

Investigation of the Construct Validity of a Self-Report Measure of Goal Commitment

John R. Hollenbeck
Michigan State University

Anne M. O'Leary
Michigan State University

Howard J. Klein
Ohio State University

Patrick M. Wright
University of Notre Dame

The purpose of this research was to develop an efficient, construct-valid measure of goal commitment. Drawing from a set of 9 unidimensional items, a 4-item unidimensional scale was developed that exhibited a .71 internal consistency estimate of reliability. This scale showed statistically significant relationships with 3 alternative measures of the same construct: force to attain the goal, self-set goal-assigned-goal discrepancy, and actual goal change. With respect to other constructs in the goal commitment nomological net, the results indicated that the scale was consistently related to performance. Moreover, the pattern of the results with expected antecedents such as goal publicness, monetary incentives, need for achievement, locus of control, and task involvement were statistically significant and in the predicted direction.

The major finding emanating from goal-setting research is that difficult goals lead to higher levels of performance than do easy or vague goals (Locke, Shaw, Saari, & Latham, 1981). This finding is predicated on the assumption, however, that there is commitment to those difficult goals. Locke's emphasis on the critical role played by goal commitment has not diminished over the years. In a more recent review, for example, Locke, Latham, and Erez (1988) state, "It is virtually axiomatic that if there is no commitment to goals, then goal setting will not work" (p. 23). Commitment to difficult goals should be distinguished from goal acceptance, which merely refers to the initial use of a goal assigned by another person (Campion & Lord, 1982; Hollenbeck & Klein, 1987; Locke et al., 1988). Acceptance does not necessarily imply that the person is psychologically bound to the goal.

Given the critical role assigned to this construct (i.e., goal difficulty leads to high performance only where there is goal commitment), the assessment of goal commitment should have played a prominent role in goal-setting research. Hollenbeck and Klein (1987) showed that this was not the case, however. Rather, in over 70% of goal-setting studies since 1968, neither goal commitment nor acceptance was ever directly assessed. As a result of this, the effect size for goal-difficulty effects and inconsistent results with key variables such as monetary incentives, participation, and individual differences have often been attributed to unmeasured goal-commitment effects. For these

and other reasons, Hollenbeck and Klein concluded that "future research in the area of goal setting obviously needs to place greater emphasis on assessing goal commitment" (p. 219).

Two measurement problems could limit such future research, however. First, there is no consensus on how to measure goal commitment. In the studies reviewed by Hollenbeck and Klein (1987), 23 attempted to directly measure subjects' goal commitment. None of these studies attempted to establish the construct validity of their measure and, in most instances, the researchers in question could not even adequately address the most basic issue of reliability.

In addition to consistency in measurement, there is also a need with respect to this particular construct for efficiency in measurement. Because past research frequently cited unmeasured goal-commitment effects as post hoc explanations for results, Hollenbeck and Klein (1987) recommended that goal commitment should be measured in all future goal-setting studies, even when commitment does not play a central role in the hypotheses tested. This practice would allow for a more rigorous empirical check of such post hoc explanations. In those cases in which a measure of goal commitment is to be used as a check rather than as a central construct of interest, length becomes an issue. There is a limit to how long questionnaires can be, and measures of checks cannot be allowed to interfere with the measurement of more central constructs. For this reason it is also important to generate a measure of goal commitment that reveals an adequate degree of construct validity with a minimum number of items.

Finally, there is also no consensus on when to measure goal commitment (i.e., in terms of research design). Of the 23 studies that measured commitment, 11 measured it after subjects had completed the task, 7 assessed commitment prior to starting the task, 3 measured it at both times, and 2 measured it during the task. The timing of measurement could have a strong impact on any subsequent results obtained with a goal-commitment measure. When measured after task completion, subjects

An earlier version of this article was presented at the 48th Annual Meeting of the Academy of Management, Anaheim, CA.

We would like to thank Edwin Locke and three anonymous reviewers for helpful comments on earlier versions of this article.

Patrick M. Wright is currently at Texas A&M University.

Correspondence concerning this article should be addressed to John R. Hollenbeck, Graduate School of Business Administration, Michigan State University, East Lansing, Michigan 48824.

have complete knowledge as to whether or not they reached the goal. In these instances, self-reports may reflect post hoc justifications as subjects try to maintain consistency between their earlier behaviors and self-reports (Salancik & Pfeffer, 1977). When measured prior to engaging in the task, subjects may have difficulty determining how realistic the goals are and, although expressing initial commitment, may subsequently abandon their goals on the basis of early task experience.

Given the fact that two separate calls for additional research on goal commitment will have been published in the last 2 years (Hollenbeck & Klein, 1987; Locke et al., 1988), it is somewhat predictable that research in this area is likely to be on the rise. Although there are obvious reasons why it is desirable to do construct validation research prior to a large number of substantive studies (Schwab, 1980), the history of social science research suggests that this is rarely the case (Nunnally, 1978). The purpose of this research was to reanalyze data from three studies (Hollenbeck, Williams, & Klein, 1989; Klein, 1987; and Wright, 1987) that shared the same pool of goal-commitment items in order to develop an efficient, construct-valid measure of goal commitment. A secondary purpose was to examine the issue of timing of measurement.

Method

Sample

Subjects for Study 1 (Hollenbeck et al., 1989) were 194 college students enrolled in a management course. Similarly, Study 2 (Wright, 1987) involved 219 undergraduate students recruited from a management course. Subjects for Study 3 (Klein, 1987) were 339 college students enrolled in a human resources management class. All subjects were sophomore level or above, and all were enrolled at a large midwestern university.

Tasks and Goals

In Study 1, performance in academic courses during the term served as the task. Goal publicness (public or private) was manipulated and several individual differences were measured. Goals were established for overall grade point average (GPA), and commitment to those goals was the primary dependent variable. The procedure involved establishment of academic goals in the first week of the term, measurement of goal commitment just prior to mid-term exams, and measurement of final GPA and goal commitment at the end of the term. In Study 2, the task consisted of computer card sorting. Subjects performed this task for one 20-min practice trial and one 20-min experimental trial. This study manipulated reward contingency (piece-rate, hourly rate, or goal attainment bonus) and assigned goal level (moderate or difficult). Dependent variables were personal (self-set) goal level, commitment to the assigned goal, and performance. Goal commitment was measured prior to the experimental trial and after the experimental trial. In Study 3, the task consisted of course work performed by subjects over a 10-week term (weeks referred to as T1 through T10). Subjects were asked to set goals for the overall GPA they hoped to receive for the term and to set subgoals for the grades they hoped to achieve in one of the classes in which they were enrolled. The study focused on subjects' grade goals and how the goals changed over the term as feedback on subgoals was received. Feedback, in the form of exam and paper grades, was provided at T3, T5, T6, T8, and T10. Goal commitment was measured at T1, T4, T6, and T9.

Commitment Measure

A pool of nine items was developed by (a) adapting items from previous goal-commitment measures (Item 2: Latham & Steele, 1983; Item 4: Organ, 1977; Item 5: Yukl & Latham, 1978; Item 9: Dossett, Latham, & Mitchell, 1979), (b) adapting items from other measures of proven validity that dealt with commitment to other objects (e.g., measures of organizational commitment; Items 6 and 8: Mowday, Steers, & Porter, 1979), and (c) introducing some for the first time here (Items 1, 3, and 7). The response scale associated with these items was a 5-point Likert scale anchored by *strongly agree/strongly disagree*, with negative items recoded so that a high score on the scale is indicative of high goal commitment.

Data Analysis

Data analysis consisted of four parts, as recommended by Schwab (1980). These consisted of empirical checks on (a) dimensionality and internal consistency, (b) convergence with alternative measures of the same construct, (c) relatedness to measures of separate constructs that lie within the *nomological net* of the focal construct, and (d) discriminability from constructs not lying within the nomological net. In addition, an examination of the effects of time of measurement was also conducted.

Results

Dimensionality and Internal Consistency Reliability

The intercorrelation matrixes obtained from the separate studies were combined through meta-analytic procedures to come up with one single correlation matrix. Specifically, in line with Hunter, Schmidt, and Jackson (1982), the weighted average observed correlation (\bar{r}) across studies (an estimate of the population parameter) was computed for each value in the matrix. This matrix was then factor analyzed by principal components. The matrix also served as the input for obtaining internal consistency estimates of reliability. The initial nine-item pool revealed one major underlying factor that accounted for 40% of the variance. The results of this factor analysis are shown in the third column of Table 1. All nine items exhibited factor loadings in excess of .50, with an average of .63. A second factor was extracted, but it accounted for only 12% additional variance.

To achieve efficiency of measurement, a subset of four items from this overall pool was selected on the basis of factor loadings and item-total correlations. Items 1 through 4 seemed to represent the purest items in that they showed the highest loadings on the first factor in the two-factor solution after rotation. The

¹ This study also manipulated goal origin; however, there is controversy over whether or not this variable should be theoretically related to goal commitment (see Locke, Latham, & Erez, 1988). According to Schwab, the "circularity problem" of construct validation can only be solved by focusing on relationships that are undisputed. A relationship between two empirical indicators has construct validity implications for one of the indicators only if the following two assumptions can be made: (a) the two latent constructs are in fact related and (b) the empirical indicator of the second construct is valid. Because some researchers have cast doubt on the viability of the first assumption, in this case it was deemed best not to place this variable in the nomological net. In fact, origin was not related to commitment here in a main effect sense, and thus for this study, subjects were collapsed across origin conditions.

Table 1
Items and Factor Loadings Associated With One-Factor Solutions to the Four-, Seven-, and Nine-Item Versions of the Goal Commitment Scale

Item	Factor loadings ^a		
	Four-item	Seven-item	Nine-item
Four-item scale			
1. It's hard to take this goal seriously.	.76 (.75)	.70 (.70)	.67 (.67)
2. It's unrealistic for me to expect to reach this goal.	.72 (.72)	.67 (.67)	.61 (.61)
3. It is quite likely that this goal may need to be revised, depending on how things go.	.69 (.70)	.59 (.61)	.52 (.54)
4. Quite frankly, I don't care if I achieve this goal or not.	.77 (.76)	.75 (.73)	.74 (.73)
Additional items for seven-item scale			
5. I am strongly committed to pursuing this goal.		.67 (.67)	.71 (.70)
6. It wouldn't take much to make me abandon this goal.		.64 (.64)	.65 (.64)
7. I think this goal is a good goal to shoot for.		.71 (.71)	.71 (.70)
Remaining items			
8. I am willing to put forth a great deal of effort beyond what I'd normally do to achieve this goal.			.57 (.58)
9. There is not much to be gained by trying to achieve this goal.			.51 (.53)

^a Values in parentheses represent item-total correlations.

average factor loading for Items 1–4 on this first rotated factor was .68, compared with .40 for Items 5–7 and .05 for Items 8 and 9. In fact, Items 8 and 9 loaded substantially on the second factor, with an average loading of .71.²

As a check, the unidimensionality of Items 1–4 was tested with a separate one-factor solution and, not surprisingly, this subset of items also revealed unidimensionality. The results of this factor analysis are shown in the first column of Table 1. Coefficient alpha reliability for this four-item scale was .71. The means for the scale averaged across measurements (when divided by the number of items) were 3.43, 3.14, and 3.88 for Studies 1, 2, and 3, respectively. The scale's standard deviation across the three studies was .79, .89, and .50.

A longer, seven-item scale that was used in the original Hollenbeck et al. (1989) study was also investigated for the data reported in Klein (1987) and Wright (1987). The three additional items that go into the seven-item scale are those numbered 5, 6, and 7 in Table 1. These seven items were also factor analyzed and revealed unidimensionality. The results of a one-factor solution for this subset of items is shown in the second column of Table 1. Coefficient alpha for this version of the scale was .80. The results that follow are those associated with the four-item measure. For those interested in the seven-item measure, the results associated with it are presented in parentheses following the results for the four-item measure.

Convergence With Alternative Measures of the Same Construct

Goal commitment and force to attain the goal. Given the motivational implications of the goal-commitment construct, it

would be expected that goal commitment should be related to the motivation to attain the goal as operationalized by a theory such as expectancy theory (Vroom, 1964). *Force* toward an act, such as goal attainment, according to this theory is a multiplicative function of the valence and expectancy of goal attainment.

Study 3 assessed the valence and expectancy of goal attainment for two different goals (overall GPA and the grade for a single class) at four different time periods. The measures of valence and expectancy were then multiplied to arrive at an overall force measure. Although still a self-report, this can be viewed as a different operationalization of goal commitment. Across the eight instances, the average correlation between force and the four-item measure of goal commitment was .30 (.29), which was statistically significant ($p < .01$). In all eight cases, the individual correlations on which this average was based were also statistically significant.

Goal commitment and the self-set goal–assigned-goal discrepancy. Several authors have suggested that the discrepancy between self-set and assigned goals could be used as a non-self-report measure of commitment to an assigned goal (Campion & Lord, 1982; Locke et al., 1988).

Subjects in Study 2 were assigned goals and asked to report on their self-set goals. Hence, data from this study allows for a test of the relationship between the four-item commitment measure and this alternative operationalization. The correlation between these two variables was $-.59 (-.54)$ and was statistically significant ($p < .05$), indicating that goal commitment

² The complete results of this two-factor solution with all nine items are available from John R. Hollenbeck.

decreased as the self-set goal–assigned-goal discrepancy increased.

Goal commitment and subsequent goal change. The definition of goal commitment also implies an unwillingness to change or abandon goals over time. Thus, another non-self-report measure of goal commitment would be whether or not subjects actually changed goals.

Study 3, which followed goals over four time periods, provided an opportunity to check on the relationship between the four-item measure and actual goal change. For the single course-grade goal, the correlation between the four-item commitment measure and actual goal change was statistically significant 3 of the 4 times, and the correlation was in the right direction the remaining time. (Although the absolute size of the correlation was small, the average correlation was $-.11$ [$-.11$].) These results did not hold up for the overall GPA goal. Although in all four instances the correlations were in the predicted direction, in no case did they reach statistical significance.

One limitation of this test, however, is the lack of variance on goal change in this study. The standard deviation of goal change across the eight instances was only .07 GPA points, greatly reducing the power to detect significant correlations. Under these conditions, the sign test for correlated samples provides more power to detect differences (Bradley, 1968; Ferguson, 1976; Siegel, 1956). This test, when applied to the data from Study 3, rejects the null hypothesis ($z = 2.47$, $p < .05$) and suggests that there is a weak but negative relationship between the four-item measure of goal commitment and actual goal change.

Relatedness to Other Constructs

Performance. In the goal-setting literature, goal commitment is important not as an end in itself, but as a means to an end: performance. Hollenbeck and Klein (1987) noted that when the entire range of goals is present (i.e., easy, moderate, and difficult), goal commitment should moderate the relationship between goal level and performance. Under these conditions, commitment to easy goals would not necessarily enhance performance. The moderating nature of the relationship suggests that commitment is associated with high performance only when the commitment is attached to difficult goals. Under conditions in which all subjects have difficult goals (and, hence, commitment to easy goals is not an issue), one would expect a main effect of goal commitment on performance. That is, all else being equal, if everyone has difficult goals, performance will be highest for those that are more highly committed.

All three studies assessed the relationship between commitment and performance when subjects had difficult goals. For example, in Study 1 the goal for subjects was to increase their GPA by no less than .25 points, a goal eventually obtained by only 18% of the subjects. In Study 2, subjects had goals that were on average at the 85th percentile of performance for a pre-test group. In Study 3, the mean GPA goal was .36 points higher than the actual performance distribution, in which the standard deviation of performance was .77 GPA points. Because all three studies used difficult goals, a main effect of goal commitment on performance would be expected. The correlation between performance and the four-item commitment measure was statistically significant ($p < .05$) in each study, with correlations of

.26 (.36) in Study 1 and .47 (.47) in Study 2. In Study 3, the average correlation over the two goals and four time periods was .18 (.18), and 7 of the 8 correlations going into this average were also statistically significant. It was also the case that in all three studies the relationship between the four-item measure of commitment and performance held up, despite controlling for either ability or goal difficulty,³ with partial correlations ranging from .14 (.15) in Study 3 to .25 (.31) in Study 2.

Situational antecedents. Two situational characteristics cited by both Hollenbeck and Klein (1987) and Locke et al. (1988) that should enhance commitment to goals are goal publicness and monetary incentives.

Study 1 manipulated goal publicness by randomly assigning subjects to one of two conditions. In the public condition, subject names and GPA goals were (a) placed on a list and distributed to all other subjects in the experiment and (b) mailed to some predetermined significant other person (in 90% of the cases this was a parent or family member). In the private condition, subjects were asked to keep their goal a secret. The resulting correlation between goal publicness (dummy coded) and the four-item goal-commitment measure was .14 (.16), which was statistically significant ($p < .05$).

Study 2 manipulated monetary incentives by randomly assigning subjects to one of three conditions, as follows: hourly pay, piece rate, or goal attainment bonus (in which subjects received a monetary bonus only if they obtained the goal). One would expect greater commitment to assigned goals when a monetary bonus is attached to them, relative to hourly conditions in which the goal has no extrinsic instrumentality. The level of commitment to goals under piece rate versus goal attainment bonus is less clear, but because performance just short of the goal still has extrinsic instrumentality for piece-rate subjects but not goal attainment bonus (GAB) subjects, commitment to the goal may be stronger for the latter group.

Two dummy variables carried the information on group membership; the first dummy carried the hourly versus GAB distinction, whereas the second dummy variable carried the piece rate versus GAB distinction. In a regression with the two dummy variables used to predict goal commitment, the resulting beta weight for the first dummy variable was $-.16$ ($-.22$; $p < .05$), the sign indicating that goal commitment was significantly lower for subjects in the hourly condition relative to those in the GAB condition. The beta weight for the second dummy variable was $-.13$ ($-.16$), also in the expected direction (favoring GAB over piece rate), although reaching only marginal levels of statistical significance ($p = .10$).

Personal antecedents. Several personal factors associated with goal commitment as specified by Hollenbeck and Klein (1987) were available from the three studies, including need for achievement, self-esteem, locus of control, and job involvement. Although not suggesting any person variables specifically, Locke et al. (1988) did propose that individual differences in internal rewards and expectancies should relate to goal commitment. Locus of control would seem to fit into their expectancy category, and internal rewards might incorporate need for achievement, job involvement, and self-esteem.

³ There was some variation in goal levels in all three studies, although this range was restricted by the fact that all subjects had difficult goals.

Both Studies 1 and 2 included measures of need for achievement and self-esteem. Need for achievement was measured with the 20-item scale from the Personality Research Form (Jackson, 1974). Wiggins (1972) has provided evidence documenting the reliability, factor structure, and convergent/discriminant validity of this scale. Self-esteem was measured with the 20-item Janis-Field Scale (Eagly, 1967). Robinson and Shaver (1973) provided evidence on the reliability and validity of this scale. There was a statistically significant ($p < .05$) correlation between the four-item measure of goal commitment and need for achievement in both samples, with correlations equalling .17 (.25) in Study 1, and .23 (.23) in Study 2.

Neither study found a statistically significant correlation between self-esteem and commitment, although the correlation in Study 2 was in the right direction and reached marginal levels of significance ($r = .10, p < .10$). One possible explanation for the lack of results here is that it is task-specific, rather than generalized, self-esteem that is the key to goal commitment. Hollenbeck and Brief (1987) found these two separate variables to operate differently in the goal-setting process.

Study 1 also included a measure of locus of control (Rotter, 1966). In line with expectations, there was a statistically significant ($p < .05$) correlation of $-.22$ ($-.18$) between this variable and the four-item commitment measure.

Study 3 included a measure of task involvement (Kanungo, 1982). One would anticipate that goal commitment to difficult-grade goals would be greater for individuals who identify with the student role; this was in fact the case, with a statistically significant ($p < .05$) correlation of .14 (.22).

Discriminant Validity

There were nonsignificant correlations between the four-item measure of goal commitment and various demographic or control variables. These include variables such as sex, age, subject major, generalized intelligence as indexed with the Scholastic Aptitude Test, and generalized anxiety (Eysenck & Eysenck, 1975). It should be noted that the generalized anxiety scale, like the goal commitment scale, was a self-reported perception for which responses were made on a Likert-type scale.

Timing Issues

All three studies measured goal commitment at two or more points in time. Study 1 measured commitment 4 weeks into the term and at the end of the term; Study 2 measured it both before starting the task and after completing the task and, as discussed already, Study 3 measured it at four different times. Goal commitment is not conceptualized as a constant individual predisposition, and therefore one might not expect a great deal of temporal stability in a measure of goal commitment. Despite this fact, there were statistically significant ($p < .05$) test-retest correlations of .52 and .71 in Studies 1 and 2, respectively. The average correlation across time periods was .65 for Study 3. Because of this relative stability, timing did not have a strong and consistent influence on the results of any of the three studies. This is consistent with the position of Locke et al. (1988) as well as with empirical research by Earley and Kanfer (1985). In general, where any differences did exist, the trend was to find

more supportive results with measures taken during or after task performance, relative to measures obtained prior to task engagement. For example, although significant at both time periods, the relationship between commitment and performance ran between 6 and 10 correlation points higher when assessed during or after task completion than when assessed before performing the task.

Discussion

The purpose of this research was to develop an efficient, construct-valid measure of goal commitment. Construct validity analysis consisted of four empirical checks that assessed (a) dimensionality and internal consistency, (b) convergence with alternative measures of the same construct, (c) relatedness to measures of separate constructs within the nomological net of the focal construct, and (d) discriminability from constructs not within the nomological net. In addition, the effects of time of measurement were examined.

Drawing from a set of nine unidimensional items, a four-item unidimensional scale was developed that exhibited a .71 internal consistency estimate of reliability. This scale showed significant relationships with two alternative measures of the same construct: force to attain the goal and self-set goal-assigned-goal discrepancy. A third alternative measure of the construct, actual goal change, was also related to the four-item scale when tested with the sign test for correlated samples.

With respect to other constructs in the goal-commitment nomological net, the results indicated that the scale was consistently related to performance. Moreover, the pattern of the results with expected antecedents such as goal publicness, monetary incentives, need for achievement, locus of control, and involvement were statistically significant and in the predicted direction. There were also nonsignificant relationships between the scale and theoretically irrelevant variables such as sex, age, subject major, generalized intelligence, and generalized anxiety. Finally, timing of measurement did not have a strong effect on the obtained results in any of the three studies. In the few instances in which differences were obtained, however, the results were stronger for measures taken during or after task completion, relative to those taken before subjects started the task.

We note that in many cases, although the results were statistically significant, the absolute magnitude of the correlations obtained was not always large. As a general rule, most of the relationships are enhanced if one adds items from the original pool to the four-item measure. In cases in which there are no constraints on the number of items, there is no reason not to use the seven-item scale.

References

- Bradley, J. V. (1968). *Distribution-free statistical tests*. Englewood Cliffs, NJ: Prentice-Hall.
- Campion, M. A., & Lord, R. G. (1982). A control systems conceptualization of goal-setting process. *Organizational Behavior and Human Performance*, 30, 265-287.
- Dossett, D. L., Latham, G. P., & Mitchell, T. R. (1979). Effects of assigned versus participatively set goals, knowledge of results, and individual differences on employee behavior when goal difficulty is held constant. *Journal of Applied Psychology*, 64, 291-298.

- Eagly, A. H. (1967). Involvement as a determinant of responses to favorable and unfavorable information. *Journal of Personality and Social Psychology*, 7, 1-15.
- Earley, P. C., & Kanfer, R. (1985). The influence of component participation and role models on goal acceptance, goal satisfaction, and performance. *Organizational Behavior and Human Decision Processes*, 36, 378-390.
- Eysenck, H. J., & Eysenck, S. B. G. (1975). *Eysenck Personality Questionnaire Manual*. San Diego, CA: Educational and Industrial Testing Service.
- Ferguson, G. A. (1976). *Statistical analyses in psychology and education*. New York: McGraw-Hill.
- Hollenbeck, J. R., & Brief, A. P. (1987). The effects of individual differences and goal origin on the goal-setting process. *Organizational Behavior and Human Decision Processes*, 40, 148-171.
- Hollenbeck, J. R., & Klein, H. J. (1987). Goal commitment and the goal-setting process: Problems, prospects, and proposals for future research. *Journal of Applied Psychology*, 72, 212-220.
- Hollenbeck, J. R., Williams, C. R., & Klein, H. J. (1989). An empirical examination of the antecedents of commitment to difficult goals. *Journal of Applied Psychology*, 74, 18-23.
- Hunter, J. E., Schmidt, F. L., & Jackson, G. B. (1982). *Meta-analysis: Cumulating research findings across studies*. Beverly Hills, CA: Sage.
- Jackson, D. N. (1974). *Personality Research Form Manual*. Port Huron, MI: Research Psychologist Press.
- Kanungo, R. N. (1982). The measurement of job and work involvement. *Journal of Applied Psychology*, 67, 341-349.
- Klein, H. J. (1987). *Reactions to goal setting and feedback: A test of a control theory model of work motivation*. Unpublished doctoral dissertation, Michigan State University, East Lansing.
- Latham, G. P., & Steele, T. P. (1983). The motivational effects of participation vs. goal setting on performance. *Academy of Management Journal*, 26, 406-417.
- Locke, E. A., Latham, G. P., & Erez, M. (1988). The determinants of goal commitment. *Academy of Management Review*, 13, 23-39.
- Locke, E. A., Shaw, K. N., Saari, L. M., & Latham, G. P. (1981). Goal setting and task performance: 1969-1980. *Psychological Bulletin*, 90, 125-152.
- Mowday, R. T., Steers, R. M., & Porter, L. W. (1979). The measurement of organizational commitment. *Journal of Vocational Behavior*, 14, 224-247.
- Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.
- Organ, D. W. (1977). Intentional vs. arousal effects of goal setting. *Organizational Behavior and Human Performance*, 18, 378-389.
- Robinson, J. P., & Shaver, P. R. (1973). *Measures of social psychological attitudes*. Ann Arbor: University of Michigan, Institute for Social Research.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs*, 80, 1-28.
- Salancik, G. R., & Pfeffer, J. (1977). An examination of need-satisfaction models of job attitudes. *Administrative Science Quarterly*, 22, 427-456.
- Schwab, D. P. (1980). Construct validity in organizational behavior. In B. M. Staw and L. L. Cummings (Eds.), *Research in organizational behavior: An annual series of analytical essays and critical reviews*. Greenwich, CT: JAI Press.
- Siegel, S. (1956). *Non-parametric tests*. New York: McGraw-Hill.
- Vroom, V. H. (1964). *Work and motivation*. New York: Wiley.
- Wiggins, J. S. (1972). Review of the Personality Research Form. In O. K. Buros (Ed.), *The Seventh Mental Measurements Yearbook* (pp. 301-303). Highland Park, NJ: Gryphon.
- Wright, P. M. (1987). *Reward contingency as an explanatory variable in the incentive-goal setting relationship*. Unpublished doctoral dissertation, Michigan State University, East Lansing.
- Yukl, G. A., & Latham, G. P. (1978). Interrelationships among employee participation, individual differences, goal difficulty, goal acceptance, goal instrumentality, and performance. *Personnel Psychology*, 31, 305-323.

Received February 22, 1989

Revision received May 25, 1989

Accepted May 26, 1989 ■