TECHNICAL PAPER 361

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THE EFFECTS OF MULTIDIMENSIONALITY ON THE PREDICTIVE AND CONSTRUCT VALIDITY OF THE LPC SCALE

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Samuel Shiflett, Ronald G. Downey
and Paul J. Duffy

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Colonel, U S Army
Commander

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER (14) ARI-TP-
Technical Paper 361

2. GOVT ACCESSION NO. (9)

3. RECIPIENT'S CATALOG NUMBER
Technical paper.

4. TITLE (and Subtitle) (6)
THE EFFECTS OF MULTIDIMENSIONALITY ON THE PREDICTIVE AND CONSTRUCT VALIDITY OF THE LPC SCALE.

5. TYPE OF REPORT & PERIOD COVERED
--

6. PERFORMING ORG. REPORT NUMBER
--

7. AUTHOR(s) (10)
Samuel Shiflett, Ronald G. Downey and Paul J. Duffy

8. CONTRACT OR GRANT NUMBER(s)
--

9. PERFORMING ORGANIZATION NAME AND ADDRESS
Army Research Institute for the Behavioral and Social Sciences
5001 Eisenhower Avenue, Alexandria, VA 22333

10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS (16)
2Q162107A766

11. CONTROLLING OFFICE NAME AND ADDRESS
Deputy Chief of Staff for Personnel
Washington, DC 20310

12. REPORT DATE (11)
May 1979

13. NUMBER OF PAGES
32

14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)
--

(12) 42p.

15. SECURITY CLASS. (of this report)
Unclassified

15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
--

16. DISTRIBUTION STATEMENT (of this Report)
Approved for public release; distribution unlimited

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)
Least Preferred Coworker (LPC) scale
Multidimensionality
Implicit personality theory
Leadership
Factor analysis

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)
A 32-item Least-Preferred Coworker (LPC) scale was administered to 260 Army reservists participating in a field training exercise. The LPC scale yielded a 5-factor structure similar to a commonly recurring factor structure reported in the literature on peer ratings and implicit personality theory. Correlations between LPC factor scores and various performance criteria were examined for formal leaders, highest endorsed members, and nonendorsed members. Results suggest that the LPC dimensions are differentially predictive as a function of the criterion involved and the role of the individual in the team. Results

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408 010

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

20. (continued)

were discussed in terms of item relevance and various psychometric properties of the LPC scale.

The discovery of this particular 5-factor structure may represent a major step toward resolving the enigmatic quality of LPC by tying it to existing literature not dealing specifically with the LPC scale. There may be relationships between leader behavior and specific LPC dimensions.

The report is written for research psychologists.

TECHNICAL PAPER 361

THE EFFECTS OF MULTIDIMENSIONALITY ON THE PREDICTIVE AND CONSTRUCT VALIDITY OF THE LPC SCALE

Samuel Shiflett, Ronald G. Downey,
and Paul J. Duffy

Submitted by:
Ralph R. Canter, Chief
PERSONNEL & MANPOWER TECHNICAL AREA

Approved by:

E. Ralph Dusek, Director
PERSONNEL AND TRAINING
RESEARCH LABORATORY

Joseph Zeidner
TECHNICAL DIRECTOR

U.S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES
5001 Eisenhower Avenue, Alexandria, Virginia 22333

Office, Deputy Chief of Staff for Personnel
Department of the Army

May 1979

Army Project Number
2Q162107A766

Leadership

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FOREWORD

This research, carried out in the Personnel and Manpower Technical Area of the Army Research Institute for the Behavioral and Social Sciences (ARI), analyzes one of the more common approaches to leadership, Fiedler's contingency model. Specifically, the research examines the least preferred coworker (LPC) scale, the most critical variable in Fiedler's model. The results suggest that the LPC scale should perhaps be interpreted along more than the usual single dimension and that there may be relationships between the scale and aspects of leader behavior.

The research was an in-house effort, responsive to Army Project 2Q162107A766 and to special requirements of the Office of the Deputy Chief of Staff for Personnel. At the time the research was conducted, both Samuel Shiflett and Ronald G. Downey were part of the ARI research staff. Dr. Shiflett is now at New York University, New York City, and Dr. Downey at Kansas State University, Manhattan, Kans. Robert Ingraham aided in preparing the questionnaires and related materials, and Frances Grafton provided statistical assistance. Robert Sulzen helped arrange and coordinate the data collection and provided insights into the group processes during the exercise. Frank E. Saal gave helpful comments on the paper.

JOSEPH ZEIDNER
Technical Director

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THE EFFECTS OF MULTIDIMENSIONALITY ON THE PREDICTIVE AND CONSTRUCT VALIDITY OF THE LPC SCALE

BRIEF

Requirement:

To investigate properties of the Least Preferred Coworker (LPC) scale as potential predictors of group performance and satisfaction. The LPC scale uses an evaluation of a specific individual with whom one cannot work well, made by each member of a group, to develop a scale or measure which has been variously interpreted but which has shown fairly consistent relationships with group performance.

Procedure:

A 32-item version of the LPC scale was administered to 260 Army reservists during a field training exercise. LPC factor scores were examined in relation to performance criteria for formal leaders as well as the most endorsed and least endorsed group members.

Findings:

LPC factor scores appeared interpretable along several different dimensions, and the dimensions seemed to correlate differentially with various criteria. The LPC factor scores yielded a five-factor structure that is similar to structures found in other fields of psychological research. The respondent's role within the group appears to have an effect upon which subscale is related to which criterion.

Utilization of Findings:

Behavioral scientists can gain insight into the complex structure and potential uses of the LPC from this research.

THE EFFECTS OF MULTIDIMENSIONALITY ON THE PREDICTIVE AND CONSTRUCT VALIDITY OF THE LPC SCALE

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THE EFFECTS OF MULTIDIMENSIONALITY ON THE PREDICTIVE AND CONSTRUCT VALIDITY OF THE LPC SCALE

INTRODUCTION

Fiedler's (1967) contingency model of leadership effectiveness is perhaps one of the best-known leadership theories in current psychological and management literature. It is certainly the most controversial (Ashour, 1973; Fiedler, 1971; Graen, Alvarez, Orris, & Martella, 1970; Rice, in preparation; Schriesheim & Kerr, 1977; Shiflett, 1973). The controversy and associated criticisms have often been so intense as to be emotional rather than intellectual, and the generated research has often been weak and inconclusive. The model's problems are extensive enough so that some recent theoretical and descriptive organizational psychology texts have ignored Fiedler's model (e.g., Lawler, 1973; Porter, Lawler, & Hackman, 1975). Most recent texts, however, devote a fair amount of space and detail to Fiedler's model. Further, Fiedler and Chemers (1974) have published a text that elaborates upon various methods for implementing the theory within organizations. More recently, Fiedler, Chemers, and Mahar (1976) have developed a self-administered, programed learning manual intended to be used by managers who wish to try to improve their leadership effectiveness. Half of a Division 14 workshop at the 1976 American Psychological Association (APA) convention was devoted to training in the use of the model.

Thus, a controversial model of leadership is being widely offered as a viable and practical management technique while, at the same time, major organizational theorists seem to be eschewing it for its many conceptual problems and operational impracticalities.

In all applications of the model, the least preferred coworker (LPC) measure is required. Perhaps more than any other aspect of the model, this measure is responsible for most of the problems encountered in interpreting research findings and in applying the model to the "real world." The LPC measure is a highly idiosyncratic measure of leadership style. It is idiosyncratic because, as Fiedler put it, LPC is "a score which seemed to correlate with nothing but group performance" (1967, p. 46).

The uniqueness of the LPC measure makes it indispensable to the application of the model because its apparent lack of relationship with any measures of leadership style or other personality traits means that there is no known substitute for the measure. Yet no safeguards or precautions have been implemented to minimize all the problems of reactive measures, including response falsification and sensitization, among others. There are not even alternate forms. More importantly, although perhaps less obviously, this situation also implies that we really do not know how or why LPC works, even after 25 years of research on the topic. Yet Fiedler, Chemers, and Mahar's (1976) manner of using and

interpreting LPC in their "leadermatch" approach implies a great deal of knowledge about the various properties of LPC; knowledge that has not been empirically substantiated and that in some cases is clearly contradicted in the research literature.

In order to understand better the problems connected with LPC, it is useful to recount briefly the evolution of the methodology and interpretive strategies associated with LPC throughout its long history in Fiedler's research program.

Fiedler's leadership measure began as "assumed similarity between opposites" (ASo) and required respondents to evaluate not only their least preferred coworker but also their most preferred coworker (MPC). Difference scores were then obtained, and the summed absolute difference between MPC and LPC was interpreted in terms of "social distance." Respondents making a high discrimination between MPC and LPC (high ASo) were defined as having high social distance, and those not making a very large distinction between LPC and MPC (low ASo) were defined as having relatively low social distance. In this procedure, each stimulus person was evaluated on 20 bipolar semantic differential scales.

Although originally developed to study the effectiveness of clinical psychologists (Fiedler, 1951), Fiedler's research program rapidly moved into the area of leader effectiveness. When Fiedler discovered that the LPC measure by itself accounted for most of the variance in the ASo scores and seemed to be a stronger predictor of other criteria, he dropped the MPC measure and the associated ASo score from his research program (Fiedler, 1967). Unfortunately, this change in procedure eliminated part of the logic for defining the personal characteristic of social distance which it purported to measure and is largely responsible for the LPC score appearing to be what Schriesheim and Kerr (1977) call "a measure in search of a meaning."

When the social distance interpretation was found to be inadequate, a new interpretation in terms of leader behavioral style was introduced (Fiedler, 1964), using the labels and terminology of the Ohio State research program (Stogdill & Coons, 1957). Thus, "high social distance" was replaced by "task-oriented, structuring behavior" and "low social distance" was replaced by "consideration behavior." Subsequent attempts to interpret LPC have been in terms of cognitive complexity (Fiedler, 1971) and motivational hierarchy (Fiedler, 1972).

It is interesting to note that LPC has rarely been interpreted in terms of what raters are actually doing when they fill out the LPC questionnaire. That is, LPC is basically a personal evaluation of, or an attitude toward, a specific individual with whom one is unable to work. Yet LPC has almost never been interpreted as an attitude measure, or as a tendency to give negative evaluations in certain contexts, or as a general attributational tendency (the primary exception to this generalization being Fishbein, Landy, and Hatch, 1969). It has instead been interpreted as social distance, or leader behavioral tendency, or cognitive

complexity, or personal-need hierarchy. All of these interpretations are hypothetical constructs that mediate between the LPC response and group performance.

The reason for these unusual interpretations of LPC is very likely a direct result of the fact that there is no obvious reason why LPC works. That is, there is at present no logical rationale for LPC to predict group performance in a way that nothing else does. In other words, the LPC measure is virtually devoid of construct validity. Thus, another theoretical step must be postulated to explain how LPC, which is a personal characteristic of the leader, gets transformed into group performance. This intermediate step, or intervening variable, has little or nothing to do with the LPC measure per se and represents a totally unrelated construct (such as interpersonal behavior, or cognitive complexity, or motivation, or whatever) that is surmised to be mediating the LPC/performance relationship. The nature of this mediating construct has usually been inferred on the basis of rather scanty information; hence it is hardly surprising that rather frequent shifts in the proposed nature of the intervening construct occur.

Thus, although contingency approaches to leadership have been gaining acceptance over the past few years, the Fiedler model, which really opened up the field of leadership to contingency approaches, is in a very precarious position; this is because it is totally dependent on LPC, a variable that appears to be unrelated to anything except group performance and has no obvious or logical reason for having the effect it does.

The precarious position of Fiedler's model becomes even more apparent when one examines the research pertaining to the psychological and psychometric properties of the LPC measure. The small amount of published research generally suggests that LPC has, to quote Stinson and Tracy, "some disturbing characteristics" (1974, p. 447). For example, Fiedler (1967) indicates test-retest reliabilities ranging from .31 to .70; Stinson and Tracy (1974) reported a test-retest reliability as low as .23. Fox (1976) found test-retest reliabilities dropping from .75 after 4 weeks to .66 after 9 weeks, but reliabilities for individual items within the LPC scale dropped as low as .36, and the overall pattern of results prompted Fox to suggest that LPC was probably measuring a transient rather than a durable state (1976, p. 460).

Another problem exists in the nature of the underlying distribution of LPC scores. In spite of the fact that Fiedler claims the LPC distribution to be normal, Shiflett (1974) reported that the obtained LPC distribution among Army enlisted trainees was serrated, flat, and distinctly nonnormal. Furthermore, unpublished data collected in 1968 from university undergraduates by Shiflett indicated that the distribution of LPC scores was bimodal and perhaps even trimodal. If this population distribution is indeed nonnormal, it could help explain the poor correlations between LPC and most other variables by suggesting the existence of a high degree of attenuation as a result of the nonnormal distribution.

An additional problem with the LPC measure, mentioned by Fishbein, Landy, and Hatch (1969) and Shiflett (1974) is that of multiple stimulus objects. Each respondent is instructed to rate a specific individual with whom he or she has been unable to work well. Thus, there are potentially as many different attitude objects as there are respondents. This fact must logically mean that a sizable amount of obtained variance is due to the evaluation of characteristics unique to the specific individuals being evaluated. This fact also suggests that some of the items within the LPC scale might not even be relevant to the general concept of one's least preferred coworker. That is, there may be certain characteristics of a particular individual that cause you to decide that he or she is your LPC, but if those characteristics are not included in the 16 scale items constituting the LPC measure, they will add nothing to the validity of the LPC score. Similarly, if some of the scales included in the LPC measure are not relevant to your decision regarding your LPC or to your evaluations of him or her, then those particular scales add unneeded and irrelevant variance to the measure. With respect to the typical uses of LPC scores, either state of affairs represents error variance. Furthermore, Mitchell (1970), Shiflett (1974), and Stinson and Tracy (1974) have demonstrated that not all respondents are following instructions correctly, since not everyone is rating a real person. These problems cannot be alleviated without changing the LPC measure completely, and this is not possible until a better understanding of the underlying processes involved in evaluating one's least preferred coworker is obtained.

What is particularly intriguing about this situation is that even though it seems apparent that much of the variance in the LPC measure is due to the many different ratees, the interpretation of the LPC score has always been one of assuming that it is reflecting an attribute of the rater. This apparent paradox seems similar to the situation in the literature on implicit personality theory (Schneider, 1973) in which a well-established factor structure of peer evaluation dimensions has been repeatedly replicated in the absence of any real stimulus object (Levy & Dugan, 1960; Norman & Goldberg, 1966; Passini & Norman, 1966). The interpretation of this finding has been to suggest that peer judgments are reflecting characteristics of the rater (his or her implicit personality theory) and that these ratings may not be at all related to the person being rated.

To complicate matters further, several recent factor analytic studies have suggested that the LPC measure may not be unidimensional, although Fiedler treats it in this manner. For example, both Shiflett (1974) and Yukl (1970) found two dimensions that were interpreted to represent task and interpersonal dimensions. Gruenfeld and Arbuthnot (1968) found results indicating the existence of four dimensions, and Fox, Hill, and Guertin (1973) found evidence from three different samples that the LPC scales might be defined by as many as six dimensions.

Although the possibility of multidimensionality may produce new psychometric problems for LPC, it also suggests a solution to many of

the dilemmas presented above, for several reasons. A multidimensional LPC scale would alleviate the problem of multidimensional interpretations of the present unidimensional LPC scale, a problem discussed at length by Shiflett (1973, 1974). In addition, it suggests a possible insight into the construct validity issue, i.e., why LPC works. Most of the studies described above have labeled the underlying factors in terms of traditional leadership orientations, i.e., task orientation, or interpersonal relations orientation, etc. These labels appear similar, if not identical to, some of the behavioral interpretations of LPC scores made by Fiedler and his associates.

If these findings hold up, a "logical" relationship between LPC and group performance can be postulated in terms of the way the leader uses the LPC scales. That is, personal needs (task needs, social needs, or whatever) can be postulated to reflect the manner in which a person evaluates a coworker along various dimensions, as well as the way the person acts toward that coworker. And in turn, those actions presumably affect group performance through the particular focus of the leader's behavior in interacting with group members.

This approach suggests that the LPC measure may be closely reflecting what is actually underlying the leadership process, but the measure confounds or obscures the true nature of these processes largely because of the problems summarized above. The task of the researcher, then, becomes one of studying all aspects of the process of evaluating one's least preferred coworker. This approach involves methodological, psychometric, and theoretical issues. For example, Foa, Mitchell, and Fiedler (1971) and Shiflett (1974) found many more interpersonal relations items than task-oriented items in the LPC scales, along with several indeterminant items.

One way to improve the psychometric characteristics as well as theoretical meaningfulness of the LPC measure might be to weight equally the task and interpersonal dimensions by changing the current scale to include the same number of items for each dimension. Of course the problem is somewhat more complex than this, since the measure may involve more than two dimensions. It would seem wise to include items that potentially define other evaluative dimensions. This is especially desirable in light of an increasing tendency for theorists to postulate the existence of more than two leader behavior dimensions in the context of predicting group performance and satisfaction (e.g., House, 1971; Yukl, 1971).

One final problem with the use of LPC to predict leader effectiveness needs to be mentioned. Fiedler (1967, 1973) has proposed that leaders' scores from the least preferred coworker scale have a complex relationship with measures of work group performance. Generally, LPC has been predicted to have a positive relationship with group performance in situations of moderate favorableness for the leader and a negative relationship in situations of both high and low favorableness to the leader. Situational favorableness is usually defined by various

combinations of leader-member relations, leader position power, and task structure, although a wide variety of other situational characteristics has also been employed.

Of particular importance in the use of LPC to predict group performance is the fact that it is almost always the leader's LPC score that is involved. The implication is clearly that LPC is a measure of some leadership characteristic and that it exerts its influence on the group product through the leader. However, with the exception of a couple of early studies in Fiedler's research program on the relationship between LPC and self-esteem or adjustment (Meyers, 1962; Bishop, 1964), no evidence exists to show that group members' LPC scores are not just as important as leaders' scores.

This concern for the possible effect of member LPC leads to the recognition of a subtle form of confounding characteristic of virtually all the laboratory research on LPC. The typical procedure is to assign leaders from the extremes of the LPC distribution--usually from a relatively small pool--often consisting of no more than the sample actually used in the study. This procedure has the effect of artificially eliminating extreme LPC scores from among the group members. Thus group members will tend to be more moderate in their LPC ratings than will their leaders. In other words, high LPC leaders and low LPC leaders will tend to have middle LPC members. The question then can be raised as to whether any results obtained using these procedures are the result of leader LPC, or member LPC, or the specific pattern of leader versus member LPC scores. Tests of the contingency model in ongoing groups that have an already established leader tend to provide stronger support for the model than do laboratory studies (Fiedler, 1971), thus tending to support the argument that the leader's LPC is the principal source of the effects attributed to LPC. That issue must be resolved in future laboratory research.

This report discusses a research project that was designed to address some of the problems outlined above. An expanded series of items was incorporated into the LPC questionnaire to provide a more comprehensive basis for dimensional analyses of the LPC scores. Several behavioral and group productivity measures were obtained from individuals in a team situation in order to determine the extent to which the LPC scores were related to actual group effectiveness for leaders as well as for team members.

METHOD

Subjects

Subjects were 275 officers and enlisted personnel in the Army Reserves engaged in an annual requirement of 2 weeks of active duty for training. They were members of a Special Forces unit that normally operated in small teams, each consisting of 11 to 14 people. Data were

collected from a total of 24 teams, but because the data from 1 team were not usable, the maximum N for data analyses was 260. Although team membership remains fairly stable over the years, there were some individuals who had joined the team only for the 2 weeks of training.

Teams were organized with a leader, an assistant leader (both officers), and 9 to 12 enlisted personnel who were specialists in five areas (e.g., medical)--two for each specialty. All teams assembled at a central location for an orientation session and were then sent to five separate and isolated locations throughout the United States where they engaged in a 2-week field training exercise. Immediately after the commencement of the orientation session, all participants filled out the preexercise questionnaire described below. Upon completion of the field exercise, the team members filled out a postexercise questionnaire.

Additional data evaluating the exercise were collected from three separate sources in addition to the team members: (a) from the evaluator, a Regular Army officer assigned to the team during the exercise for evaluation of team performance; (b) from the controller, a Regular Army officer assigned to the team for general maintenance duties; and (c) from "guerrillas," non-Special Forces military reservists who operated with the Special Forces team and who were to be trained by the team. All nonteam respondents filled out a special evaluator questionnaire, described below, at the completion of the field exercise.

Preexercise Questionnaire

The initial questionnaire requested a variety of information and was designed to require not longer than 1 hour to complete. Included were biographical, demographic, and attitudinal items and a set of peer nominations of leadership potential of each person on the respondent's team. The LPC scale was included in this questionnaire. It consisted of 32 bipolar items, including the 16 items used by Fiedler (1967), as well as items used by Yukl (1970).

Postexercise Questionnaire

The questionnaire administered at the completion of the 2-week exercise included group atmosphere scales (Fiedler, 1967), a repetition of the peer ratings, and a series of items asking the participants to rate their leader on various behaviors and to evaluate how the team's tasks were performed.

Six scales were developed from unit member evaluative responses to a number of specially constructed items describing various aspects of the exercise (Downey, Duffy, & Shiflett, 1975; Duffy, Downey, & Shiflett, 1977). The scales are labeled unit performance, job satisfaction, leader effectiveness, group cohesion, individual performance, and individual effort.

Special Evaluator Questionnaire

This questionnaire was administered at the same time as the post-exercise questionnaire and was actually a shorter version of it, containing only the evaluative items on the leader's and team's performance. These responses also provided evaluations of various unit outcomes (Downey, Duffy, & Shiflett, 1975; Duffy, Downey, & Shiflett, 1977) resulting in seven scales labeled morale, early mission effectiveness, mission effectiveness, esprit, mission support effectiveness, leader effectiveness, and planning effectiveness.

RESULTS

Psychometric Properties of the LPC Scale

The 32 LPC scale items were submitted to a principal axes factor analysis with varimax rotations. All rotations from two through five factors yielded interpretable factor structures. The two-factor and the five-factor solutions are shown in Table 1.

The two-factor solution is presented because it rather clearly demonstrates the existence of two underlying dimensions that are conceptually similar to interpretations of LPC by Fiedler (1967), as well as being similar to major leadership styles frequently described in the leadership literature (e.g., Stogdill, 1974). They also confirm the findings of Shiflett (1974) and Yukl (1970). These two factors are labeled Interpersonal warmth and supportiveness and Task-oriented activities.

Inspection of the rotated three-, four-, and five-factor solutions indicated that the original two factors were each systematically partitioned into two interpretable factors, and finally a fifth factor was pulled out of the interpersonal warmth space. Thus, five factors--labeled Consideration and Helpfulness, Dependability, Extroversion, Self-sufficiency, and Personal Composure--appeared to best describe the factor space of the 32 items. These five factors accounted for 50% of the total scale variance.

The obtained LPC factor structure bears a remarkable resemblance to the five-factor structure repeatedly found in the research on the effects of rater personality structure on peer evaluation and self-evaluations (Fiske, 1949; Norman, 1963; Norman & Goldberg, 1966; Passini & Norman, 1966; Tupes & Christal, 1961). Our five LPC factors of Consideration and Helpfulness, Dependability, Extroversion, Self-sufficiency, and Personal Composure are quite similar both in concept and content to the five factors in Norman's research program; he has labeled the factors, respectively, Agreeableness, Conscientiousness, Extroversion or Surgency, Culture (inquiring intellect), and Emotional Stability. The obvious similarity in these factor structures caused us to wonder why some of the previous factor analytic studies of the LPC

Table 1

Two- and Five-Factor Solutions from the Varimax Rotations of LPC Scales

Scale names[a]	Two-factor solution[b]		Five-factor solution[c]				
	I	II	I	II	III	IV	V
1. Pleasant - unpleasant	726	188	256	258	613	-043	360
2. Friendly - unfriendly	729	130	194	203	710	-060	293
3. Accepting - rejecting	597	070	338	110	402	-071	289
4. Close - distant	648	034	427	-074	545	063	088
5. Cooperative - uncooperative	500	360	574	357	140	049	226
6. Interesting - boring	561	280	373	004	459	362	121
7. Efficient - inefficient	189	753	395	621	-006	373	035
8. Cheerful - gloomy	626	223	144	108	687	197	182
9. Careful - careless	063	692	055	780	079	156	028
10. Energetic - unenergetic	306	531	222	420	518	282	-295
11. Considerate - inconsiderate	629	269	582	303	285	-030	268
12. Reliable - unreliable	138	667	319	710	-024	153	031
13. Outgoing - shy	219	227	-251	070	601	308	-092
14. Decisive - indecisive	145	710	117	332	152	688	033
15. Cheerful - ill-humored	691	099	172	049	679	073	282
16. Independent - dependent	022	602	046	147	016	748	042
17. Helpful - frustrating	548	396	683	253	144	203	202
18. Enthusiastic - unenthusiastic	323	417	046	414	612	149	-209
19. Relaxed - tense	578	102	189	-055	212	208	692
20. Warm - cold	799	028	451	-073	630	055	253
21. Supportive - hostile	684	204	474	226	330	-017	432
22. Harmonious - quarrelsome	685	106	361	259	296	-180	598
23. Self-assured - hesitant	-022	647	-211	305	086	685	187
24. Open - guarded	528	214	211	-018	366	323	359
25. Clean - dirty	224	486	-115	549	299	140	219
26. Responsible - irresponsible	171	746	198	801	090	192	082
27. Adaptive - dogmatic	389	393	442	180	009	328	338
28. Resourceful - unresourceful	329	660	295	252	174	676	177
29. Adjusted - maladjusted	458	562	268	442	173	322	460
30. Calm - excitable	505	239	191	054	093	293	725
31. Interesting - dull	545	356	362	-014	434	503	146
32. Interested in others - self-absorbed	619	221	715	073	280	133	103

[a]Items 1-8 and 17-24 are the 16 scales reported by Fiedler (1967). Decimals are omitted.

[b]Factor I = Interpersonal Warmth and Supportiveness; Factor II = Task-oriented Activities.

[c]Factor I = Consideration and Helpfulness; Factor II = Dependability; Factor III = Extroversion; Factor IV = Self-sufficiency; Factor V = Personal Composure.

scale had not yielded such a factor structure. A summary review of these studies indicated that most investigators simply factored the 16-item LPC scale, and even those adding extra items failed to include items that would permit this particular five-factor structure to appear. Our ability to extract this rather common factor structure did not occur as a result of any deliberate attempt on our part to do so; it resulted from our rather serendipitous decision to add the items used by Yukl (1970) to Fiedler's (1967) original 16 items. Yukl, in turn, had derived his items from the work of Fishbein, Landy, and Hatch (1969, 1970), who had asked subjects in a free-response situation to generate items descriptive of their least preferred coworker. This procedure may well have allowed their subjects' implicit personality theory to operate freely in the generation of items that would eventually permit us to recover that process in an entirely different context.

In the next step of the data analyses, composite scores representing each factor were derived. In order to make the various subscores directly comparable, an equal number of items from each of the first four factors was selected for inclusion in the composite scores. The criteria for selection of items were size of loading and the item's relative independence of other factors, or simple structure. Four items per factor were selected, except for the personal composure factor, where only three items were selected due to an inadequate number of usable items.

Factor I, Consideration and Helpfulness, was represented by the following items: Cooperative-uncooperative (5), Considerate-inconsiderate (11), Helpful-frustrating (17), and Interested in others-self-absorbed (32).

Factor II, Dependability, was represented by these items: Careful-careless (9), Reliable-unreliable (12), Clean-dirty (25), and Responsible-irresponsible (26).

Factor III, Extroversion, was represented by the following items: Pleasant-unpleasant (1), Friendly-unfriendly (2), Cheerful-gloomy (8), and Cheerful--ill-humored (15).

Factor IV, Self-sufficiency, was represented by these items: Decisive-indecisive (14), Independent-dependent (16), Self-assured-hesitant (23), and Resourceful-unresourceful (28).

Factor V, Personal Composure, was represented by these items: Relaxed-tense (19), Harmonious-quarrelsome (22), and Calm-excitable (3).

This procedure resulted in five LPC subdimension scores utilizing 19 of the 32 items in the pool. Eight of the 19 items are in the original 16-item LPC scale set reported by Fiedler (1967). Two additional scores were derived by summing the Factor I and III scores to yield a Consideration and Helpfulness score and by summing the Factor II and IV

scores to obtain a Task-oriented Activities score. These two scores, containing a total of 16 items, were then summed to obtain a new and improved 16-item LPC score in which both task and social dimension are equally represented. These procedures resulted in a set of eight new LPC-based scores in addition to the original LPC score. The intercorrelations among these scales are presented in Table 2.

Table 2

Correlation Matrix of LPC Composite Scores

LPC composites	LPC composites									
	1	2	3	4	5	6	7	8	9	10
1. Factor I: Considerate Helpfulness										
2. Factor II: Task-oriented Activities	.46									
3. Factor III: Extroversion	.56	.34								
4. Factor IV: Self-sufficiency	.34	.47	.30							
5. Factor V: Personal Composure	.54	.28	.52	.30						
6. I plus III: Interpersonal Warmth	.87	.45	.89	.36	.60					
7. II plus IV: Task-oriented Activities	.47	.85	.37	.86	.34	.47				
8. New LPC	.77	.77	.73	.72	.54	.85	.87	-.07		
9. Original LPC	.78	.51	.84	.51	.70	.92	.60	.27	.88	

The five-factor composite scores show a reasonable degree of independence, with the intercorrelations among the scores ranging from .28 to .56. Thus, even though there is variance common to all the factors--probably from a general evaluative tendency and common method variance--there is enough divergence among the scores to support reasonable confidence that the scores are meaningfully different.

Of particular interest is the high degree of association these items have with the original 16-item LPC scale used by Fiedler (1967). The two task-oriented factors are each correlated .51 with the original LPC score, and their combined score is correlated .60 with original LPC. Although these are not remarkably high correlations, they are strong enough to indicate a definite common basis.

The interpersonal factors, on the other hand, show remarkably high correlations with the original LPC score, with Factors I, III, and V correlating .78, .84, and .70, respectively, with the original LPC score. Furthermore, the Factor I-III combined score is correlated .92 with original LPC. This value is clearly in the range of the maximum reliability coefficients ever reported for LPC (Fiedler, 1967; Posthuma, 1970). This value is particularly striking in light of the fact that only three items are common to both scores. Further, a correlation of this magnitude, given the measurement error involved, indicates that the two variables are nearly indistinguishable and should probably be interpreted as measuring the same thing. In other words, low LPC people would be labeled as negative interpersonal evaluators instead of as task-oriented or cognitively simple individuals.

Examination of the new 16-item LPC score reveals a pattern of correlations with the subscores similar to what occurred with the original LPC score except that the patterns are perhaps a bit neater with the new LPC score. The task factors are nearly equal to the interpersonal factors in their contributions to accountable variance, thus reflecting the deliberate effort to create an LPC score equally balanced between task and interpersonal items.

However, in spite of the fact that the task and interpersonal items are now equally represented in the new LPC score, it still attains a correlation of .88 with the original LPC score. This latter intercorrelation allows the interpersonal scale to be correlated with supposedly task-related items to the extent that both subscores share common trait and method variance. Thus, misinterpretations of the "meaning" of LPC are highly likely in the absence of an adequate conceptual model, and unusual and misleading correlations can easily occur.

Shiflett (1974) reported that LPC had an unusual distribution in his sample of Army basic trainees. To determine whether this finding could be replicated, the distributions of the original and new LPC scores were plotted and are presented in Figure 1.

As can be seen, the distribution of original LPC is nonnormal, containing three distinct modes. The new LPC score is somewhat smoother but still reflects the existence of three modes. Given an N of 260, and given the fact that each of the modes is separated from the others by at least 10 points, it seems unlikely that these modes are an artifact of the procedures used in this study.

In this regard, it should be mentioned that as the category width is increased, it is possible eventually to "iron out" the modes as more and more information is lost in the grosser categorizations. By the same token, narrowing the category widths results in the LPC distributions taking on a more and more jagged and irregular appearance. It seems quite clear that LPC is not normally distributed. Figure 1 does not, however, suggest enough of a deviation from normality to yield more than a minor attenuating effect on potential relationships with other

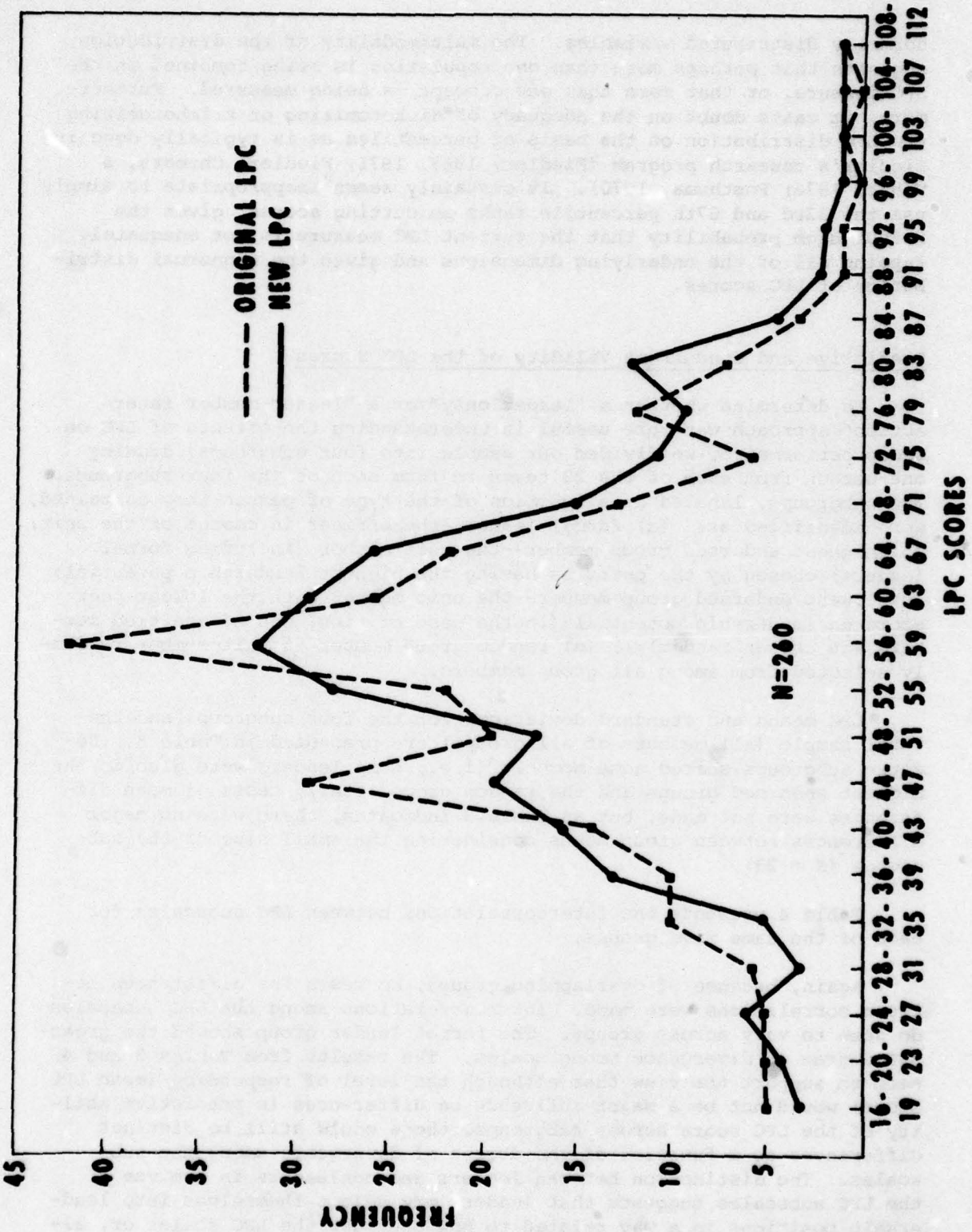

Figure 1. Distribution of original 16-item LPC scale (Fiedler, 1967) and new revised 16-item LPC scale.

normally distributed variables. The multimodality of the distribution suggests that perhaps more than one population is being combined in the LPC measure, or that more than one concept is being measured. Furthermore, it casts doubt on the adequacy of dichotomizing or trichotomizing the LPC distribution on the basis of percentiles as is typically done in Fiedler's research program (Fiedler, 1967, 1971; Fiedler, Chemers, & Mahar, 1976; Posthuma, 1970). It certainly seems inappropriate to simply use the 33rd and 67th percentile ranks as cutting scores, given the rather high probability that the current LPC measure is not adequately tapping all of the underlying dimensions and given the nonnormal distribution of LPC scores.

Predictive and Concurrent Validity of the LPC Scores

To determine whether a "leader only" or a "leader-member interaction" approach was more useful in understanding the effects of LPC on group performance, we divided our sample into four subgroups, drawing one person from each of the 23 teams to form each of the four subgroups. The subgroups, labeled as a function of the type of person they contained, were identified as: (a) formal leader--the officer in charge of the unit; (b) highest endorsed group member--the unit member (including formal leaders) chosen by the peers as having the highest leadership potential; (c) lowest endorsed group member--the unit member with the lowest peer score on leadership potential (in the case of ties, one of the tied members was chosen randomly); (d) random group member--a unit member randomly selected from among all group members.

LPC means and standard deviations for the four subgroups and the total sample (all members of all groups) are presented in Table 3. Because subgroups shared some members (i.e., some leaders were also in the highest endorsed groups and the random group total), tests of mean differences were not made, but as Table 3 indicates, there were no major differences between group means considering the small size of the subgroups (N = 23).

Table 4 presents the intercorrelations between LPC subscales for each of the same five groups.

Again, because of overlapping groups, no tests for differences between correlations were made. Intercorrelations among the LPC subscales do seem to vary across groups. The formal leader group showed the greatest degree of divergence among scales. The results from Tables 3 and 4 seem to support the view that although the level of responding (mean LPC score) would not be a major influence on differences in predictive ability of the LPC score across subgroups, there could still be distinct differences as a function of the degree of divergence among the subscales. The distinction between leaders and nonleaders in the use of the LPC subscales suggests that leaders may select themselves into leadership positions in a way related to how they use the LPC scales or, alternately, that once they become leaders they tend to change the way

Table 3

LPC Subscale Means and Standard Deviations for Four Subgroups and Total Group

LPC scales	Group									
	Formal		High peer		Low peer		Random		Total[a]	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Consideration and Helpfulness	11.0	3.7	11.4	3.8	11.4	4.5	11.9	5.0	11.5	4.9
Dependability	15.1	5.2	14.4	4.9	14.0	5.6	13.8	4.9	14.8	5.6
Extroversion	17.9	4.7	15.9	5.0	14.7	5.7	16.6	5.7	15.6	5.4
Self-sufficiency	15.0	6.5	13.7	5.6	15.7	5.3	15.9	4.9	15.4	5.7
Personal Composure	10.3	4.1	9.7	3.9	8.6	3.0	9.8	3.6	9.5	4.0
New LPC	58.8	11.7	55.4	12.7	55.9	16.1	58.1	14.0	57.2	16.1
Old LPC	57.6	10.3	53.7	12.9	53.1	15.2	55.7	14.9	54.6	15.8

[a]Total group is all group members, N = 275.

Table 4

LPC Subscale Intercorrelations for Four Subgroups and Total Group

LPC subscale intercorrelations	Group				
	Formal	High peer	Low peer	Random	Total[a]
I with II	-10	17	29	37	50*
I with III	-11	51*	65*	42*	60*
I with IV	15	46*	57*	29	36*
I with V	37	61*	60*	76*	56*
II with III	23	22	21	60*	35*
II with IV	24	13	51*	19	50*
II with V	-03	08	11	35	31*
III with IV	06	09	41	-14	33*
III with V	47*	58*	34	51*	52*
IV with V	22	41	40	16	31*

*$p < .05$.

Note. Decimals have been omitted. I = Consideration and Helpfulness; II = Dependability; III = Extroversion; IV = Self-sufficiency; V = Personal Composure.

[a]Total group is all group members, N = 275.

they perceive those for whom they are responsible. This latter interpretation would offer at least some explanation of the low test-retest reliabilities, reported by Fiedler (1967, 1971) and Stinson and Tracy (1974), which usually spanned a period of intervening leadership experience.

Our interpretation also suggests that the previously mentioned confounding of leader and member LPC scores that often exists in laboratory studies may also exist to some degree in field settings; however, in the latter case, it may be the leaders themselves who "select themselv out" of the overall population of LPC scores, thereby causing the leader's mean (or configural) LPC score to differ systematically from member LPC scores. The interaction between leader and member characteristics on various leadership criteria has been well enough established (Stogdill, 1974) to make the current situation regarding the role of member LPC one of great concern.

Before examining the correlations between LPC and various criteria, it is useful to characterize the groups in terms of the situational favorableness dimension in Fiedler's model. Detachments were commanded by captains, not a particularly powerful rank in the Army. Furthermore, many of the enlisted personnel--particularly the senior noncommissioned officers--were older and substantially more experienced than their commanding officers. Therefore, the leader's position power was judged to be relatively low.

The field training exercise was a large operation involving a number of different sequential phases that required the coordination of the unit's activities with several other military units also participating in the exercise. On the whole, once the detachments were in the field, their day-to-day operations were largely at the discretion of the commander and the unit members, with virtually no direction from their central headquarters. The complexity of the operation, with the many alternative ways of handling the various situations encountered, led to a judgment that the task was relatively unstructured. The voluntary nature of the Reserves, plus the enthusiastic reception of this type of outdoor "action" exercise, led us to conclude that group morale and leader-member relations were relatively good. This conclusion was confirmed by the group atmosphere ratings (M = 70.8, S.D. = 6.7).

A situation with low leader position power, an unstructured task, and relatively good leader-member relations corresponds to octant 4 of Fiedler's (1967) model. The model predicts a positive correlation between leader LPC and group performance in this octant.

A comparison of the predictive ability of the old and new LPC scales is presented in Table 5.

Table 5

Correlations Between Unit Criteria and Old and New LPC Scales

Criteria	Formal leaders		High endorsed		Low endorsed	
	New LPC	Old LPC	New LPC	Old LPC	New LPC	Old LPC
1. Acquaintanceship	.14	.16	-.22	-.12	-.26	-.15
2. Friendship	-.13	-.30	-.28	-.20	-.02	.02
3. Group Atmosphere	.24	-.01	-.12	-.04	.13	.09
4. Morale	.10	.10	-.32	-.30	.46*	.46*
5. Early Mission Effectiveness	.51*	.18	-.04	-.14	.15	.46
6. Mission Effectiveness	.02	.00	-.28	-.28	.35	.26
7. Esprit de Corps	-.15	-.09	-.22	.00	.32	.29
8. Mission-Support Effectiveness	.39	.28	-.25	-.36	.47*	.50*
9. Leader Effectiveness 1[a]	.28	.10	-.31	-.37	.43	.43
10. Planning Effectiveness	.39	.15	.10	-.07	.24	.39
11. Unit Performance	.52*	.20	.11	-.05	.33	.42*
12. Job Satisfaction	.26	-.23	.04	-.11	-.14	-.04
13. Leader Effectiveness 2[b]	.06	.08	.02	.23	.37	.37
14. Group Cohesion	.00	-.17	-.29	-.23	-.04	-.11
15. Individual Performance	-.10	-.28	-.36	-.33	.05	-.04
16. Individual Effort	.48*	.46*	.10	.03	.43*	.41

*p < .05.
**p < .01.

[a] From outside observers.

[b] From group members.

The prediction of a positive correlation between leader LPC and group performance received only weak support using Fiedler's old LPC measures. Correlations were in the correct (positive) direction, but only one achieved statistical significance (Individual Effort, r = .46, p < .05). Our new LPC measure, however, provided rather strong support for the model's prediction. The correlation between new-LPC and early mission effectiveness was .51 (p < .05); with Unit Performance the correlation was .52 (p < .05); and with Individual Effort the correlation was .48 (p < .05). It is heartwarming to note that our improved LPC score was better able to support Fiedler's model than was his own LPC scale. It is also interesting to note that the leaders' LPC scores were

not related to either of our direct estimates of leader effectiveness (items 9 and 13 in Table 5), also confirming findings by Fiedler (1967). For highest endorsed members, neither LPC scale was able to significantly predict any of the criteria. Among lowest endorsed members, both LPC scales predicted three criteria. All in all, the new LPC scale, based on a balanced combination of four subscales, appears to have a slightly improved predictive ability over the old LPC scale. Interestingly, among the significant correlations, formal leader LPC is most strongly associated with product and mission-oriented criteria (e.g., early mission effectiveness and unit performance), whereas member LPC is more closely associated with psychological and auxilliary performance criteria (e.g., morale and mission support effectiveness). For both leaders and members, LPC is equally predictive of reported effort.

Of perhaps greater interest--and certainly more informative--are the patterns of relationships between the various LPC subscales and group outcome criteria. The correlations between the five LPC subscales and the various outcome measures for three subsamples are presented in Tables 6, 7, and 8. Because of missing data, the correlations in these tables are based on N's ranging from 14 to 23. Data for the random member subgroup are not presented in tabular form because only 2 correlations (out of 80) were statistically significant. Approximately four r's could be expected to be significant at the .05 level due to chance alone in each subsample.

Table 6 reports the LPC and outcome correlations for formal leaders. Nine of 80 r's were significant. The Dependability subscale accounts for six of the significant correlations and indicated that formal leaders who described their LPC as dependable tended to have more effective and more cohesive units. On the other hand, negative evaluations of one's least preferred coworker on the Consideration and Helpfulness subscale were associated with higher individual performance and a high level of friendship. The Self-sufficiency subscale produced one significant positive correlation, with early mission effectiveness.

Table 7 reports the LPC and outcome correlations for highest endorsed group members. Seven correlations were significant. Describing one's LPC as low on Self-sufficiency and Personal Composure was associated with teams high in group solidarity (negative r's with Morale, Esprit, Group Cohesion, Individual Performance, Friendship, and Group Atmosphere).

As Table 8 indicates, low endorsed group members selecting a least preferred coworker who was high in Consideration and Helpfulness as well as Dependability were associated with groups high in Mission-Support Effectiveness, Morale, Leader Effectiveness, and Individual Effort.

Finally, of the five LPC subscales, the Extroversion subscale was not related to any of the outcome criteria for any of the subgroups.

Table 6

Correlations Between LPC Subscales and Unit Criteria for Formal Leader

Criteria	LPC scales				
	Consideration and Helpfulness	Dependability	Extroversion	Self-sufficiency	Personal Composure
1. Acquaintanceship	-.16	.16	.34	-.02	.13
2. Friendship	-.45*	.14	-.05	-.04	-.32
3. Group Atmosphere	-.10	.50*	.29	-.13	-.13
4. Morale	-.05	.07	-.06	.21	-.10
5. Early Mission Effectiveness	.23	.35	-.08	.57*	-.06
6. Mission Effectiveness	-.14	.10	.14	-.07	-.27
7. Esprit de Corps	-.15	-.02	.00	-.17	-.29
8. Mission-Support Effectiveness	.03	.47*	.18	.19	.14
9. Leader Effectiveness 1[a]	.01	.44*	.02	.13	-.08
10. Planning Effectiveness	-.12	.36	.29	.22	.10
11. Unit Performance	.21	.49*	.19	.28	.07
12. Job Satisfaction	-.29	.61**	.13	.04	-.35
13. Leader Effectiveness 2[b]	.01	.25	.09	-.16	.06
14. Group Cohesion	-.25	.23	.15	-.15	-.21
15. Individual Performance	-.54**	.40	.14	-.29	-.35
16. Individual Effort	.15	.46*	.41	.11	.35

*p < .05.
**p < .01.

[a]From outside observers.

[b]From group members.

Table 7

Correlations Between LPC Subscales and Unit Criteria for Highest Endorsed Group Member

Criteria	LPC scales				
	Consideration and Helpfulness	Dependability	Extroversion	Self-sufficiency	Personal Composure
1. Acquaintanceship	-.15	-.16	-.07	-.20	-.12
2. Friendship	-.23	-.10	-.09	-.31	-.46*
3. Group Atmosphere	-.18	.12	.19	-.44*	-.22
4. Morale	-.12	-.17	-.05	-.44*	-.38
5. Early Mission Effectiveness	-.24	.15	-.11	.05	-.40
6. Mission Effectiveness	-.05	-.10	-.06	-.43	-.44
7. Esprit de Corps	-.02	-.23	.30	-.54*	-.26
8. Mission-Support Effectiveness	-.22	-.03	-.21	-.20	-.21
9. Leader Effectiveness 1[a]	-.25	.05	-.24	-.37	-.40
10. Planning Effectiveness	.07	.20	.03	-.03	-.03
11. Unit Performance	-.10	.27	.08	.02	-.13
12. Job Satisfaction	-.20	.36	.04	-.13	-.41
13. Leader Effectiveness 2[b]	.04	.00	.27	-.21	-.01
14. Group Cohesion	-.29	.01	.04	-.50*	-.45*
15. Individual Performance	-.28	-.10	-.10	-.46*	-.40
16. Individual Effort	.01	.07	.08	.09	.10

*p < .05.
**p < .01.

[a]From outside observers.

[b]From group members.

Table 8

Correlations Between LPC Subscales and Unit Criteria for Lowest Endorsed Group Member

Criteria	LPC scales				
	Consideration and Helpfulness	Dependability	Extroversion	Self-sufficiency	Personal Composure
1. Acquaintanceship	.05	-.20	-.21	-.38	-.03
2. Friendship	.19	-.11	-.03	-.06	.01
3. Group Atmosphere	.08	.06	.08	.17	.11
4. Morale	.62**	.26	.27	.28	.43*
5. Early Mission Effectiveness	.29	-.03	.38	-.15	.35
6. Mission Effectiveness	.44	.37	-.04	.32	.32
7. Esprit de Corps	.37	.04	.25	.34	.38
8. Mission-Support Effectiveness	.45*	.46*	.30	.23	.36
9. Leader Effectiveness 1[a]	.46*	.42	.29	.17	.30
10. Planning Effectiveness	.47	.16	.22	-.08	.37
11. Unit Performance	.28	.30	.23	.20	.33
12. Job Satisfaction	-.09	-.09	.01	-.26	.02
13. Leader Effectiveness 2[b]	.32	.21	.34	.25	.12
14. Group Cohesion	.06	.04	-.19	-.01	.06
15. Individual Performance	.05	.18	-.09	.02	.01
16. Individual Effort	.32	.43*	.23	.31	.12

*p < .05.
**p < .01.

[a]From outside observers.

[b]From group members.

DISCUSSION

When examining the LPC subdimensions and their relationship to group criteria within the various subgroupings, one has the distinct feeling that the LPC dimensions should be describing the actor-respondent rather than his least preferred coworker; perhaps they are. When people select their least preferred corworker, they presumably select that person with whom they had the greatest difficulty working in a group situation. The particular reason for having difficulty working with someone undoubtedly varies greatly from person to person. Thus, when the raters actually evaluate their least preferred coworker on the LPC items, they quite possibly find that some of the items are relevant to their decision to select that particular person, while other items are not at all relevant to the decision. That is, any individual, including a least preferred coworker, is made up of many different characteristics, only a few of which may have had a negative effect on the rater. Furthermore, because people do vary, the characteristics relevant to the selection of one person's LPC may be completely irrelevant to the selection of another person's LPC.

This fact has a definite implication for the distribution of scores on a given LPC item. When an item is relevant for selecting a particular least preferred coworker, the resulting distribution of scores would be expected to cluster at the negative (low) end of the item scale, since presumably the negative aspect of that characteristic was the reason for the selection of a negative stimulus object (i.e., LPC). When an item is not relevant, however, the distribution of item scores would be expected to resemble the population distribution for that item and perhaps be more or less symmetrically and normally distributed across the entire range.

A further implication of the presumption that items constituting the LPC scale vary in decision relevance is the distinct possibility that relevance is at least partially a function of the rater's own personality characteristics, especially with respect to leadership style. To the extent that people use themselves as anchors (consciously or unconsciously) for assessing others, their own personal traits are likely to be used as positive anchors when assigning relatively negative ratings to someone with whom they have had difficulty working. Therefore, traits that are valued highly by the rater will tend to receive low scores for one's least preferred coworker, whereas traits that are not highly valued will tend to receive more moderate scores.

The data from this study suggest that people make their evaluations along at least five dimensions, which have been repeatedly identified in a variety of other contexts. The dimension labels used here have strong behavioral overtones and suggest the possibility that this approach to LPC may bring us a step closer to understanding the nature of the behavioral link between group performance and leader traits. The data also suggest a means whereby the rather confusing literature on implicit personality theory (Rosenberg & Sedlak, 1972; Schneider, 1973) can

perhaps be tied more closely to behavioral tendencies; we have demonstrated in Table 1 that the recurring five-factor structure found in our data can be seen as emerging from (or collapsing into) a two-factor space where one dimension represents task-oriented behavior and the orthogonal dimension represents interpersonal behaviors.

Our data further suggest that the various LPC subdimensions may be differentially relevant to group processes depending upon the role of the individual within the group, as well as the group output criterion. Thus, for the formal leader we find that the dimensions of Dependability and Self-sufficiency are positively related to various task-effectiveness criteria. Combining this finding with the implication suggested above, that people use themselves as anchors, indicates that leaders who value dependability and self-sufficiency (and therefore give low scores to their LPC on these dimensions) were associated with groups low in task-effectiveness and satisfaction measures. It is as if the leader were unable to utilize the group effectively because of too much self-reliance--that is, the leader would be rated as relatively high on Dependability in a peer rating setting.

The formal leader Consideration and Helpfulness scores are negatively related to the personal friendship and individual performance criteria, suggesting that formal leaders who value this trait and who presumably would be ranked higher on this trait (while at the same time they are giving their LPC low scores), are associated with groups reporting high levels of friendship and individual performance.

On the other hand, in the case of the high endorsed member, who might be thought of as an informal leader, we find that Self-sufficiency and Personal Composure are negatively correlated with various interpersonal criteria. The negative correlations suggest that raters see a lot of these characteristics in their least preferred coworkers and therefore that they evaluate these traits negatively in others as well as in themselves.

Thus, the most effective informal leaders were, in the present case, the socioemotional leaders who downplayed self-sufficiency and independence. The negative correlations suggest that a relatively powerful (sociometrically overchosen) subordinate who is self-sufficient and personally composed or aloof, may cause friction and conflict to develop in the group since his action may be perceived as antagonistic to the formal leader's role.

In contrast, the low endorsed group member, a label not meant to imply rejection or negative evaluation but rather to describe the individual who is "just one of the guys," shows another salience pattern involving Consideration and Helpfulness and Dependability. These are the same dimensions that were salient for the formal leader, but here the sign of the Consideration and Helpfulness correlation is positive, whereas for the formal leader it was negative, suggesting that these

characteristics of the noninfluential members must be complementary to those of the leader for maximum group effectiveness.

The data in Table 5 support the view that the relationship between LPC and unit performance is indeed primarily a leader-specific relationship. However, we have found that the LPC scores for both leaders and members, as well as the specific LPC subdimensions, are differentially predictive of various criteria as a function of the individual's role in the group. These findings raise an interesting question: If the situation, including the roles, were changed, would the formal leader's inferred positive orientation toward dependability still be functional in facilitating group effectiveness?

Our suggestion that LPC dimension scores are measuring probable behavioral modes of the leader represents a rather large inferential leap and is one that of course must be subjected to future research. Nevertheless, we are able to garner some modest support for this interpretation from a study of Air Force officer candidates reported by Tupes (1957). Using a cluster technique, Tupes grouped peer ratings of traits into seven clusters, five of which correspond roughly to the five factors reported here as well as by other investigators previously cited. Tupes' procedures were such that only a rough comparison can be made, but based on a table of cluster weights (Tupes, 1957, p. 16) it appears that, for his sample, peer ratings of Agreeableness-Helpfulness were positively related to a standard officer performance rating obtained at least 1 year later. Dependability was negatively related to this same criterion. Both findings support our assertion that these LPC dimensions may be reflecting the effect of relevance of behavioral style of the rater on team performance, and in the directions suggested. Tupes' data also indicated that Extroversion was unrelated to the officer performance criterion, also corroborating our findings. On the other hand, Tupes found a positive relationship between Personal Composure and performance, but we were unable to find any relationship involving this dimension.

The multidimensionality of LPC more and more seems to be an established finding. Failure to properly account for this fact, by neither eliminating nonpredictive dimensions nor assuring inclusion of predictive dimensions, substantially reduces the predictive capacity of LPC. Explanations and interpretations of the LPC scale suffer accordingly. The discovery of a possible trimodal distribution suggests that certain combinations of subdimensions may occur with greater frequency than others. This finding has implications for defining high, middle, and low LPC, as well as for the manner in which LPC is interpreted psychologically. Present measurement techniques and theory are totally inadequate for explaining this phenomenon, and this problem may represent a fruitful line of future research.

Also alluded to was the problem of multiple attitude objects. The fact that there are as many different least preferred coworkers as there are raters undoubtedly introduces a great deal of noise (completely

irrelevant variance) into the LPC measuring system. Indeed, the recognition of this fact makes one wonder that LPC is able to work at all. That is, it is surprising that the "signal to noise" ratio is large enough to provide any predictive power under any circumstances.

This problem leads to the final issue of the relevance of the scales in selecting a least preferred coworker. In all likelihood only some of the LPC dimensions or scales were relevant in a rater's determination, and others were of no concern at all to the rater in choosing an LPC. To what extent does the combining of relevant LPC scales with irrelevant LPC scales moderate, obscure, or attenuate the relationship of the LPC score with other variables? And what is the effect of combining raters who were responding to relevant characteristics (i.e., the characteristic was important in choosing an LPC) with raters who were responding to what were, for them, irrelevant characteristics?

Clearly, the first condition, relevance, tells us something about the values of the person selecting the LPC, and in all probability will lead to relatively negative LPC scores. The second condition, irrelevance, tells us something about the least preferred coworker, uninfluenced by rater values, and thus could lead to scores anywhere on the item dimensions, all of which is error variance in terms of the construct validity of the LPC scale. It is also possible that knowing which scales are relevant and which are not relevant may be a more important source of information than the actual rating assigned by the evaluator. This particular line of thought can also be found in Fishbein, Landy, and Hatch (1969, 1970). Rice (in preparation) has concluded that the LPC score is probably an attitude measure that reflects basic differences in the personal values of high and low LPC persons. A somewhat different approach to the problem of scale relevance has been discussed by Kerr (1974). The problem, of course, is that current methodology provides no way to determine directly which scales are relevant for which raters. Future research might well simply ask the raters if a particular scale played a role in determining their LPC.

CONCLUSION

When one pauses to reflect upon LPC--the unusual measurement procedure, the torturously complex attempts to explain what it does and why, the incredible number of problems with it illustrated here and in a variety of other papers--one realizes what an absolutely atrocious measure it really is. And yet it works. Therefore, ignoring it or avoiding it will not make it go away. This fact is attested to by the ever-growing interest in its practical application to real-life settings as well as continuing research interest in the measure (Rice, in preparation). Whatever direction this research takes, there is clearly a need to create a closer fit between what a rater is actually doing when evaluating a least preferred coworker, and the multitudinous interpretations and explanations of why the score is related to group performance. When this is accomplished, and when the underlying processes are clearly

understood, new and more adequate assessment procedures can be developed to replace LPC! To this end, our data seem to represent a major step forward in understanding the dynamics and meaning of the LPC score. In relating it to an extant body of research on implicit personality theory, we may finally be denying LPC its dubious distinction of being a measure in search of a meaning that correlates with nothing but group performance.

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4 OASD (M&RA)
2 HQDA (DAMI-CSZ)
1 HQDA (DAPE-PBR)
1 HQDA (DAMA-AR)
1 HQDA (DAPE-HRE-PO)
1 HQDA (SGRD-ID)
1 HQDA (DAMI-DOT-C)
1 HQDA (DAPC-PMZ-A)
1 HQDA (DACH-PPZ-A)
1 HQDA (DAPE-HRE)
1 HQDA (DAPE-MPO-C)
1 HQDA (DAPE-DW)
1 HQDA (DAPE-HRL)
1 HQDA (DAPE-CPS)
1 HQDA (DAFD-MFA)
1 HQDA (DARD-ARS-P)
1 HQDA (DAPC-PAS-A)
1 HQDA (DUSA-OR)
1 HQDA (DAMO-RQR)
1 HQDA (DASG)
1 HQDA (DA10-PI)
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1 Mil Asst. Hum Res, ODDR&E, OAD (E&LS)
1 HQ USARAL, APO Seattle, ATTN: ARAGP-R
1 HQ First Army, ATTN: AFKA-OI-TI
2 HQ Fifth Army, Ft Sam Houston
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1 Ofc Chief of Stf, Studies Ofc
1 DCSPER, ATTN: CPS/OCP
1 The Army Lib, Pentagon, ATTN: RSB Chief
1 The Army Lib, Pentagon, ATTN: ANRAL
1 Ofc, Asst Sect of the Army (R&D)
1 Tech Support Ofc, OJCS
1 USASA, Arlington, ATTN: IARD-T
1 USA Rsch Ofc, Durham, ATTN: Life Sciences Dir
2 USARIEM, Natick, ATTN: SGRD-UE-CA
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1 USAIMA, Ft Bragg, ATTN: ATSU-CTD-OM
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1 US WAC Ctr & Sch, Ft McClellan, ATTN: Tng Dir
1 USA Quartermaster Sch, Ft Lee, ATTN: ATSM-TE
1 Intelligence Material Dev Ofc, EWL, Ft Holabird
1 USA SE Signal Sch, Ft Gordon, ATTN: ATSO-EA
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