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Technical Paper 341

REPLICATION AND EXTENSION OF COLLINS' LOCUS OF CONTROL SCALE

Paul J. Duffy, Samuel Shiflett,

and

Ronald G. Downey

PERSONNEL ACCESSION & UTILIZATION TECHNICAL AREA

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JOSEPH ZEIDNER
Technical Director

WILLIAM L. HAUSER
Colonel, US Army
Commander

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20. (continued)

Survey instruments, including the Rotter Internal-External (I-E) scale, the Mach IV Machiavellian scale, Budner's Intolerance of Ambiguity scale, Fiedler's Least-Preferred Co-worker scale, and the Military Leadership Behavior Scale, were administered to 275 Special Forces Reserves during their 2-week active duty training period. Analysis of the results showed the factor structure of the Rotter I-E scale to be similar to the original, supporting the common idea of internal-external locus of behavioral control and, further, that locus of control beliefs are multidimensional. The concept of the I-E scale is sound and moderately useful in understanding reward expectations of soldiers and improving effectiveness of military units.

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REPLICATION AND EXTENSION OF COLLINS' LOCUS OF CONTROL SCALE

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

William H. Helme, Work Unit Leader

PERSONNEL ACCESSION & UTILIZATION TECHNICAL AREA

Submitted as complete and
technically accurate by:
Ralph R. Canter,
Technical Area Chief

Approved By:

E. Ralph Dusek, Director
INDIVIDUAL TRAINING AND PERFORMANCE
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
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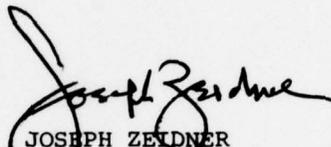
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FOREWORD

An important and continuing concern within the Army Research Institute for the Behavioral and Social Sciences has been the improvement of military competence, through enhanced troop training and morale and selection and training of officers. This research investigated specific aspects of how leadership style and group effectiveness are related to soldiers' beliefs in whether outside forces or internal personal factors primarily govern rewards and events in their lives. Work was done as part of the technological base research in the Personnel Accession and Utilization Technical Area, under Army Project 2Q762717A766.


JOSEPH ZEIDNER
Technical Director

REPLICATION AND EXTENSION OF COLLINS' LOCUS OF CONTROL SCALE

BRIEF

Requirement:

To investigate specific relationships of leadership style and group effectiveness with an individual's beliefs about locus of control (i.e., whether events and rewards are controlled primarily by external environmental factors or internal personal factors).

Collins had adapted Rotter's Internal-External (I-E) scale into a 46-item Likert-scale questionnaire and, from college students' responses, distinguished four dimensions within the I-E scale: beliefs that the world is predictable or unpredictable, just or unjust, politically responsive or unresponsive, and easy or difficult.

The research reported here replicated that of Collins and investigated its applicability in a military setting.

Procedure:

Data were collected from a sample of 275 Army reservists during a 2-week field training exercise. Responses to the 46-item scale were factor-analyzed and compared to Collins' results and to results of other measures.

Findings:

Five factors were found, four of them clearly replicating Collins' and the fifth dealing with the belief that the world is friendly or hostile. The total I-E scale and the factors were selectively related to measures of Machiavellianism, intolerance of ambiguity, perceived leadership behavior, and job satisfaction. For example, those who believed in a politically responsive and easy world were more likely to report greater job satisfaction.

Utilization of Findings:

The concept of the I-E scale is sound and can be useful in military units. Descriptors such as the I-E factors can aid in understanding small group processes, particularly leadership processes. An understanding of the locus of control beliefs and reinforcement expectations of soldiers is important in improving the effectiveness of military units.

REPLICATION AND EXTENSION OF COLLINS' LOCUS OF CONTROL SCALE

CONTENTS

	Page
INTRODUCTION	1
METHOD	3
Subjects	3
Survey Instruments	3
RESULTS	4
DISCUSSION	12
REFERENCES	17
DISTRIBUTION	21

LIST OF TABLES

Table 1. Factor loadings for the five-factor solution from the internal-external items	5
2. Comparison of Collins' four-factor solution with the present five-factor solution, using phi's	8
3. Intercorrelations of total I-E and the five subscales (n = 270)	10
4. Correlations of I-E scales with personality and work-related measures	11

LIST OF FIGURES

Figure 1. Task-oriented leadership behavior and locus of control interactions in predicting job satisfaction . .	13
2. People-oriented leadership behavior and locus of control interactions in predicting unit performance . .	14

REPLICATION AND EXTENSION OF COLLINS' LOCUS OF CONTROL SCALE

INTRODUCTION

Military management has traditionally recognized the importance of the role of leadership in the effective functioning of military units. Management has also recognized the complex interactions among the leader's skills and aptitudes, the context of the situation, and the characteristics of unit members who determine the effectiveness of the unit. This research was designed to develop instrumentation for measuring basic belief patterns and to investigate the relationships of these belief patterns with leadership style and the effectiveness of the group.

An approach to understanding human motivation and behavior has received considerable attention over the past decade. The approach involves the attributions that a person believes to operate for behavioral consequences and reinforcement: An individual believes that events are controlled by either the internal, personal forces of the actor ("internals") or by the external forces of the environment ("externals"). Rotter's (1966) approach to this topic has given rise to the internal-external (I-E) locus of control scale. Research using this scale has been both popular and fruitful (Lefcourt, 1972), and general expectations of reinforcement measured by this scale have been shown to be related to a number of personality variables and behaviors.

Part of this interest has been in the relation between locus of control and work situation variables. For example, several investigations have shown that individuals who scored high on measures of externality were less satisfied with their jobs (Pryer & Distefano, 1971; Mitchell, Smyser, & Weed, 1975; Organ & Greene, 1974), more alienated from the work setting (Neal & Seeman, 1964; Wolfe, 1967), and less involved in their jobs (Runyon, 1973) than those scoring high on measures of internality. Some evidence also relates locus of control to supervisory style. Pryer and Distefano found internal supervisors significantly more considerate than externals. Similarly, Goodstadt and Hjelle (1973) reported that externally controlled supervisors used significantly more coercive power than internals, and internals used more personal persuasion than did externals.

Beyond these direct relationships between locus of control and supervisory style, subordinate locus of control and supervisory style interact in predicting subordinate job satisfaction (Runyon, 1973; Mitchell et al., 1975). Specifically, internal subordinates preferred a participative management style, whereas external subordinates preferred a directive management style. The occasionally contradictory relationships found between supervisory style and subordinate satisfaction (Korman, 1966; Stogdill, 1974) perhaps may be explained by a mismatch of the locus of control orientation of the superiors and subordinates.

In spite of the popularity of the Rotter locus of control scale, the original scale has certain weaknesses and may oversimplify the actual dimensionality of the construct. Gurin, Gurin, Lao, and Beattie (1969) and Lao (1970) suggest that the I-E scale can be meaningfully described as two major independent dimensions, "personal control" and "control ideology." Mirels (1970) and Cherlin and Bourque (1974) defined the two dimensions differently and called them "political control" and "general control."

There is also evidence for the existence of several subscales that may be useful for predicting specific types of behaviors (Reid & Ware, 1973). Collins, Martin, Ashmore, and Ross (1973), in reviewing the general internal-external construct in personality theories, concluded that a single dimension probably oversimplified the true situation. By factor-analyzing a number of scales dealing with the internal-external concept, they obtained four independent factors, which they labeled "other-direction," "inner-direction," "lack of constraints on behaviors," and "trans-situational predictability of behavior."

In an analysis directed specifically toward the Rotter scale, Collins (1974) rejected the original 23-item, forced-choice format and developed a 46-item Likert scale format. Responses obtained from 300 undergraduate students using this new format were factor-analyzed, and a four-factor rotated structure resulted. The factors were (a) the easy-difficult world, (b) the just-unjust world, (c) the predictable-unpredictable world, and (d) the politically responsive-unresponsive world. Collins interpreted his findings as demonstrating that an external person, as originally defined on Rotter's scale, believes in a difficult and unjust world that is unpredictable and politically unresponsive. An internal person's beliefs would be the opposite of these. Thus, Collins obtained evidence for a complex belief structure based on source of reinforcement.

Several authors have pointed out that the relationships found between unidimensional locus of control measures and other personality variables are usually slight (Lefcourt, 1972; Reid & Ware, 1973). However, if a multidimensional representation of locus of control is more appropriate, as appears likely, then it should be possible to establish more definitive relationships between such dimensions and other relevant variables. This paper examines the dimensionality of locus of control. Specifically, this paper replicates Collins' methodology and compares the factor structure that he obtained using college students with one that was obtained using a different population. In order to evaluate the usefulness of a more complex concept of locus of control, the study focused on the relationship between the I-E dimensions and several other personality variables. Finally, the relationship of the I-E dimensions to behavior and attitudes in a formal leadership situation was investigated.

METHOD

Subjects

Subjects were 275 members of the U.S. Army Special Forces Reserves in 23 groups, who were participating in 2 weeks of active duty for training. A highly realistic field simulation reproduced activities in which Special Forces troops might engage during war. As operational detachments, the 23 groups were dispatched from a central point to various locations throughout the United States. The mission of each detachment was to contact a guerrilla group in the field and to train the guerrillas in counterinsurgency measures. The guerrilla roles were played by other reservists who also were fulfilling their training requirement. A detachment consisted of 11 to 12 members, including a commanding officer, an executive officer, and various enlisted military specialists. All detachment members were males between 21 and 49 years of age (mean = 28.6). Most of the men had been in the Reserves for 3 or more years (52%), and 62% had served on active duty up to 3 years prior to joining the Reserves.

Survey Instruments

Before going into the field, detachments were briefed on their mission for approximately 36 hours. Near the beginning of this orientation session, the men completed a questionnaire that dealt with leadership effectiveness. The questionnaire included Collins' adaptation of Rotter's (1966) "Internal-External Control of Reinforcement" scale. Possible responses to the 46 items ranged on a 5-point Likert scale from "agree strongly" (5 points) to "disagree strongly" (1 point). Items were arranged so that a high score would indicate a high degree of internality. Collins reported that the median test-retest item reliability of the 46-item scale was .54.

The questionnaire also included the Mach IV version of the Machiavellianism scale (Christie & Geis, 1970). The scale, designed to indicate an individual's strategy in dealing with others (especially the degree to which the individual believes people can be manipulated in interpersonal situations), consisted of 20 items. Possible responses ranged along a 7-point Likert scale. A third component of the questionnaire was Budner's (1962) intolerance-of-ambiguity scale, containing 16 Likert-type scale items. This measure was designed to assess an individual's tendency to perceive ambiguous situations as sources of threat. Budner characterized ambiguous situations as novel, complex, or insoluble. Finally, Fiedler's least-preferred coworker (LPC) scale was included. The LPC score reflects the degree to which a respondent describes the person with whom he could work least well in relatively favorable terms (high LPC) or unfavorable terms (low LPC).

After the training exercise, detachment members completed a second questionnaire. This questionnaire contained a number of items constructed to assess the subjects' perceptions and attitudes regarding various aspects of the exercise. Factor analyses of these items resulted in the construction of two scales. One scale reflected the subjects' own estimates of their job satisfaction. The other scale reflected perceptions of unit effectiveness (Downey, Duffy, & Shiflett, 1975). The questionnaire included Fiedler's (1967) group atmosphere scale, which measures warmth of interpersonal relationships within a group.

The Military Leadership Behavior Survey (MLBS) (Downey, 1974) also was administered to the men after the exercise to measure their perceptions of leadership style. The MLBS is constructed of 53 7-point Likert items comprising four dimensions: task professionalism, task-oriented consideration, person-oriented consideration, and personal/interpersonal professionalism. This instrument is quite similar, in both format and content, to Stogdill's (1963) Leader Behavior Description Questionnaire.

RESULTS

In the analysis of responses from the first questionnaire, Collins' 46-item I-E scale was subjected to a principal axes factor analysis with unities entered on the diagonal. Several rotations were performed, using the varimax method. The four-factor solution, accounting for 32.5% of the total rotated variance, appeared very similar to that reported by Collins, and phi's of .81, .90, .92, and .83 between the corresponding pairs of factors in each solution indicated strong replication (Hartman, 1967). However, the five-factor solution, accounting for 36.5% of the total rotated variance, was believed to provide an additional interpretable factor. Factor loadings for the five-factor solution are presented in Table 1.

To assess the extent of replication, phi's were computed between each possible pair of the present five-factor solution and Collins' four-factor solution. The results are presented in Table 2, where Collins' factors are represented by the columns and the present factors are represented by the rows. In each column of Table 2, the appropriate factor of the present solution is related most highly to its counterpart in Collins' solution. Therefore, following Collins' terminology, the first four factors of the present solution were named Predictable-Unpredictable World, Just-Unjust World, Politically Responsive-Unresponsive World, and Easy-Difficult World, respectively.

The last nine items listed in Table 1 failed to meet Collins' criteria for inclusion in his structure. In the present solution, four of the nine items clearly define the fifth factor with loadings greater than .40. Two of the items deal with wars or their inevitability. The

Table 1

Factor Loadings for the Five-Factor Solution
from the Internal-External Items

Scale Items	I	II	III	IV	V
1. Many times exam questions tend to be so unrelated to course work that studying is really useless.	-11	04	05	<u>53</u>	08
2. Sometimes I feel that I don't have enough control over the direction my life is taking.	15	16	-13	<u>53</u>	01
3. Most people don't realize the extent to which their lives are controlled by accidental happenings.	33	07	-10	<u>48</u>	06
4. Sometimes I can't understand how teachers arrive at the grades they give.	02	08	-09	<u>54</u>	10
5. Who gets to be the boss often depends on who was lucky enough to be in the right place first.	35	-16	-01	<u>55</u>	-04
6. Many times I feel that I have little influence over the things that happen to me.	05	01	-26	<u>60</u>	-03
7. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.	02	-00	-14	<u>66</u>	-19
8. Most students don't realize the extent to which their grades are influenced by accidental happenings.	25	04	-14	<u>56</u>	-00
9. I have often found that what is going to happen will happen.	36	-04	-12	15	05
10. Without the right breaks one cannot be an effective leader.	35	-12	-20	36	-24
11. Getting a good job depends mainly on being in the right place at the right time.	<u>49</u>	-11	-15	29	-21
12. People's misfortunes result from the mistakes they make.	25	26	06	-09	28
13. Capable people who fail to become leaders have not taken advantage of their opportunities.	26	37	-27	-15	10
14. The idea that teachers are unfair to students is nonsense.	21	38	09	33	18

Table 1 (continued)

Scale Items	I	II	III	IV	V
15. In the long run, people get the respect they deserve in this world.	09	<u>48</u>	00	27	06
16. In the case of the well-prepared student, there is rarely if ever such a thing as an unfair test.	05	<u>45</u>	09	24	12
17. What happens to me is my own doing.	14	38	-27	38	-06
18. People are lonely because they don't try to be friendly.	-01	<u>66</u>	-06	-08	-05
19. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.	24	<u>61</u>	04	07	03
20. In the long run, the bad things that happen to us are balanced by the good ones.	-20	<u>52</u>	-09	-09	-15
21. People who can't get others to like them don't understand how to get along with others.	-07	<u>57</u>	-27	-14	-12
22. There is a direct connection between how hard I study and the grades I get.	16	<u>42</u>	-14	27	-02
23. In my case, getting what I want has little or nothing to do with luck.	<u>61</u>	14	-21	22	-08
24. There really is no such thing as "luck."	<u>74</u>	19	03	-02	06
25. It is impossible for me to believe that chance or luck plays an important role in my life.	<u>72</u>	06	-00	-01	07
26. Many of the unhappy things in people's lives are partly due to bad luck.	<u>66</u>	-04	10	08	00
27. Getting people to do the right thing depends upon ability; luck has little or nothing to do with it.	<u>41</u>	21	-28	17	-04
28. Becoming a success is a matter of hard work; luck has little or nothing to do with it.	<u>62</u>	14	-25	04	-02
29. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.	33	25	-36	07	-07

Table 1 (continued)

Scale Items	I	II	III	IV	V
30. By taking an active part in political and social affairs the people can control world events.	12	25	<u>-56</u>	-02	24
31. This world is run by the few people in power, and there is not much the little guy can do about it.	10	06	<u>-51</u>	13	-07
32. With enough effort we can wipe out political corruption.	22	21	-35	-22	30
33. The average citizen can have an influence in government decision.	-05	09	<u>-63</u>	07	01
34. It is difficult for people to have much control over the things politicians do in office.	01	04	<u>-65</u>	03	04
35. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.	01	-12	<u>-54</u>	16	09
36. In the long run, the people are responsible for bad government on a national as well as on a local level.	07	08	<u>-47</u>	08	-00
37. One of the major reasons why we have wars is because people don't take enough interest in politics.	05	09	-25	-27	<u>43</u>
38. There will always be wars, no matter how hard people try to prevent them.	-05	-20	-17	08	<u>65</u>
39. No matter how hard you try, some people just don't like you.	-02	-05	03	33	<u>54</u>
40. It is not always wise to plan too far ahead because things turn out to be a matter of good or bad fortune anyhow.	12	-12	-36	38	13
41. It is hard to know whether or not a person really likes you.	-03	03	-34	31	10
42. There's not much use in trying too hard to please people, if they like you, they like you.	03	-03	-18	12	<u>42</u>

Table 1 (continued)

Scale Items	I	II	III	IV	V
43. Most of the time I can't understand why politicians behave the way they do.	17	-21	<u>-44</u>	18	03
44. When I make plans, I am almost certain that I can make them work.	15	06	<u>-46</u>	18	-35
45. How many friends you have depends upon how nice a person you are.	-09	28	17	-19	37
46. Many times we might as well decide what to do by flipping a coin.	28	-00	-37	22	-18

Note. Underscore indicates items defining each factor.

Table 2

Comparison of Collins' Four-Factor Solution with the Present Five-Factor Solution, Using Phi's

Present solution	Collins' solution			
	I	II	III	IV
I	.26	.27	<u>.64</u>	.41
II	.06	<u>.90</u>	.34	.26
III	.31	.30	.34	<u>.66</u>
IV	<u>.53</u>	.20	.31	.38
V	.01	.08	.05	.46

Note. Underscore indicates highest column-row value.

other two items appear to reflect a fatalistic belief that some people will always be friendly, whereas others will always be hostile. The emergence of the fifth factor, labeled Friendly-Hostile World, perhaps can be attributed to the nature of the subject population. The subjects of this study had experienced considerable combat, had committed part of their lives to the military, and presumably had a different conception of war than did the college-undergraduate subjects of Collins' study.

A total I-E scale was formed by summing all 46 items, scaled so that higher scores indicate increasing internality. Scales defining the five dimensions were formed by summing the responses to each item that showed a loading greater than .40 on a given factor. Higher scores on these scales indicate, respectively, the subjects' belief in a predictable, just, politically responsive, easy, and friendly world. The resulting scales were then correlated among themselves (Table 3).

Except for the Friendly-Hostile World factor, the subdimensions were fairly strongly related to beliefs about locus of control (sum of all 46 items). The correlations of individual subdimensions with the total I-E are spuriously high because of part-whole relationships, but in general, the positive intercorrelations among the subscales and between the subscales and the total I-E scale support Collins' assertion of a common theme throughout the I-E scale. The data also strongly confirm Collins' findings regarding the factor structure of I-E and support his conversion of the forced-choice format to a Likert format. Table 3 also shows Cronbach's alpha estimates of internal consistency for all of the scales (Nunnally, 1967). Except for the Just-Unjust and Friendly-Hostile World scales, internal consistency appears to be good for a research instrument of this type.

Several significant but small correlations between the I-E subscales and personality measures were obtained (Table 4). Subjects intolerant of ambiguity tended to see the world as difficult and politically unresponsive. Also, people who believed that people are easily manipulated (high Mach) tended to believe that the world is hostile, difficult, unpredictable, or politically unresponsive. However, it should be noted that total I-E was correlated more highly with Mach than any of the subscales, and its magnitude ($r = -.32$) is consistent with previous findings (Christie & Geis, 1970).

Table 4 also shows that those subjects who believed in a politically responsive and easy world reported greater job satisfaction than did those subjects who believed in an unresponsive and difficult world. Subjects who viewed the world as relatively easy were more likely to report that the group atmosphere in their unit was high. The total I-E scale also correlated with group atmosphere and job satisfaction but not to an appreciably greater degree than the subscales.

Table 3

Intercorrelations of Total I-E and the Five Subscales (n = 270)

	Mean	SD	α	1	2	3	4	5
1. Predictable-Unpredictable World	23.33	3.21	.56					
2. Just-Unjust World	23.56	2.85	.30	.43*				
3. Politically Responsive-Unresponsive World	28.15	4.26	.65	.22*	.22*			
4. Easy-Difficult World	28.33	4.90	.74	.30*	.45*	.35*		
5. Friendly-Hostile World	10.82	2.42	.42	.05	.03	.18*	.11	
6. Total I-E ^a	158.15	15.15	.84	.61*	.60*	.66*	.73*	.34*

^aPart-whole correlations.

*p < .01.

Table 4

Correlations of I-E Scales with Personality and Work-Related Measures

Measures	Total I-E	I-E Scales					
		Predictable Unpredictable World	Just-Unjust World	Politically Responsive- Unresponsive World	Easy- Difficult World	Friendly- Hostile World	
Machiavellianism	.32**	-.14*	-.11	-.27**	-.14*	-.21**	
Intolerance of Ambiguity	-.11	.05	.05	-.22**	-.13*	-.07	
LPC	-.02	-.10	-.06	-.02	.05	-.05	
Task-Oriented Leadership	-.05	.05	-.03	-.06	-.03	-.18**	
People-Oriented Leadership	.00	.04	-.05	-.01	.04	-.13*	
Group Atmosphere	.17**	.09	.08	.10	.16*	.06	
Job Satisfaction	.18**	.06	.12	.15*	.15*	.06	
Unit Performance	.10	.06	.05	-.05	.11	.06	

Note. N's vary due to missing data. Decimal points have been omitted.

*p < .05.

**p < .01.

The two task-related scales and the two person-oriented scales of the MLBS were combined to form a perceived task-oriented leadership behavior scale and a perceived people-oriented leadership behavior scale. These two scales were strongly related ($r = .85$), which is common with scales of this type (House & Dessler, 1974; Weissenberg & Kavenaugh, 1972). The data in Table 4 show that subjects who believed in a hostile world perceived their leaders as behaving in both task-oriented and people-oriented manners.

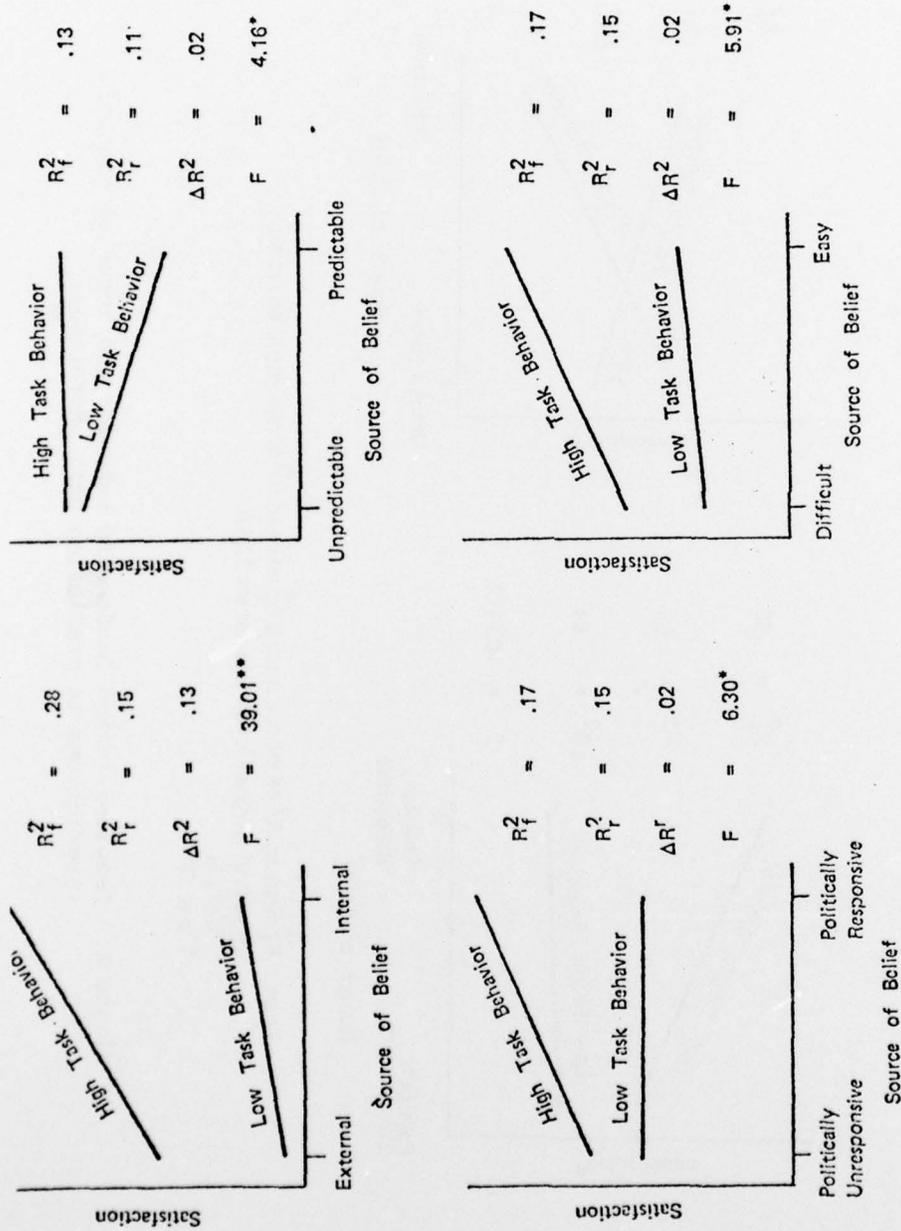
As a test of the interactive effects of locus of control and leadership behavior in predicting job satisfaction and unit performance, full and restricted regression models were formulated (Bottenberg & Ward, 1963; Kelley, Beggs, & McNeil, 1969). Full models included the appropriate leadership behavior and locus of control scales and showed their interaction term in predicting the given criterion of interest. The corresponding restricted model did not contain the interaction term, so as to test the statistical significance of the proportion of criteria variance that was accounted for by the interaction. Results are presented in Figure 1 for the job satisfaction criterion, and in Figure 2 for the unit performance criterion. The incremental R^2 's in Figures 1 and 2 are the proportion of criterion variance that can be accounted for by the interaction over and above the additive effects. To demonstrate the meaning of these interactions more clearly, predicted criterion values were calculated for hypothetical points arbitrarily defined at plus and minus one standard deviation on each predictor.

Figure 1 illustrates the four significant interactions (ΔR^2) found when task-oriented leadership behavior and locus of control scales were used to predict job satisfaction in a series of six tests, one for each I-E subscale and one for the total. None of the six interactions was found to be significant when task-oriented leadership behavior and locus of control were used in predicting unit performance.

Figure 2 illustrates the two significant interactions found (again out of six tests) when people-oriented leadership behavior and locus of control were used to predict unit performance. No significant interactions were found in predicting job satisfaction from people-oriented leadership behavior and locus of control.

DISCUSSION

The factor structure underlying the Rotter I-E scale that was obtained in this study has shown a gratifying similarity to that originally reported by Collins (1974). That these comparable results were obtained under substantially different conditions of administration (Army field setting versus college classroom) and with completely different populations (male Army reservists versus male and female college undergraduates) attests to the generality and importance of the phenomenon.



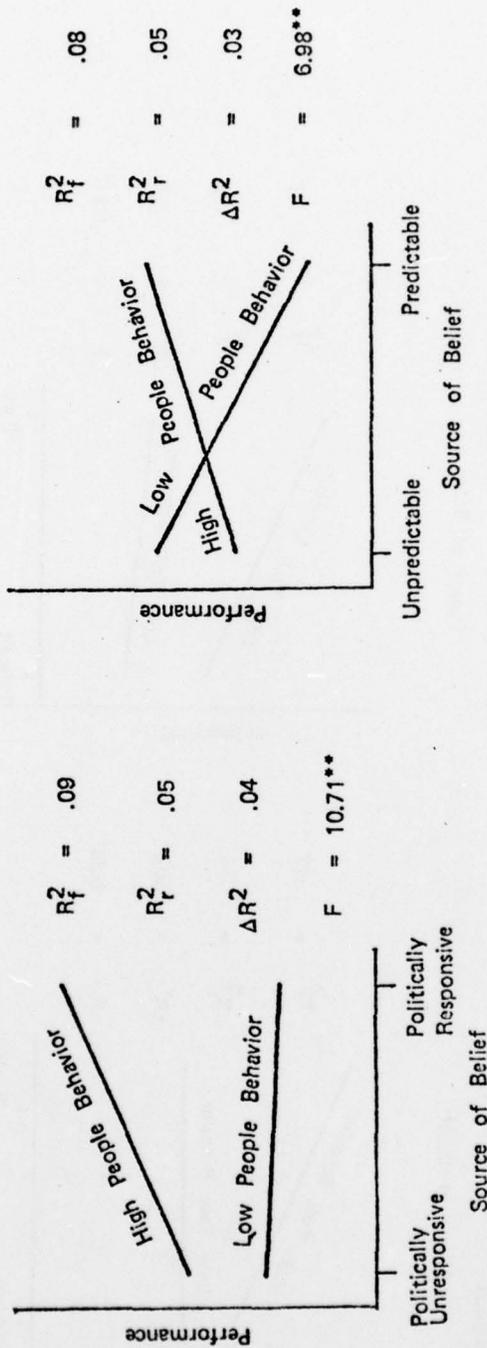
Note: R^2_f refers to R^2 of the full model; R^2_r refers to R^2 of the restricted model.

Degrees of freedom for all F-ratios are 1,218

* $p < .05$

** $p < .01$

Figure 1. Task-oriented leadership behavior and locus of control interactions in predicting job satisfaction.



Note: R^2_f refers to R^2 of the full model; R^2_r refers to R^2 of the restricted model.
 Degrees of freedom for all F-ratios are 1,218
 * $p < .05$
 ** $p < .01$

Figure 2. People-oriented leadership behavior and locus of control interactions in predicting unit performance.

The data present evidence of a common theme of internal versus external locus of behavioral control running throughout the 46 items. However, underlying this common theme is clear evidence that people can and do distinguish among various sources of control. Collins suggests that belief that the world is difficult, unjust, unpredictable, or politically unresponsive might tend to inhibit coping behavior. For example, the data indicated that Machiavellianism, the belief that people can be manipulated, was most strongly related to beliefs in a politically unresponsive and/or unfriendly world and completely unrelated to belief in the justness of the world. Further, we can distinguish between intolerance of ambiguity and Machiavellianism as coping styles by examining the similarities and differences in the pattern of beliefs associated with each style. Thus both personality characteristics are associated with beliefs in a politically unresponsive and difficult world; however, Machiavellianism is also associated with the belief in a hostile and unpredictable world, and intolerance of ambiguity is not. Neither coping style is associated with beliefs about the justness of the world.

While a primary set of beliefs may be common to many populations, it is also possible that some beliefs are specific to certain populations and reflect some defining aspect of the population, as Cherlin and Bourque (1974) argued. Thus, the emergence in this study of a factor reflecting beliefs about the hostility of the world is understandable, considering that most of the subjects had Army combat experience.

The presence of significant relationships between the scales and several self-report measures indicates that a more detailed analysis of the underlying dimensionality of locus of control might be useful. However, the magnitude of the bivariate relationships was consistently rather small, confirming previous findings (Lefcourt, 1974). Although the pattern of the correlations of the subscales with other measures demonstrated some divergent validity, the power of the subscales as individual predictors in any specific instance was no greater than that of the entire scale.

Two general findings emerged from examining the interaction between locus of control and leader behavior in predicting organizational effectiveness criteria. First, the two criteria were differentially related to the two leadership behavior dimensions when locus of control was used as a moderator; i.e., task-oriented leadership predicted job satisfaction, and people-oriented leadership predicted unit performance. Second, the predictable-unpredictable and politically responsive-unresponsive dimensions interacted with both leadership measures in predicting either job satisfaction or perceived unit performance.

Use of a selection of criterion measures much wider than those used for this paper will be necessary to determine the full extent to which the subscales are related to other aspects of behavior. For instance, in the present study, Factor II (belief in a just-unjust world)

was not related to any other self-report variable. Further examination of these factors might include a consideration of their differential usefulness in predicting related behaviors.

In conclusion, the research results summarized in this paper strongly support earlier research findings regarding the multidimensionality of locus of control beliefs. Also, correlations between these scales and other personality and work-related variables indicate that Collins' I-E scales and subscales are based on sound and useful concepts, although the moderate degree of the relationships and the relatively low internal consistency of some of the scales also indicate that they should be further refined.

Research results offer moderate support for the concept that an understanding of the locus of control beliefs and the reinforcement expectations of unit members is important in improving the effectiveness of military units. One of the remaining problems is that the scales used in the present research instrument include items specific to college students. Elimination of such problems undoubtedly would increase the usefulness and acceptability of the scales in a difficult, unpredictable, unjust, politically unresponsive, and hostile world.

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