

## LOCUS OF CONTROL AND GOAL-SETTING<sup>1</sup>

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*Summary.*—Effects of goal-setting and locus of control were studied in 188 undergraduate men in a laboratory setting using a card-sorting task. Two trials were employed with one of three goals assigned on Trial 2 (easy, moderately difficult, or hard goals representing, respectively, a 10%, 20%, or 50% increase over Trial 1 card sort). A curvilinear relationship moderated the relationship between goal-setting and card sorting when differences in locus of control were examined. However, when these individual differences were partialled out, a linear relation between goal-setting and card sorting typical of the goal-setting literature was obtained.

One of the most researched topics in Industrial/Organizational Psychology over the last 20 years has been goal-setting (Locke & Latham, 1990a). A core finding of this research asserts that there is a linear relationship between degree of goal difficulty and performance (Locke, Frederick, Buckner, & Bobko, 1984; Locke, Chah, Harrison, & Lustgarten, 1989). These researchers have attributed this effect to hard goals requiring greater effort and persistence than easy ones.

There has been, however, little research on the role of individual differences within the goal-setting paradigm. Investigations which have been conducted (Locke & Latham, 1990a, 1990b; Martin & Murberger, 1994) have characterized the results as inconsistent. Nowhere is this more evident than in the investigation of locus of control.

### *Locus of Control*

Rotter (1966) labeled individuals' views of an event as occurring by luck, chance, fate, or under the control of powerful others, as one of external control. Individuals who view outcomes as the product of their own actions, predictable, or within their control, are said to have an internal locus of control. Rotter hypothesized that there are consistent individual differences in the extent to which people believe in internal or external control of reinforcement contingencies and developed a scale to measure these "generalized expectancies" which has been used in much of the research in this area (Rotter, 1966; Lefcourt, 1982). A consistent finding in this research is that individuals' beliefs in external or internal control affect their perceptions of outcomes such as performance.

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More pertinent to goal-setting, Locke and Latham (1990a) reported Bigoness, Keef, and DuBose found a positive relationship between difficulty of a personal goal and performance for those with an internal orientation; for those with an external orientation, there was an inverse relationship between perceived difficulty of a goal and performance. However, the performance measure was based on self-ratings so results could have been biased by the use of percept-percept measures. In other studies incorporating more objective performance criteria belief in internal versus external control had no moderating effect on performance (e.g., Dossett, Latham, & Mitchell, 1979; Latham & Marshall, 1982; Latham, Steele, & Saari, 1982).

In contrast, other findings from experiments on goal-setting suggest that internally oriented persons will perform better and that this difference will be more pronounced for difficult tasks than for easy ones. This is because internally oriented individuals view their performances as a function of their skill and with an increasingly difficult task more skill factors are required to attain the goal. For example, Latham and Yukl (1976) found that typists with participatively set goals who scored as internally oriented set more difficult goals than those who scored as externally oriented and had higher performance. External scorers view factors such as fate or luck as determinants of the outcomes of their efforts and little, if any, performance increase is anticipated as task difficulty increases. Further, the equivocal data on locus of control may reflect insufficient sample size, inadequate delineation between externally and internally controlled individuals, or inappropriate categorization of individuals. Hence, this study recruited a large sample, categorized internal and external scorers as those falling in the top and bottom thirds of the total distribution of ratings (as opposed to dividing at the median as is typically done), and involved the original, unabridged version of Rotter's locus of control scale.

Based on the above considerations three hypotheses were tested. (1) There will be a positive, linear relationship between difficulty of goal and performance when locus of control differences are not analyzed. (2) Performance of internal scorers will increase more than that of externally controlled scorers on more difficult tasks. (3) With hard goals higher performance will be achieved than on moderately difficult goals, and both will result in higher performance than on easy goals regardless of locus of control scores.

A three-way factorial analysis of variance (locus of control  $\times$  goal difficulty  $\times$  pay) was used to test the hypotheses. Pay was included only to assess whether pay affected the two research variables of interest.

#### METHOD

##### *Pilot Study to Establish Goals*

The purpose of the pilot was to select goal difficulties such that 90% of

the individuals given an easy goal would accomplish it, 50% of the subjects given a moderately difficult goal would reach it, and 10% of those individuals given a hard goal would achieve that one. An iterative procedure was used which required successive approximations to the predetermined percentages expressed above. Using this procedure, an easy goal was defined as a 10% increase in cards sorted on the second attempt, a moderately difficult goal was defined as a 20% increase, and a hard goal was defined as a 50% increase.

### *Subjects*

The subjects were 188 undergraduate men. One hundred and sixteen subjects were introductory psychology students who participated in partial fulfillment of their course requirements. Sixty-two subjects were recruited from a college newspaper advertisement offering money for participation.

### *Instrument*

Rotter's (1966) original, unmodified Internal-External (I-E) Scale was employed to measure belief in internal versus external control of reinforcement. The distribution of I-E test scores ranging from three to sixteen was divided into thirds, defining High (external; 63), Middle, and Low (internal; 63). The mean for the entire distribution of I-E scores was 9.7 and a standard deviation of 5.2. Mean I-E test score for the externally controlled scorers was 15.8; mean I-E test score for the internally controlled scorers was 4.2.

### *Task and Procedure*

Due to logistical considerations the experiment was conducted during two sessions. In Session 1, the I-E scale was administered. Number of cards sorted was the performance measure and was obtained from subjects during a second session which took place one to eight days after the first. The number of subjects varied from one to eight per session but in most sessions there were at least four. Each subject was given an individual card-sorting board with a stack of cards to be sorted. Subjects stood as they sorted the cards. The card-sorting boards were placed on 30-in. high tables and were flush with the surface. The card-sorting boards were circumscribed by 36-in. high partitions which prevented subjects from viewing one another.

Subjects were assigned to a specified partition, introduced to the card-sorting board, and told that the task was an information-sorting exercise. Each 3-in.  $\times$  5-in. card contained information about an individual's sex (male, female), education (BA, no BA), and income (\$5,000-\$7,000, \$7,000-\$10,000, \$10,000+). Thus, 12 configurations of information ( $2 \times 2 \times 3$ ) were possible. The subject's task was to read the card and place it on one of 12 piles which corresponded to that pattern of information.

The task was structured so that performance could vary only along the quantity dimension. This was accomplished by punching three holes in the cards the subjects sorted, with one hole corresponding to the sex data on the card, another hole corresponding to the education data on the card, and the last hole corresponding to the income data on the card. Thus, 12 unique patterns of three holes were generated, one pattern for each possible configuration of data. Also, 12 corresponding patterns of metal spikes were attached to a 24-in.  $\times$  36-in. sorting board. To sort one card correctly, the subject was required to identify the pattern of data on the card and then place the card on the three spikes corresponding to the same information on the board. If the subject made an error, the card did not fit on the spikes. Thus, no variation in quality was possible.

After explanation of the task, each subject was given a stack of 24 well-shuffled practice cards, two for each of the 12 possible positions, and asked to sort them to become familiar with the task. After questions were answered, the subjects were given a large stack of cards and asked to sort them as fast as possible for 10 minutes. Then, the subjects were asked to stop and the cards were removed and taken to another room to be counted.

At this point, subjects were randomly assigned to one of three experimental manipulations: an easy goal ( $n=59$ ; 10% increase over Trial 1 performance), a moderately difficult goal ( $n=59$ ; 20% increase over Trial 1 performance), and a hard goal ( $n=60$ ; 50% increase over Trial 1 performance). Subjects were told by the experimenter that these percentages were obtained by other participants. Thus, difficulty was conveyed by merely giving subjects relevant norm data. This procedure has been employed in numerous goal-setting investigations (Locke & Latham, 1990a). Verbal commitment to the goal was then obtained from all subjects. A large stack of cards was again given to each subject. This large stack was seen by all subjects as clearly impossible to sort in the second 10-min. period and was given so subjects would not set a goal of trying to sort the entire stack of cards. At this point subjects began card-sorting a second time and were stopped exactly 10 min. later.

In a posttask questionnaire goal acceptance was measured by response to a single item ("For your *second* card-sorting try, did you set a performance goal? If you marked yes, please describe your goal."). Subjects were then debriefed, paid (if appropriate), and then dismissed.

#### RESULTS AND DISCUSSION

The performance criterion was the number of cards sorted on Trial 2. Means, standard deviations, and *ns* for internal and external scorers for each goal are provided in Table 1.

The Cronbach coefficient alpha for the 23-item I-E scale was .79 com-

puted for all 188 individuals. All groups were compared on their Trial 1 card-sorting scores and no differences were found ( $p > .05$ ). Because some subjects were paid while others were not, it was decided to assess whether payment of subjects affected performance. To evaluate this, a 3-factor (pay, goal difficulty, locus of control) unequal  $n$  analysis of variance design employing Trial 2 performance as the dependent measure was used. There were no main effects for pay ( $F_{1,114} = 1.6, p > .05$ ) and no significant interactions containing the pay factor (Goal  $\times$  Payment  $F_{2,114} = 2.2, p > .05$ ; Locus of Control  $\times$  Payment  $F_{1,114} = 0.1, p > .05$ ; Locus of Control  $\times$  Goal  $\times$  Payment  $F_{2,114} = 1.6, p > .05$ ). Therefore, the pay versus no-pay groups were combined in all subsequent analyses.

TABLE 1  
MEANS, STANDARD DEVIATIONS, AND  $n$ S FOR INTERNAL AND  
EXTERNAL SUBJECTS ON TRIAL 2 CARD SORT

Goal Difficulty	Internal Scorers			External Scorers		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Hard	178.1	26.7	20	179.8	26.7	23
Moderate	185.6	46.1	23	161.2	23.7	17
Easy	159.2	25.5	20	176.4	31.5	23

Further, a series of one-way analyses of variance indicated that internal and external subjects in the three difficulties of goal did not differ significantly ( $F_s < 1.00$ ) in their response to an item indicating whether they accepted the assigned goal. All subjects accepted their designated goals.

Hypothesis 1 predicted a linear relationship between difficulty of goal and performance when all subjects were included in the analysis. This is the typical goal-setting effect. For all 188 subjects combined, under the easy goal 87% of the subjects assigned the goal attained it, while under the moderate-goal condition 52% of the subjects attained the goal; and 10% of the subjects assigned a hard goal were able to accomplish it. Thus, the choice of difficulty used in the experiment yielded the anticipated difficulties of 10%, 50%, and 90% quite well.

Fig. 1 presents the mean number of cards sorted on Trial 2 for all subjects as well as for subjects classified as internal and external in locus of control. A positive linear relationship between performance and goal-setting is clear when all subjects participating in the experiment were examined. A one-way analysis of variance among the three difficulties of goal yielded an over-all  $F_{2,185}$  of 3.15 ( $p < .05$ ). Planned comparisons among the three means indicated that only the easy versus hard conditions differed significantly ( $p < .05$ ). These results are consistent with predictions from goal-setting theory of a linear function relating goal difficulty and performance.

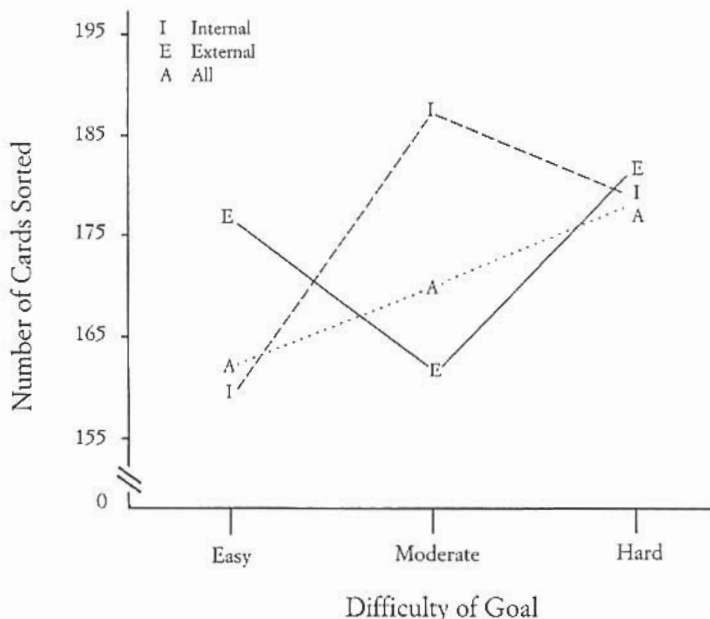


Fig. 1. Number of cards sorted on Trial 2 for all subjects (A,  $n=188$ ) and for subjects classified as internal (I,  $n=63$ ) and external (E,  $n=63$ ) in locus of control

Hypothesis 2 suggested that performance would increase for internal scorers relative to external scorers as the task goal becomes more difficult. Essentially, this hypothesis predicts an interaction between goal level and locus of control. Fig. 1 also contains plots of the mean Trial 2 performance on each of the goal difficulties for the two locus of control groups. The data were subjected to a 3 (goal level)  $\times$  2 (locus of control) analysis of variance for unequal  $n$ s. No main effects for goal difficulty or locus of control were obtained. An interaction between goal level and locus of control was observed ( $F_{2,120} = 3.97, p < .02$ ) although not in the manner expected (it was anticipated that both internal and external scorers would show a positive linear relation with the internal scorers' responses having a steeper slope). For external scorers a U-shaped function was obtained with performance poorest when the moderately difficult goal was assigned while for internal scorers an inverted U-shaped function was seen, i.e., performance was higher for the moderately difficult goal.

Hypothesis 3 predicted that, for both locus of control groups, hard goals would be associated with higher performance than moderately difficult goals which would show higher performance than easy goals. As indicated in Fig. 1, the data did not confirm that hypothesis. The interaction suggests

that the relationship between goal difficulty and performance is moderated by the subject's generalized belief in internal versus external control of reinforcement. Performance for the internal group tended to be best for the moderately difficult goal while the external group performed better at easy and hard goals than the moderate one.

Contrary to research by Latham and his colleagues (Latham & Yukl, 1976; Dossett, *et al.*, 1979; Latham & Marshall, 1982; Latham, *et al.*, 1982), the present study found belief in internal versus external control had a moderating effect on performance. It may be that the larger sample of the present study, the use of only men as subjects, the greater differentiation between internally and externally controlled individuals, or the use of Rotter's original 23-item I-E questionnaire may have accounted for these differences.

In summary, goal-setting has been shown to be effective in various industrial settings (Locke & Latham, 1990a). Perhaps investigation of individual-difference measures in an applied setting could maximize performance further by tailoring the goals or tasks assigned to a specific person. This means that no work situation is optimal for everyone, no type of personality is most productive in all situations, and that no single generalization about the effects of strength of motivation will apply to all tasks.

Other individual difference variables to be investigated might include self-efficacy, need for achievement, and self-esteem. Further, researchers might explore sex differences and various personality variables within the goal-setting paradigm using a no-goal control group. Research could focus on a replication of this study using multiple tasks varying in complexity or task interest. It is possible that there is an interaction between some aspect of the task itself (i.e., task complexity) and locus of control.

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