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The effect of distal learning, outcome, and proximal goals on a moderately complex task

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Summary The effects of learning versus outcome distal goals in conjunction with proximal goals were investigated in a laboratory setting using a class-scheduling task. The participants ($n = 96$) needed to acquire knowledge in order to perform the task correctly. A 'do your best' outcome goal led to higher performance than the assignment of a specific, difficult outcome goal. However, the assignment of a specific, difficult learning goal led to higher performance than urging people to 'do their best.' Goal commitment was higher in the learning goal than in the outcome goal condition. The correlation between task-relevant strategies discovered and performance was positive and significant. The number of task-relevant strategies implemented by participants assigned a distal learning goal in conjunction with proximal goals was higher than in any other goal condition. Setting a distal outcome or learning goal that included proximal outcome goals, however, did not lead to higher performance than the setting of a distal outcome or learning goal alone. Self-efficacy correlated significantly with performance, and this effect was mediated through strategy development. Furthermore, the discovery of task-relevant strategies affected self-efficacy through an increase in performance.

Introduction

More than 500 studies have shown that setting a specific, difficult goal leads to higher performance than a general intention to do one's best (e.g., Latham and Locke, 1991; Locke and Latham, 1990). Because goal setting is a theory of motivation (Locke and Latham, 1990) almost all of the tasks in the studies that have tested its predictions have required choice, effort, or persistence to perform them effectively. The goals set have either been outcomes to be attained (e.g., harvest × cords of wood; Latham and Kinne, 1974) or behaviors within the employees' repertory of knowledge and ability to increase in frequency (e.g., BOS; Latham *et al*., 1978). When an individual has the ability necessary to perform a task, setting a specific, difficult outcome goal directs attention to exert effort and persistence

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to achieve it (e.g., Latham and Locke, 1991; Locke and Latham, 1990) or cues individuals to use strategies which have been proven to be effective in the past (e.g., Bandura and Wood, 1989; Wood and Locke, 1990).

However, when primarily learning rather than motivation is required to master a task, setting an outcome goal can have a detrimental effect on performance. For example, Earley *et al*. (1989) found that business students who were assigned a specific, difficult outcome goal on a stock market prediction task for which they had yet to acquire the necessary knowledge to perform effectively, fared worse than individuals who were urged to 'do their best.' The latter group took time to systematically test and modify their task strategies when feedback indicated that they were doing the task incorrectly. The participants with specific, difficult outcome goals frantically switched from one strategy to another in a vain attempt to attain their goal.

Kanfer and Ackerman (1989) replicated this finding in a study involving Air Force trainees who lacked the knowledge necessary to perform effectively in an air traffic control simulation. The authors concluded that when people are in the process of learning how to perform a task, goal setting distracts their attention from the development and systematic testing of task-relevant strategies. Only when the requisite knowledge has been acquired should people focus their attention on goal attainment. Their finding is supported by studies that Dweck has conducted with children (e.g., Dweck and Leggett, 1988; Elliott and Dweck, 1988; Smiley and Dweck, 1994). She found that, on a problem-solving task, urging children to do their best to increase their task competence resulted in faster learning than giving them a performance goal to attain. Dweck labelled what were essentially 'do best' instructions learning goals.

Winters and Latham (1996) hypothesized that the deleterious effect of goals on a task that requires learning before it can be performed correctly is not due to a fault in or a boundary condition of goal setting theory, but rather due to the type of goal that was set, namely an outcome rather than a learning goal. Consistent with goal setting theory (Locke and Latham, 1990, pp. 95–97), they defined a learning goal as one that is specific and difficult in terms of the number of strategies to be discovered to learn how to perform the task. Using a 3 (learning goal, outcome goal, and 'do your best' goal) $\times$ 2 (simple task, and complex task) factorial design, they replicated the finding obtained in hundreds of previous studies. On a motivational task where participants had the requisite knowledge and skill, individuals with a specific, difficult outcome goal had higher performance than individuals who were urged to 'do their best.' In addition, participants who were assigned an outcome goal had higher performance than those who were assigned a learning goal. But on a task where participants lacked the requisite knowledge to perform it, the findings of both Earley *et al*. (1989) and Kanfer and Ackerman (1989) were replicated. People who were urged to 'do their best' had higher performance than people who had a specific, difficult outcome goal. However, individuals with a specific, difficult learning goal (e.g., discover six short-cuts to performing this class-scheduling task) had the highest self-efficacy and the highest performance. The authors concluded that on a task that requires learning, a specific, difficult learning goal shifts attention to the development and implementation of task-relevant strategies and away from task outcome achievement. Furthermore, Winters and Latham (1996) argued, but never empirically tested, that individuals with high self-efficacy are more likely than those with low self-efficacy to discover and implement task-relevant strategies. The effect, however, may be reciprocal as the discovery of relevant strategies undoubtedly increases self-efficacy (e.g., Latham *et al*., 1994; Wood and Bandura, 1989). To date, the Winters and Latham study (1996) is the only study published in the organizational behavior literature that defined a learning goal consistent with Locke and Latham's (1990) goal setting theory.

Latham and Seijts (1999) hypothesized that a distal goal that includes proximal goals, in contrast to a distal goal alone, provides clear markers of progress. Distal goals are long-term or end-goals. Proximal goals, in contrast, are short-term or sub-goals, and allow individuals to recast a distal goal regarding a task which is complex into smaller, attainable ones. Proximal goals thus allow people to evaluate their ongoing goal-directed behavior accurately. Inherent in proximal goals is an increase in frequency of feedback that can be crucial for altering strategies in addition to maintaining effort and persistence to attain the distal goal. On tasks where learning has yet to occur, a distal goal, without proximal goals, is typically too far removed in time to serve as a marker of progress to facilitate high self-efficacy regarding goal attainment, or to suggest strategic behaviors to attain it (e.g., Bandura, 1997; Stock and Cervone, 1990).

A situational constraint to effective goal setting is environmental uncertainty (Locke and Latham, 1990). This is because the information required to set outcome or learning goals may be unavailable. And even when such information is available, it may become obsolete due to rapid changes in the environment. Thus as uncertainty increases, it becomes increasingly difficult to set and commit to a distal goal.

In a simulation of such a situation, Latham and Seijts (1999) used an assessment centre task that required not only learning how to make toys but 'when to sell what' as the dollar amount paid for the toys changed continuously. Senior high-school students were paid on a piece rate basis to manufacture toys. Consistent with previous research, participants who were urged to 'do their best' made more money than those with a specific distal outcome goal. However, people with a distal outcome goal that included proximal goals made the most money. The latter finding corroborated results reported in the clinical-counselling literature regarding the benefits of proximal goals (e.g., Bandura and Simon, 1977; Bandura and Schunk, 1981). In addition, Latham and Seijts found that, over time, self-efficacy increased, but only for participants assigned a distal goal in conjunction with proximal goals. A limitation of the Latham and Seijts study is that the task they used did not permit a direct measure of the strategies identified and implemented. Instead, participants were asked to recall the strategies they used to complete the task. Moreover, self-efficacy was measured only twice, namely at the beginning and the end of the task. Therefore, the authors could only speculate on the possible mechanisms underlying the results for performance.

To date, only one study has been reported in the organizational behavior literature on the effect of learning versus outcome goals on a task that is complex for individuals, and only one study has examined the effect of proximal and distal goals in an environment of uncertainty. No study could be found where the effects of including proximal goals with a distal learning or a distal outcome goal have been investigated. Thus the present study examined the effect of setting proximal goals with either a distal learning or outcome goal on a task that requires the acquisition of knowledge before it can be performed correctly.

The hypotheses were as follows:

Hypothesis 1. Urging individuals to 'do their best' on a task where they lack the requisite knowledge to perform it correctly leads to higher performance than a specific, difficult outcome goal. This hypothesis is consistent with Earley *et al.* (1989) and Kanfer and Ackerman (1989).

Hypothesis 2. A specific, difficult learning goal leads to higher performance on a task where participants lack the requisite knowledge than a specific, difficult outcome goal. This hypothesis is consistent with Winters and Latham (1996).

Hypothesis 3. Specific, difficult proximal outcome goals in conjunction with a distal outcome goal leads to higher performance than a specific, difficult distal outcome goal alone or a 'do your best' outcome goal. This hypothesis is consistent with Latham and Seijts (1999).

Furthermore, we tested whether a distal learning goal that includes proximal goals is superior to all other goal setting conditions. Proximal goals influence the immediate choice of activities as well as how hard individuals work at their attainment (Bandura, 1986). A learning goal facilitates the discovery of the requisite strategies for effective task performance. Individuals with proximal learning goals, in addition to a distal learning goal, may thus be able to evaluate their ongoing goal-directed activities more accurately than individuals in the other conditions. Thus the fourth hypothesis was:

Hypothesis 4. There is a two-way interaction effect between type of goal and goal proximity. That is, specific, difficult proximal learning goals in conjunction with a distal learning goal leads to higher performance than any other goal orientation/goal proximity combination.

To determine how goals affect performance, task strategies were measured objectively and self-efficacy was assessed three times during the completion of the task. Process-oriented changes in self-efficacy and strategy development could therefore be detected.

Research suggests that self-efficacy and the use of task relevant strategies are reciprocally related (e.g., Durham *et al*., 1997; Latham *et al*., 1994; Wood and Bandura, 1989). Specifically, high self-efficacy leads to the identification and implementation of effective task strategies. The use of these strategies, in turn, builds confidence, presumably through an increase in actual performance. The fifth and sixth hypotheses, consistent with prior research on self-efficacy, strategy development, and performance were as follows:

Hypothesis 5. Strategy development mediates the effect of self-efficacy on subsequent performance on a task where knowledge to perform it has yet to be acquired. Similarly, self-efficacy mediates the effect of strategy development on subsequent performance. That is, self-efficacy and strategy development are reciprocally related.

Hypothesis 6. The effect of strategy development on subsequent self-efficacy is mediated through performance.

Method

Sample and experimental design

Sixty-two female and 32 male undergraduate business students, whose mean age was 21.5 years (*S.D.* = 3.4), participated in the study. Two participants did not indicate their gender. The 96 participants were randomly assigned to a 2 (outcome goal, and learning goal) × 3 (a distal goal alone, proximal goals in addition to a distal goal, and a 'do your best' goal) × 3 (trials) factorial design with repeated measures. Each experimental condition contained 16 participants.

Task

Participants were required to produce unique class schedules comprised of five non-redundant university classes. The task, developed by Earley (1985), was divided into three 8-minute trials. Previous research indicated that three 8-minute trials is a sufficient time-span for acquiring the knowledge to complete class schedules correctly (e.g., Latham *et al*., 1994; Roberson *et al*., 1999; Winters and Latham, 1996). Previous studies indicate that individuals perceive this task as complex (e.g., Earley, 1985; Winters and Latham, 1996).

The instructions explained six rules for producing correct class schedules, namely (1) each schedule indicates the course name, its code, meeting times, and section; (2) each schedule must have five different classes scheduled on the same day; (3) each schedule must be unique, that is, it cannot duplicate another class schedule; (4) any course with a quiz section must have the quiz section scheduled on the same day as the class; (5) no two marketing courses can be scheduled within one hour of each other; and (6) any speech communication lecture class must have a laboratory class scheduled as well.

This task was used for three reasons. First, it meets the criterion for complexity set forth by Wood (1986), namely performance on the task is not increased solely through effort or persistence. It requires the discovery and implementation of effective task strategies. Second, the task permitted a direct measure of the strategies that were identified and implemented to complete the class schedules. A direct measure of the task strategies that were used was necessary for an accurate assessment of the effect of learning and proximal goals on the implementation of strategies, and the effect of these strategies on subsequent task performance. Third, scheduling is an organizationally relevant task. Using organizationally relevant tasks in laboratory studies enhances the generalizability of findings from laboratory simulations to field settings (Locke, 1986).

Procedure

Each participant received a package that included an explanation of the task requirements, a class schedule list, blank schedules, and a series of questionnaires (see Measures). Participants were informed that the computer broke down, and that the Office of the Registrar has requested them to complete class schedules. These instructions are consistent with Earley (1985) and Winters and Latham (1996) who used the identical task. The participants were then given a list of 12 classes, each with 10 different section meetings.

Consistent with recommendations by Locke and Latham (1990), participants were given a 4-minute pre-test prior to the manipulation of the independent variables so that ability could be used as a covariate in the analyses of performance. The task in the pre-test was to 'schedule as many classes as possible within a 4-minute period.'

To hold goal difficulty constant, the performance of 51 undergraduate business school students who participated in a pilot study was examined. The average age of these participants was 21.1 years ($S.D. = 1.6$). Twenty-eight of these participants were female, and 20 were male. Three participants did not indicate their gender on the research materials.

Wood and Bandura (1989) stated that a truly difficult goal is one that only 10 per cent of individuals can attain. Therefore, the number of class schedules completed by the upper 10 per cent of the pilot-group participants during trials 1, 2, and 3 was assigned to participants in the proximal plus distal goal condition. The distal outcome goal was the sum of the class schedules completed by the upper 10 per cent of the pilot-group participants during trials 1, 2, and 3. Similarly, the number of effective task strategies the top 10 per cent of the pilot-group participants implemented during trials 1, 2, and 3 was assigned to participants in the learning goal condition that included proximal goals. The distal learning goal was the total number of unique task-relevant strategies implemented by the upper 10 per cent of the participants in the pilot study. Defining learning goals in terms of a number of task-relevant strategies to be discovered for successful completion of the task is consistent with Locke and Latham's (1990) goal setting theory. The experimental instructions were as follows:

1. 'Do your best' outcome goal: There will be three trials of 8 minutes each. Your goal for the next 24 minutes is to complete as many correct class schedules as possible.

2. 'Do your best' learning goal: There will be three trials of 8 minutes each. Your goal for the next 24 minutes is to discover as many shortcuts or strategies as possible to produce correct class schedules.

3. Distal outcome goal: There will be three trials of 8 minutes each. A pilot study indicated that a goal of 10 schedules is difficult, yet attainable. Research has shown that setting a difficult, yet attainable goal maximizes productivity. Your goal for the next 24 minutes is to complete 10 or more correct class schedules.

4. Distal learning goal: There will be three trials of 8 minutes each. Research has shown that thinking about shortcuts or strategies to produce correct class schedules maximizes productivity. A pilot study indicated that a goal of identifying and implementing 4 shortcuts is difficult, yet attainable. Research has shown that setting a difficult, yet attainable goal maximizes productivity. Your goal for the next 24 minutes is to identify and implement 4 or more shortcuts.

5. Distal outcome goal that included proximal goals: There will be three trials of 8 minutes each. A pilot study indicated that a goal of 10 schedules is difficult, yet attainable. Research has shown that setting difficult, yet attainable sub-goals maximizes productivity. Your goal for the next 24 minutes is to complete 2.8 or more correct class schedules on trial 1, 3.4 or more correct class schedules on trial 2, and 3.8 or more correct class schedules on trial 3.

6. Distal learning goal that included proximal goals: There will be three trials of 8 minutes each. Research has shown that thinking about shortcuts or strategies to produce correct class schedules maximizes productivity. A pilot study indicated that a goal of identifying and implementing 4 shortcuts is difficult, yet attainable. Research has shown that setting difficult, yet attainable sub-goals maximizes productivity. Your goal for the next 24 minutes is to identify and implement 2 shortcuts on trial 1, an additional third shortcut on trial 2, and a fourth shortcut on trial 3.

Dependent and intervening variables

Performance

Performance was operationalized as the number of correct class schedules produced on each of the three trials.

Goal commitment

Goal commitment was measured in order to determine whether the participants in each experimental condition were attempting to attain the goal (Locke and Latham, 1990). It was measured prior to each 8-minute trial using five 5-point Likert-type items (e.g., 'I am strongly committed to pursuing this goal') taken from Klein *et al*., (in press). Scale scores could range from 1 ('completely disagree') to 5 ('completely agree').

Self-efficacy

Measures of self-efficacy were taken after the goal was assigned, and prior to each of the three 8-minute performance trials. Sixteen levels were assessed, ranging from completing 3.0 to 12.0 class schedules during the 24-minute period (e.g., 'I am able to complete 6.0 class schedules'). Both self-efficacy magnitude and strength were measured consistent with the recommendations by Lee and Bobko (1994) and Locke and Latham (1990). Self-efficacy magnitude was operationalized as the total number of 'Yes' answers to the 16 questions above. The strength of self-efficacy was the sum of the rating scores across the 16 levels. The ratings were made in terms of a 10-point scale ranging from 1 ('no confidence at all') to 10 ('total confidence'), which were then aggregated. Consistent with Locke and Latham (1990), the measures of self-efficacy magnitude and strength were converted to *z*-scores and summed to derive a total self-efficacy score for each of the three trials.

Task strategies

Previous studies identified four strategies for producing correct class schedules (e.g., Latham *et al*., 1994; Winters and Latham, 1996). These strategies are: (1) repeatedly scheduling the same subject; (2) repeatedly scheduling the same section; (3) scheduling night classes; and (4) recording class names and times chronologically. The extent to which each of these strategies were used was assessed by examining each class schedule. For example, to measure the strategy of recording class names and times chronologically, each schedule was examined to determine if classes and times written on the schedule started with early morning classes on the first line of the schedule, and ended with late classes on the last line of the schedule. One point was given each time a particular strategy was used. Strategies 1, 2, and 4 could be used only once for each schedule. In contrast, the third strategy, scheduling night classes could be used more than once. Consistent with Latham *et al*. (1994) and Winters and Latham (1996), the four separate strategy scores were added together to obtain a total strategy score.

Manipulation checks

Goal specificity

Perceived goal specificity was measured by two 5-point Likert-type items after the participants completed the third 8-minute trial. These items were taken from Winters and Latham (1996). For example, participants in the learning goal condition were asked: 'To what extent was the number of short-cuts to be identified specified.' The corresponding item for participants in the outcome goal condition was: 'To what extent was the number of class schedules to be completed specified.' Scale scores could range from 1 ('not at all') to 5 ('very much so').

Perceived complexity of the task

The extent to which the participants perceived the task as complex was measured by four 5-point Likert-type items (e.g., 'Many times, I had to check one thing before I scheduled something else') after the participants completed the third 8-minute trial. These items were taken from Winters and Latham (1996). Scale scores could range from 1 ('not at all') to 5 ('very much so').

Results

Manipulation checks

Goal specificity

The coefficient alpha for the 2-item scale was 0.80. A two-tailed t-test indicated a significant difference in perceived specificity of the goal between participants in the 'do your best' conditions ($M = 2.80$, $S.D. = 1.22$) versus those with a specific goal ($M = 3.56$, $S.D. = 1.14$); $t(94) = 2.63$, $p < 0.01$. No significant difference between participants with a distal goal alone ($M = 3.27$, $S.D. = 1.13$) versus those who had proximal goals in addition to a distal goal was found ($M = 3.65$, $S.D. = 1.13$); $t(62) = 1.38$, $p > 0.05$.

Perceived complexity of the task

The coefficient alpha for the 4-item scale was 0.78. An ANOVA revealed no significant differences among the six experimental conditions regarding the perceived complexity of the task. The mean overall score was 3.83 ($S.D. = 0.75$) which suggests that the task was perceived to be moderately complex.

Hypotheses

Performance

The results for performance are shown in Table 1. A 2 × 3 × 3 repeated measures ANCOVA with goal type and goal proximity as between-group factors, trials as a within-group factor, and performance on the pre-test as a covariate[1] indicated a significant within-effect for trials; $F(2, 178) = 4.18$, $p < 0.05$. A series of paired sample two-tailed *t*-tests indicated that performance on trials 2 ($t(95) = 5.98$, $p < 0.001$) and 3 ($t(95) = 9.18$, $p < 0.001$) was significantly higher than performance on trial 1. Moreover, performance on trial 3 was significantly higher than performance on trial 2; $t(95) = 4.01$, $p < 0.001$. This suggests that learning increased across trials.

The results also showed a significant two-way interaction effect between goal type and goal proximity; $F(2, 89) = 8.47$, $p < 0.001$. Planned comparisons were conducted to test the nature of this interaction. Consistent with the first hypothesis, a 'do your best' outcome goal ($M = 8.70$, $S.D. = 1.89$) led to significantly higher performance than a specific, difficult outcome goal ($M = 6.55$, $S.D. = 1.89$); $t(46) = 3.71$, $p < 0.001$. However, as shown in Figure 1, a specific, difficult learning goal ($M = 8.55$, $S.D. = 2.40$) led to significantly higher performance than a 'do your best' learning goal ($M = 7.00$, $S.D. = 1.94$) ($t(46) = 2.27$, $p < 0.05$) as well as significantly higher performance than a specific, difficult outcome goal ($t(62) = 3.71$, $p < 0.001$). Thus, hypothesis 2 was accepted.

A serendipitous finding was that participants in the 'do your best' outcome goal condition completed significantly more class-schedules than participants in the 'do your best' learning goal condition; $t(30) = 2.55$, $p < 0.05$. A likely explanation is that specificity was perceived to be significantly lower in the 'do your best' learning goal condition ($M = 2.22$, $S.D. = 0.82$) than it was in the 'do your best' outcome goal condition ($M = 3.37$, $S.D. = 1.31$); $t(30) = 3.00$, $p < 0.01$.

Setting proximal goals did not increase performance regardless of whether a learning or an outcome goal was set. Similarly, no significant difference in performance was found when the data for the proximal goal conditions were collapsed and compared with the data for the two distal goal conditions. Therefore, hypotheses 3 and 4 regarding the advantage of including proximal goals with a distal outcome or learning goal were rejected.

Goal commitment

The scores for goal commitment as shown in Table 1 were high across conditions. The coefficient alphas for the 5-item goal commitment scale were 0.72, 0.72, and 0.81 for trials 1, 2, and 3, respectively. The correlation between goal commitment and performance was 0.21 ($p > 0.05$), 0.47 ($p < 0.001$), and 0.30 ($p < 0.05$) for trials 1, 2, and 3, respectively. Thus the higher commitment to the goal, on trials 2 and 3, the higher the performance. Goal commitment also correlated with self-efficacy and the strategy development process. The correlation between goal commitment and self-efficacy was 0.09 ($p > 0.05$), 0.40 ($p < 0.001$), and 0.46 ($p < 0.001$) for trials 1, 2, and 3, respectively. This suggests that, on trials 2 and 3, individuals with high self-efficacy were more committed to the goal than individuals with low self-efficacy. The correlation between goal commitment and the number of strategies implemented was 0.33 ($p < 0.01$), 0.24 ($p < 0.06$), and 0.29 ($p < 0.05$) for trials 1, 2, and 3, respectively. Thus the higher goal commitment the higher the number of task-relevant strategies implemented.

A 2 × 3 × 3 repeated measures ANOVA with goal type and goal proximity as between-group factors and trials as a within-group factor was conducted to assess whether there were any significant differences among the experimental conditions. In each repeated measures ANOVA, the assumption of sphericity was tested and, when rejected, the Greenhouse-Geisser corrected probabilities are reported.

[1]The covariate was not significant; $F(1, 89) = 0.22$; $p > 0.05$.

Table 1. Means and standard deviations of the measures for performance, goal commitment, self-efficacy, and strategies used during trials 1, 2, and 3

Goal assignment			Performance			Goal commitment			Self-efficacy			Strategy development		
			T = 1	T = 2	T = 3	T = 1	T = 2	T = 3	T = 1	T = 2	T = 3	T = 1	T = 2	T = 3
	Do best	*X*	2.24	2.99	3.48				0.56	1.40	0.99	3.33	3.35	3.79
		S.D.	0.85	0.87	0.98				2.12	1.89	1.90	1.46	1.38	1.24
Outcome	Distal	*X*	1.78	2.13	2.28	3.33	3.36	3.31	0.15	−0.13	−0.38	2.90	2.99	2.69
		S.D.	0.92	0.75	0.75	0.86	0.91	1.03	1.52	1.96	1.84	2.35	1.97	1.14
	Proximal	*X*	1.89	2.33	2.71	3.08	3.13	3.12	0.21	−0.34	−0.45	2.42	3.16	3.51
		S.D.	0.46	0.63	0.86	0.62	0.46	0.64	1.96	1.65	1.90	1.38	1.23	1.76
	Do best	*X*	1.89	2.43	2.68				−0.37	−0.98	−1.09	2.50	2.48	3.00
		S.D.	0.70	1.00	0.59				1.65	1.59	1.21	1.91	1.32	1.59
Learning	Distal	*X*	2.31	2.76	3.10	3.75	3.64	3.44	−0.91	−0.35	−0.20	2.20	2.71	2.86
		S.D.	0.78	0.78	1.12	0.53	0.84	0.80	1.52	1.76	2.24	1.55	0.92	1.45
	Proximal	*X*	2.61	3.01	3.33	3.59	3.69	3.63	0.36	0.41	1.02	3.70	3.62	4.10
		S.D.	0.59	0.69	1.32	0.70	0.78	1.04	2.34	1.92	1.86	1.94	2.37	2.16

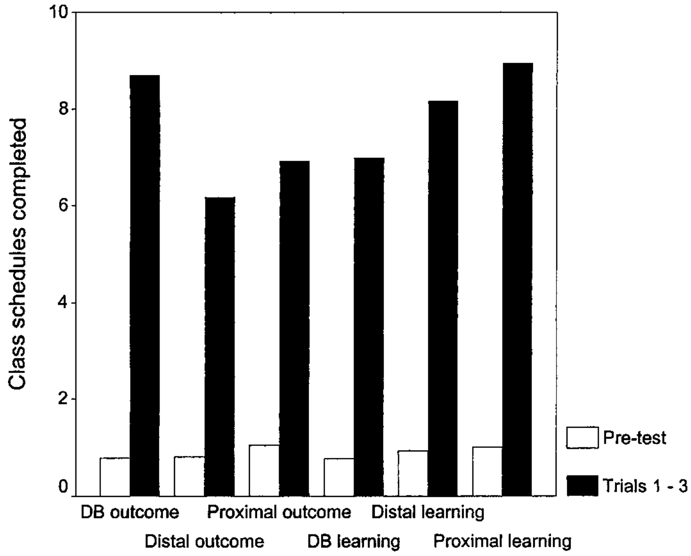

Figure 1. Overall task performance and pre-test scores across goal conditions

A significant between-effect for goal type was found; $F(1, 59) = 5.23$, $p < 0.05$. A two-tailed *t*-test indicated that goal commitment was higher in the learning goal ($M = 3.62$, $S.D. = 0.70$) than in the outcome goal condition ($M = 3.21$, $S.D. = 0.67$); $t(61) = 2.33$, $p < 0.05$.

Self-efficacy

The means and standard deviations for self-efficacy in completing class schedules are shown in Table 1. The correlation between self-efficacy magnitude and self-efficacy strength was 0.80 ($p < 0.001$), 0.87 ($p < 0.001$), and 0.92 ($p < 0.001$) for trials 1, 2, and 3, respectively. The standardized scores for self-efficacy magnitude and strength were combined additively to yield a composite measure. The coefficient alphas for the self-efficacy scale were 0.89, 0.92, and 0.93 for trials 1, 2, and 3, respectively. The correlation between self-efficacy in completing class schedules and performance was 0.13 ($p > 0.05$), 0.36 ($p < 0.001$), and 0.41 ($p < 0.001$) for trials 1, 2, and 3, respectively.

A $2 \times 3 \times 3$ repeated measures ANOVA with goal type and goal proximity as between-group factors and trials as a within-group factor indicated a significant two-way interaction effect between goal type and goal proximity ($F(2, 90) = 5.18$, $p < 0.01$) and a significant three-way interaction effect among goal type, goal proximity, and trials ($F(3.03, 136.34) = 3.61$, $p < 0.05$). The results in Table 1 show that, across trials, self-efficacy decreased for participants with a specific, difficult outcome goal, but increased for those with a specific, difficult learning goal. A one-way analysis of variance indicated no significant differences in self-efficacy between the six experimental conditions during trial 1; $F(5, 95) = 1.34$, $p > 0.05$.

Task strategies

The correlation between the composite score of strategies and performance was 0.38 ($p < 0.001$), 0.54 ($p < 0.001$), and 0.62 ($p < 0.001$), for trials 1, 2, and 3, respectively. The first strategy, repeatedly scheduling the same subject, was implemented by 95 per cent of the participants; the second strategy, repeatedly scheduling the same class section was used by 51 per cent of the participants; the third strategy, scheduling night classes, was implemented by 59 per cent of the participants; and finally, the fourth strategy, recording the classes and time in chronological order, was used by 88 per cent of the participants.

A $2 \times 3 \times 3$ repeated measures ANOVA with goal type and goal proximity as between-group factors and trials as a within-group factor indicated a significant within-effect for trials ($F(2, 180) = 20.54$, $p < 0.001$) and a significant two-way interaction effect between goal type and goal proximity ($F(2, 90) = 3.74$, $p < 0.05$). A series of paired sample two-tailed *t*-tests indicated that the number of strategies implemented on trials 2 ($t(95) = 3.67$, $p < 0.001$) and 3 ($t(95) = 5.97$, $p < 0.001$) was significantly higher than the number of strategies implemented on trial 1. Furthermore, participants implemented significantly more strategies on trial 3 than on trial 2; $t(95) = 3.04$, $p < 0.01$. Table 1 shows that the number of strategies implemented in the learning goal condition that included proximal goals was higher than in any other goal condition.

Mediator analyses

To test whether the identification of strategies mediated the relationship between self-efficacy and task performance, analyses were conducted consistent with the recommendations of Baron and Kenny (1986). Specifically, three regression equations were estimated, one for each trial, namely (1) regressing strategy development (mediator) on self-efficacy (independent variable); (2) regressing performance (dependent variable) on self-efficacy; and (3) regressing performance on strategy development and self-efficacy. To establish mediation, three conditions must hold. First, self-efficacy must affect strategy development in the first equation. Second, self-efficacy must be shown to affect performance in the second equation. And finally, self-efficacy and strategy development must affect performance in the third equation. Strategy development mediates the relationship between self-efficacy and performance if the above conditions all hold in the predicted direction, and the effect of self-efficacy on performance is less in the third equation than in the second equation.

As shown in Table 2, the results for trials 2 and 3 support the hypothesis that strategy mediated the relationship between self-efficacy and performance (hypothesis 5). Specifically, self-efficacy in completing class schedules affected both the number of strategies implemented (step 1; mean $\beta = 0.26$ and mean $R^2 = 0.07$) and performance (step 2; mean $\beta = 0.40$ and mean $R^2 = 0.15$). Moreover, as the

Table 2. Results of the three-step mediated regression analysis for self-efficacy and strategy development (mediator) predicting performance for trials 1, 2, and 3

Step	Dependent variable	Independent Variable	Beta	*t*	Adj. R^2	F	dfs
Trial 1							
1.	Strategies	Self-efficacy	0.08	0.79	0.01	0.62	1, 94
2.	Performance	Self-efficacy	0.13	1.28	0.01	1.63	1, 94
3.	Performance	Self-efficacy	0.07	1.05	0.61	71.47	2, 93‡
		Strategies	0.77	11.79‡			
Trial 2							
1.	Strategies	Self-efficacy	0.20	1.97*	0.04	3.88	1, 94*
2.	Performance	Self-efficacy	0.36	3.76‡	0.13	14.17	1, 94‡
3.	Performance	Self-efficacy	0.21	3.50‡	0.67	94.12	2, 93‡
		Strategies	0.75	12.31‡			
Trial 3							
1.	Strategies	Self-efficacy	0.31	3.14†	0.09	9.83	1, 94†
2.	Performance	Self-efficacy	0.43	4.56‡	0.17	20.78	1, 94‡
3.	Performance	Self-efficacy	0.18	3.30‡	0.74	129.92	2, 93‡
		Strategies	0.78	14.00‡			

* $p < 0.05$; † $p < 0.01$; ‡ $p < 0.001$.

Table 3. Results of the three-step mediated regression analysis for strategy development and self-efficacy (mediator) predicting performance for trials 1, 2, and 3

Step	Dependent variable	Independent variable	Beta	t	Adj. R^2	F	dfs
Trial 1							
1.	Self-efficacy	Strategies	0.11	1.10	0.02	1.20	1, 92
2.	Performance	Strategies	0.38	3.96§	0.15	15.70	1, 92§
3.	Performance	Strategies	0.37	3.83§	0.15	8.21	2, 91§
		Self-efficacy	0.09	0.88			
Trial 2							
1.	Self-efficacy	Strategies	0.19	1.83*	0.04	3.34	1, 93*
2.	Performance	Strategies	0.54	6.12§	0.29	37.42	1, 93§
3.	Performance	Strategies	0.49	5.71§	0.36	25.55	2, 92§
		Self-efficacy	0.27	3.17‡			
Trial 3							
1.	Self-efficacy	Strategies	0.23	2.22‡	0.05	4.93	1, 92‡
2.	Performance	Strategies	0.62	7.53§	0.38	56.66	1, 92§
3.	Performance	Strategies	0.54	7.01§	0.48	41.61	2, 91§
		Self-efficacy	0.32	4.10§			

*$p < 0.07$; †$p < 0.05$; ‡$p < 0.01$; §$p < 0.001$.

results in Table 2 show, the effect of self-efficacy on performance was less when strategy was included in the regression equation (see step 3; mean $\beta = 0.20$ and mean $R^2 = 0.71$).

Alternatively, as suggested in the introduction, self-efficacy may mediate the effect of strategies on performance. That is, discovering task-relevant strategies increases self-efficacy, which, in turn, affects performance. A mediation analysis was conducted to test for this possibility. The results for trials 2 and 3 support the fifth hypothesis that self-efficacy mediates the relationship between strategy development and performance (see Table 3). The number of strategies discovered affected both self-efficacy (step 1; mean $\beta = 0.21$ and mean $R^2 = 0.05$) and performance (step 2; mean $\beta = 0.58$ and mean $R^2 = 0.33$). The effect of strategy development on performance, however, was less when self-efficacy was included in the regression equation (step 3; mean $\beta = 0.51$ and mean $R^2 = 0.42$).

Hypothesis 6 stated that the discovery of relevant strategies increase subsequent self-efficacy through an increase in performance. To test this hypothesis, two regression models were estimated. First, performance during trials 1 and 2 was regressed on the strategy development process during trials 1 and 2. Second, self-efficacy during trials 2 and 3 was regressed on strategy development during trials 1 and 2. Third, self-efficacy during trials 2 and 3 was regressed on strategy development and performance during trials 1 and 2. The results of these two regression models are shown in Table 4. The hypothesis that performance mediates the relationship between strategy development and self-efficacy was supported. The strategy development process affected both the number of class schedules completed (step 1; mean $\beta = 0.78$ and mean $R^2 = 0.62$) and subsequent self-efficacy (step 2; mean $\beta = 0.35$ and mean $R^2 = 0.12$). The results also indicate that the effect of task strategies on self-efficacy was less when performance was included in the third step of the two regression models (see step 3; mean $\beta = -0.11$ ($p > 0.05$) and mean $R^2 = 0.26$).

A path analysis was conducted on the three trial data-set to investigate whether the proposed network of relationships hold true as predicted. The results are shown in Figure 2. These findings provide additional support for hypothesis 6. Path analysis results indicated that most paths of influence between the variables measured were significant at the 0.01 or 0.001 levels. However, the path coefficients between self-efficacy and strategies, while in the predicted direction, were not significant ($p > 0.05$).

Table 4. Results of the three-step mediated regression analysis for strategy development and performance (mediator) predicting subsequent self-efficacy

Step	Dependent variable	Independent variable	Beta	t	Adj. R^2	F	dfs
Trial 1–2							
1.	Performance[a]	Strategies[a]	0.78	11.90‡	0.60	141.69	1, 94‡
2.	Self-efficacy[b]	Strategies	0.29	2.91†	0.08	8.44	1, 94†
3.	Self-efficacy	Strategies	− 0.10	− 0.67	0.18	10.34	2, 93‡
		Performance	0.50	3.36‡			
Trial 2–3							
1.	Performance[c]	Strategies[c]	0.79	12.54‡	0.63	157.22	1, 94‡
2.	Self-efficacy[d]	Strategies	0.41	4.32‡	0.16	18.66	1, 94‡
3.	Self-efficacy	Strategies	− 0.12	− 0.87	0.33	23.13	2, 93‡
		Performance	0.67	4.82‡			

*$p < 0.05$; †$p < 0.01$; ‡$p < 0.001$.
[a]Strategy development and performance during trial 1; [b]Self-efficacy during trial 2; [c]Strategy development and performance during trial 2; [d]Self-efficacy during trial 3.

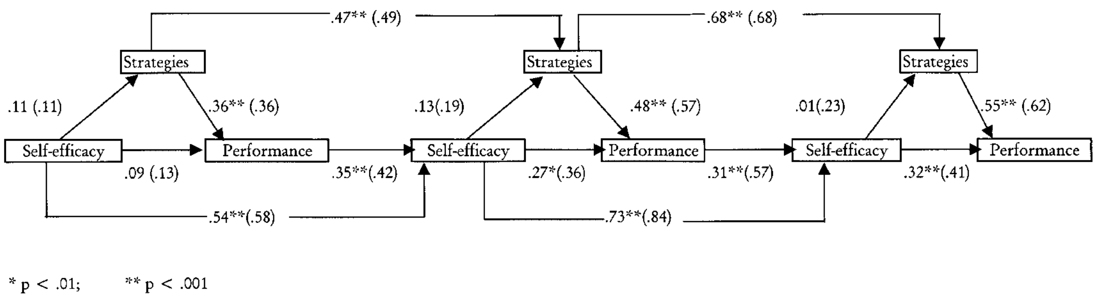

Figure 2. Path analysis for trials 1 through 3. The initial numbers on the paths of influence are the path coefficients; the numbers in parentheses are the first-order correlations

Discussion

This is the first study in the organizational behavior literature to examine the effect of distal learning and distal outcome goals that include proximal goals on a task that requires primarily learning to perform it correctly. The contribution of this study to the literature is at least six-fold.

First, a specific, difficult learning goal leads to higher performance than urging people to 'do their best' on a task where people initially lack the requisite knowledge to perform it. This finding is consistent with that of Winters and Latham (1996). Specific, difficult outcome goals are to be avoided as they appear to have a detrimental effect on performance during the learning process. Participants instructed to 'do their best' outperformed those assigned a specific, difficult outcome goal. This finding supports the results of Earley *et al*. (1989) and Kanfer and Ackerman (1989).

Second, the results of the present study provide a reason as to why a specific, difficult learning goal leads to higher performance than a specific, difficult outcome goal. Setting a learning goal results in higher goal commitment than setting an outcome goal on a task that requires knowledge acquisition before it can be performed well. This would appear to be due to the increase in self-efficacy across trials in contrast to a decrease in self-efficacy in the outcome goal condition. There was a significant correlation between self-efficacy and performance on the second and third trials. High performance increases goal commitment (Locke and Latham, 1990).

Third, consistent with both goal setting (Latham and Locke, 1991; Locke and Latham, 1990) and social-cognitive (Bandura, 1986, 1997) theories, self-efficacy correlates positively with goal commitment and task performance. The low initial correlation between self-efficacy and performance on the first trial in the present study is common in learning studies because participants do not know how well they will perform until they have some experience with the task in the time frame of interest (Gist and Mitchell, 1992).

Fourth, over time, outcome and learning goals have a differential effect on self-efficacy in mastering a task. Learning goals increase self-efficacy. Self-efficacy decreases when people lack the knowledge to attain an outcome goal. The increase in self-efficacy in the learning goal condition most likely reflects the fact that participants were discovering the strategies necessary to complete the task successfully.

Overall, the practical implication of these findings is that practitioners should focus on ways to increase participants' self-efficacy on tasks the participants perceive are complex as this increases goal commitment and subsequent performance. Research has repeatedly shown that self-efficacy plays a critical role in keeping individuals committed to a specific course of action, especially on tasks where there are obstacles or setbacks to performing well (e.g., Bandura, 1986; 1997). Research has also shown that self-efficacy influences the degree of skill acquisition and retention in learning situations (e.g., Gist *et al*., 1991; Wood and Locke, 1987).

Fifth, the results of the present study provide partial support for Winters and Latham's (1996) assertion that individuals with high self-efficacy are more likely than those with low self-efficacy to discover and implement task-relevant strategies which, in turn, affect performance. Discovering the strategies that are necessary to perform a task, in turn, increases self-efficacy that the task will eventually be performed correctly. The mediation analyses showed that strategies had both a direct effect on self-efficacy as well as an indirect effect through performance. These results are consistent with the findings reported by Bandura and Wood (1989) and Latham *et al*. (1994).

Sixth, setting proximal learning goals in conjunction with a distal learning goal can lead to the greatest number of strategies. Task-relevant strategies, in turn, correlate positively with performance. The results of the present study suggest that proximal learning goals have an indirect effect on performance through the discovery and implementation of these task-relevant strategies.[2] We suspect that subsequent studies that have a large sample size will find a direct effect.

That proximal goals did not have a direct effect on performance may also have been due to differences between the learning task that was used in the present study in contrast to the one used by Latham and Seijts (1999) where task uncertainty was high. A direct effect of proximal goals on performance may be limited to tasks where learning is required in a context of environmental uncertainty. Dorner (1991) found that performance errors on a dynamic task are often due to deficient decomposition of a goal into a series of proximal goals. Proximal goals can increase what Frese and Zapf (1994) call error management in a dynamic setting. The proximal goals that were set in conjunction with a distal goal in the previous Latham and Seijts (1999) study signalled to the participants when a strategy on a given trial would lead to less, the same, or more money for the sale of toys. Thus, the toy making task was not a typical learning task where participants, upon the discovery of a strategy, can proceduralize their activities so that they can work faster with practice, as was the case in the present study. The effect of proximal goals on a procedural learning task may be minimal since feedback from proximal goals is not necessarily informative. Research on including proximal goals with a distal goal where the characteristics of a task are manipulated in terms of static versus dynamic would appear warranted.

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[2]Personal communication with E.A. Locke, 9 August, (1999).

Limitations

The present study was conducted in a laboratory setting. The participants were students rather than actual employees of an organization. The task was not one they had to perform effectively for any substantive reason. Moreover, the participants completed the task in a short period of time. Thus drawing inferences to organizational tasks are thus just that—inferences. Research that examines the generalizability of laboratory findings involving learning and proximal goals to work-related settings such as transfer of training, self-development, and performance appraisal is needed.

Practical implications

Because results of laboratory experiments of goal setting typically generalize to field settings (e.g., Latham and Lee, 1986; O'Leary-Kelly *et al*., 1994), we believe that the practical significance of the present findings include the following. In the area of training, researchers have suggested that a goal setting intervention may facilitate the transfer of training to the workplace (e.g., Bennett *et al*., 1999; Ford *et al*., 1998; Latham and Seijts, 1997). Future research should investigate the effect of assigning a distal learning goal that includes proximal goals on the transfer of training.

Self-development involves seeking and using feedback, engaging in developmental activities, and tracking one's own progress (e.g., London and Smither, 1999; Olian *et al*., 1998). Organizations may be able to encourage self-development through the setting of challenging learning goals.

Studies have shown that when supervisors set specific performance goals with their employees, employee performance improves (e.g., Burke *et al*., 1978; Dossett *et al*., 1979; Latham *et al*., 1978). These appraisals involved tasks for which employees had already acquired the requisite skills. The results of the present study suggest that a distal learning goal in conjunction with proximal goals should be set when employees are new to the job, and hence are in a learning mode. For example, in an academic setting, it would appear to be more worthwhile for newly minted Ph.D.'s to set a learning goal (e.g., generate 10 concrete ways that will enable you to obtain high teaching ratings) rather than an outcome goal (e.g., get a four or higher on a 5-point Likert scale). Similarly, there may be an incremental effect for including proximal goals (e.g., 'I will have identified four teaching strategies by midterm') on teaching performance.

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References

Bandura A. 1986. *Social Foundations of Thought and Action: A Social Cognitive Theory.* Prentice-Hall: Englewood Cliffs.

Bandura A. 1997. *Self-efficacy: The Exercise of Control*. WH. Freedman and Company: New York.

Bandura A, Schunk DH. 1981. Cultivating competence, self-efficacy and intrinsic interest through proximal self-motivation. *Journal of Personality and Social Psychology* **41**: 586–598.

Bandura A, Simon KM. 1977. The role of proximal intentions in self-regulation of refractory behavior. *Cognitive Therapy and Research* **1**: 177–193.
Bandura A, Wood RE. 1989. Effect of perceived controllability and performance standards on self-regulation of complex decision-making. *Journal of Personality and Social Psychology* **56**: 805–814.
Baron RM, Kenny DA. 1986. The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology* **51**: 1173–1182.
Bennett JB, Lehman WEK, Forst JK. 1999. Change, transfer climate, and customer orientation: a contextual model and analysis of change-driven training. *Group and Organization Management* **24**: 188–216.
Burke RJ, Weitzel W, Weir T. 1978. Characteristics of effective employee performance review and development interviews: replication and extension. *Personnel Psychology* **31**: 903–919.
Dorner D. 1991. The investigation of action regulation in uncertain and complex situations. In: *Distributed Decision Making: Cognitive Models for Cooperative Work*. Ramussen J, Brehmer B. (eds). John Wiley and Sons, Chichester.
Dossett DL, Latham GP, Mitchell TR. 1979. The effects of assigned versus participatively set goals, KR, and individual differences when goal difficulty is held constant. *Journal of Applied Psychology* **64**: 291–298.
Durham C, Knight D, Locke EA. 1997. Effects of leader role, team-set goal difficulty, efficacy, and tactics on team effectiveness. *Organizational Behavior and Human Decision Processes* **72**: 203–231.
Dweck CS, Leggett EL. 1988. A social-cognitive approach to motivation and personality. *Psychological Review* **95**: 256–273.
Earley PC. 1985. Influence of information, choice, and task complexity upon goal acceptance, performance, and personal goals. *Journal of Applied Psychology* **70**: 481–491.
Earley PC, Connolly T, Ekegren G. 1989. Goals, strategy development and task performance: some limits on the efficacy of goal setting. *Journal of Applied Psychology* **74**: 24–33.
Elliott ES, Dweck CS. 1988. Goals: an approach to motivation and achievement. *Journal of Personality and Social Psychology* **54**: 5–12.
Ford JK, Smith EM, Weissbein DA, Gully SM, Salas E. 1998. Relationships of goal orientation, metacognitive activity, and practice strategies with learning outcomes and transfer. *Journal of Applied Psychology* **83**: 218–233.
Frese M, Zapf D. 1994. Action as the core of work psychology: a German approach. In: *Handbook of Industrial and Organizational Psychology*, Triandis HC, Dunnette MD, Hough LM (eds.). vol: 4. Consulting Psychologists Press: Palo Alto; 271–340.
Gist ME, Mitchell TR. 1992. Self-efficacy: a theoretical analysis of its determinants and malleability. *Academy of Management Review* **17**: 183–211.
Gist ME, Stevens CK, Bavetta AB. 1991. Effects of self-efficacy and post-training intervention on the acquisition and maintenance of complex interpersonal skills. *Personnel Psychology* **44**: 837–861.
Kanfer R, Ackerman PL. 1989. Motivation and cognitive abilities: an integrative/aptitude-treatment interaction approach to skill acquisition. *Journal of Applied Psychology* **74**: 657–690.
Klein HJ, Wesson MJ, Hollenbeck JR, Wright PM, DeShon RP. in press. The assessment of goal commitment: a measurement model meta-analysis. *Organizational Behavior and Human Decision Processes*.
Latham GP, Kinne SB. 1974. Improving job performance through training in goal setting. *Journal of Applied Psychology* **59**: 187–191.
Latham GP, Lee TW. 1986. Goal setting. In: *Generalizing from Laboratory to Field settings*. Locke EA. (ed). Lexington Books: Lexington.
Latham GP, Locke EA. 1991. Self-regulation through goal setting. *Organizational Behavior and Human Decision Processes* **50**: 212–247.
Latham GP, Seijts GH. 1997. Overcoming mental models that limit research on transfer of training in organizational settings. *Applied Psychology: An International Review* **46**: 371–375.
Latham GP, Seijts GH. 1999. The effects of proximal and distal goals on performance on a moderately complex task. *Journal of Organizational Behavior* **20**: 421–429.
Latham GP, Mitchell TR, Dossett DL. 1978. Importance of participative goal setting and anticipated rewards on goal difficulty and job performance. *Journal of Applied Psychology* **63**: 163–171.
Latham GP, Winters DC, Locke EA. 1994. Cognitive and motivational effects of participation: a mediator study. *Journal of Organizational Behavior* **15**: 49–63.
Lee C, Bobko P. 1994. Self-efficacy beliefs: comparison of five measures. *Journal of Applied Psychology* **79**: 364–370.
Locke EA. 1986. *Generalizing from laboratory to field settings*. Lexington Books: Lexington.

Locke EA, Latham GP. 1984. *Goal Setting: A Motivational Technique that Works*. Prentice Hall: Englewood Cliffs.

Locke EA, Latham GP. 1990. *A Theory of Goal Setting and Task Performance*. Prentice-Hall: Englewood Cliffs.

London M, Smither JW. 1999. Empowered self-development and continuous learning. *Human Resource Management* **38**: 3–15.

O'Leary-Kelly AM, Martocchio JJ, Frink DD. 1994. A review of the influence of group goals on group performance. *Academy of Management Journal* **37**: 1285–1301.

Olian JD, Durham CC, Kristof AL, Brown KG, Pierce RM, Kunder L. 1998. Designing management training and development for competitive advantage: lessons from the best. *Human Resource Planning* **21**: 20–31.

Roberson QM, Moye NA, Locke EA. 1999. Identifying a missing link between participation and satisfaction: the mediating role of procedural justice perceptions. *Journal of Applied Psychology* **84**: 585–593.

Smiley PA, Dweck CS. 1994. Individual differences in achievement goals among young children. *Child Development* **65**: 1723–1743.

Stock J, Cervone D. 1990. Proximal goal setting and self-regulatory processes. *Cognitive Therapy and Research* **14**: 483–489.

Winters D, Latham GP. 1996. The effect of learning versus outcome goals on a simple versus a complex task. *Group and Organization Management* **21**: 235–250.

Wood RE. 1986. Task complexity: definition of the construct. *Organizational Behavior and Human Decision Processes* **37**: 60–82.

Wood RE, Bandura A. 1989. Social cognitive theory of organizational management. *Academy of Management Review* **14**: 361–384.

Wood RE, Locke EA. 1987. The relation of self-efficacy and grade goals to academic performance. *Educational and Psychological Measurement* **47**: 1013–1024.

Wood RE, Locke EA. 1990. Goal setting and strategy effects on complex tasks. In *Research in Organizational Behavior*, Staw BM, Cummings LL. (eds). vol. 12. JAI Press: Greenwich; 73–109.

