

ARI Research Note 98-22

The Effects of Proximal and Distal Goals on Strategy Development and Group Performance

Elizabeth Weldon
Indiana University

Research and Advanced Concepts Office
Michael Drillings, Chief

July 1998



U.S. Army Research Institute
for the Behavioral and Social Sciences

Approved for public release; distribution is unlimited.

19980721 050

APPROVED FOR RELEASE

**U.S. Army Research Institute
for the Behavioral and Social Sciences**

A Directorate of the U.S. Total Army Personnel Command

**EDGAR M. JOHNSON
Director**

Research accomplished under contract
for the Department of the Army

Indiana University

Technical Review by

Joseph Psotka

NOTICES

DISTRIBUTION: This Research Note has been cleared for release to the Defense Technical Information Center (DTIC) to comply with regulatory requirements. It has been given no primary distribution other than to DTIC and will be available only through DTIC or the National Technical Information Service (NTIS).

FINAL DISPOSITION: This Research Note may be destroyed when it is no longer needed. Please do not return it to the U.S. Army Research Institute for the Behavioral and Social Sciences.

NOTE: The views, opinions, and findings in this Research Note are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision unless so designated by other authorized documents.

Log File
Interim Report

REPORT DOCUMENTATION PAGE

1. REPORT DATE (dd-mm-yy) July 1998			2. REPORT TYPE Interim report		3. DATES COVERED (from... to)	
4. TITLE AND SUBTITLE The Effects of Proximal and Distal Goals					5a. CONTRACT OR GRANT NUMBER MDA903-93-K-0016	
					5b. PROGRAM ELEMENT NUMBER PE0601102A	
6. AUTHOR(S) Elizabeth Weldon					5c. PROJECT NUMBER 20161102B74F	
					5d. TASK NUMBER 1902	
					5e. WORK UNIT NUMBER C01	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Indiana University					8. PERFORMING ORGANIZATION REPORT NUMBER ARI-6	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Research Institute for the Behavioral and Social Sciences 5001 Eisenhower Avenue Alexandria, VA 22333-5600					10. MONITOR ACRONYM ARI	
					11. MONITOR REPORT NUMBER Research Note 98-22	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.						
13. SUPPLEMENTARY NOTES This article has been supplied to the <u>Journal of Applied Psychology</u> .						
14. ABSTRACT (Maximum 200 words): I hypothesized that team members working toward proximal and distal goals would perform better than teams working towards distal goals alone, because team members would invest more time and energy in efforts to develop effective task strategies. As expected, team members in the proximal-plus-distal goal condition performed better than those in the distal-goal condition, and strategy development mediated this effect. Results also showed that goal level was an important mediator. Group members in the proximal-plus-distal goal condition set more difficult goals, which led to better performance, compared to those who set distal goals alone.						
15. SUBJECT TERMS goals, proximal, distal, goal commitment, strategy development						
SECURITY CLASSIFICATION OF			19. LIMITATION OF ABSTRACT Unlimited	20. NUMBER OF PAGES 27	21. RESPONSIBLE PERSON (Name and Telephone Number) Michael Drillings (703) 617-8641	
16. REPORT Unclassified	17. ABSTRACT Unclassified	18. THIS PAGE Unclassified				

Table of Contents

Acknowledgements	Pg.1
Abstract	Pg. 2
Methods	Pg. 5
Results	Pg. 10
Discussion	Pg. 14
References	Pg. 17
Tables and Figures	Pg. 19

Running head: THE EFFECTS OF PROXIMAL AND DISTAL GOALS

The Effects of Proximal and Distal Goals on Strategy Development
and Group Performance

Elizabeth Weldon

Indiana University

Author Note

Elizabeth Weldon, School of Business, Indiana University.

This research was supported by a grant from the Army Research Institute (contract# MDA903 93 K 0016) to Edwin A. Locke and Elizabeth Weldon, Co-principle Investigators.

Correspondence concerning this article should be addressed to Elizabeth Weldon, who is now at the Department of Management of Organizations, The Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, HONG KONG. Electronic mail may be sent via Internet to mnweldon@usthk.ust.hk.

Abstract

I hypothesized that team members working toward proximal and distal goals would perform better than teams working toward distal goals alone, because team members invest more time and energy in efforts to develop effective task strategies. As expected, team members in the proximal-plus-distal goal condition performed better than those in the distal-goal condition, and strategy development mediated this effect. Results also showed that goal level was an important mediator. Group members in the proximal-plus-distal goal condition set more difficult goals, which led to better performance, compared to those who set distal goals alone.

The effects of proximal and distal goals on strategy
development and group performance

Several studies show that setting proximal performance goals in addition to distal goals can produce better performance than distal goals alone (Bandura & Simon, 1977; Bandura & Schunk, 1981; Morgan, 1985; Latham & Seijts, in press). Distal goals define the ultimate level of performance to be achieved, and proximal goals define preliminary levels of performance to be achieved while working toward the distal goal.

Although Bandura (1997, chp. 4) has described several motivational and self-referent processes believed to produce this effect, research has focused on only a few. In this study, I extend our understanding of proximal and distal goals by testing one more.

Mediating processes

Bandura (1997, chp. 4) suggests that proximal plus distal goals produce better performance than distal goals alone, because a) proximal goals create a sense of immediacy which reduces procrastination; b) proximal goal attainment provides a clear mark of progress that increases feelings of accomplishment, which increases motivation; c) proximal goal attainment increases perceived efficacy for attaining the distal goal, which increases effort and persistence; d) proximal goal attainment leads to a sense of mastery and causal agency that increases intrinsic interest in the task; and

The effects of proximal

e) proximal goals provide benchmarks used to evaluate progress toward the distal goal so that workers can develop more effective task strategies when their progress indicates that the distal goal will not be met. Existing research has tested the effects of self-efficacy (Bandura & Schunk, 1981; Latham & Seijts, in press; Stock & Cervone, 1990), intrinsic interest (Bandura & Schunk, 1981; Morgan, 1985), and persistence (Bandura & Schunk, 1981), and shown that these variables do mediate the proximal goal effect. In this study, I extend our understanding of proximal goals by testing the role of strategy development. Based on Bandura's belief that proximal goals provide opportunities for workers to evaluate their progress toward the distal goal and adjust their strategies when necessary, I hypothesized that team members working toward proximal and distal goals would perform better than teams working toward distal goals alone, because team members invest more time and energy in efforts to develop more effective task strategies. Although distal goals alone will motivate some strategy development (Weingart & Weldon, 1991; Weldon, Jehn & Pradhan, 1991), group members working toward proximal goals should engage in more, and increased strategy development should lead to better performance.

The hypothesized model is shown in Figure 1. The mediating role of strategy development and three control variables are shown. Baseline performance was controlled to reduce variation in strategy development and post-goal performance unrelated to the goal manipulation to increase the likelihood that significant effects were

The effects of proximal uncovered. Goal level and team efficacy (beliefs about how well the group can execute the actions required to deal with a prospective situation, Bandura, 1986, chp. 9) were controlled to assess the impact of strategy development on performance caused by the manipulation independent of their effects. Studies of individual goals show that the level of efficacy that exists at the time goals are set influences strategy development and also has an independent impact on performance (Locke & Latham, 1990, chp. 13). Research at the team level shows that goal level influences strategy development and has an independent effect on performance (Weldon, et al., 1991). Thus, controlling for these two variables allowed me to assess the impact of strategy development on performance independent of their effects.

Methods

Participants

Nineteen teams of nurse surveyors employed by a State Department of Health participated. Each team was composed of three to five nurses who work together to inspect nursing homes and homes for the developmentally disabled to ensure that state and federal regulations governing their operation are met. These nurses work together to plan the inspection, perform the inspection, and write a report to document their findings. This documentation must meet the principles of documentation published by state and federal regulatory agencies. These principles provide a set of categories that the surveyors use to categorize each deficiency (i.e., each deviation from the

The effects of proximal regulations), guidelines for writing documentation to support their claim, and guidelines for grammar and punctuation. Each report is sent to a quality control reviewer, who checks to see that each deficiency has been categorized properly, that documentation for each deficiency meets the principles of documentation, and that grammar and punctuation are correct. Any deviations from the principles for documentation and acceptable grammar and punctuation must be corrected by the survey team. The quality reviewer can not make any change on the report. Management hoped that performance goals could be used to decrease rework by increasing the accuracy of the original report. Accuracy was defined as the percentage of the total number of deficiencies reported where the documentation was completely correct.

Procedures

Meetings. Over the course of 15 months, I met with each team three times. At the first meeting, I explained that the Department of Health hoped to increase the accuracy of survey documentation, and hoped that each team would participate in a study to determine effective ways to do that. I described the study; told them that I would meet again with teams that agreed to participate; and then asked team members to work together to complete a questionnaire measuring team efficacy. All nineteen teams in the department agreed to participate.

At the second meeting I gave team members feedback about their current level of accuracy, and then asked them to set a goal for the level of accuracy they believed

The effects of proximal the group could attain over the next six to nine months, and indicate when they thought it could be achieved. For the ten teams in the proximal-plus-distal-goal condition, I explained that they would set a long term performance goal (the level of performance they would ultimately achieve over the six to nine months) and one or two short term goals to serve as intermediate steps. The nine teams in the distal-goal condition set only a long term goal. At this meeting, I also asked teams members if they would like to have feedback about their subsequent work, and every team asked for information about the accuracy of their documentation after each survey. I talked to the department supervisor, and she assured me that this feedback would be forthcoming.

At the third meeting, I asked each team to describe any problems they had experienced and checked to see that timely feedback was being received. These discussions indicated that feedback was in fact being received.

The first set of meetings took place within a three-week period, but the second set was spread over six months to minimize the confounding effects of other events. The third meeting took place about six weeks after the second.

Questionnaires. Participants completed three questionnaires. The first measured team efficacy and several variables unrelated to this study. The second one measured the manipulation check, and the third measured goal commitment and strategy development. The first questionnaire was completed at the first meeting. The second questionnaire was completed approximately two weeks after goals were set,

The effects of proximal and the third one was completed after the third meeting and about one month before the ultimate goal was to be achieved (i.e., four to eight months after the goal was set). The second and third questionnaires were distributed at regularly scheduled department meetings. Team members put their questionnaires in a sealed envelope and handed them directly to me.

Measures

Manipulation check. Team members were asked to report the goal set by the team and to indicate the extent to which they agreed with these two statements: "We set specific near term objectives that led to our long term objective" and "We set near term objectives to help us achieve our long term objective" (7-point scale, strongly disagree to strongly agree). Responses to these two items were averaged to create one variable (CHECK).

Goal commitment. Commitment to goal attainment (COMMIT) was measured with the eight-item scale developed by Hollenbeck, Klein, O'Leary and Wright (1989).

Strategy development. Strategy development (STRATDEV) was measured with six items asking each group member to indicate the extent to which she talked to other group members to develop solutions to work problems, better ways to do their work, and ways to increase the accuracy of survey documentation, and the extent to which team members met as a group to discuss these issues. Responses were averaged across items to create an individual score and averaged across group members to

The effects of proximal produce a group score. A measure of within team agreement (r_{wg}) justified this aggregation. r_{wg} measures the extent to which group members report similar levels of a construct (James, Demaree & Wolf, 1984; George, 1990). When agreement is high (at least .70) aggregation of individual responses to produce a group level variable is justified. r_{wg} for strategy development equaled .75.

Post-goal performance. Post-goal performance (PGPERF) was defined as the accuracy of the documentation (i.e., percent of all deficiencies reported where the documentation was completely correct) after the goal setting intervention. Post-goal performance was measured by averaging the accuracy scores for the survey performed immediately before the distal goal was scheduled to be achieved and the two immediately following.

Control variables. Baseline performance (BLPERF) was measured by the average accuracy for the last five surveys before goals were set. Team efficacy (EFFICACY) was measured using the method described by Locke and Latham (1990, chp. 3). Working together, team members indicated the team's ability to meet various levels of accuracy expressed as a percentage in 10% increments (yes or no) and their confidence in that judgement. The magnitude and confidence judgements were converted to z-scores and summed to produce a measure of efficacy. Goal level is the actual value of the distal goal set by the team (i.e., percent accuracy to be achieved).

Analyses

The analyses proceeded in three steps. First, I analyzed the manipulation check and goal commitment to be sure that the manipulation produced the desired result and that goal commitment was equal across conditions. Second, pre-goal and post-goal performance were compared to be sure that the standard goal setting effect was achieved (i.e., introducing performance goals led to improved performance). Third, I performed a test for mediation involving linear and additive causal relations using the logic described by James and Brett (1984). This test for mediation includes three steps (James & Brett, 1984): the direct effect of the independent variable on the mediator is assessed; the direct effect of the mediator on the dependent variable is assessed; and if both correlations are significant, the effect of the independent variable on the dependent variable with the mediator held constant is assessed. Partial mediation is indicated when this partial correlation is significant but reduced. When the partial correlation is not significant, complete mediation can be inferred.

Results

Table 1 shows means and standard deviations for all variables broken down by goal condition.

The effects of proximal

Manipulation check and goal commitment

A t test with the degrees of freedom adjusted for unequal variances showed that group members in the proximal-plus-distal-goal condition agreed more strongly that they had set proximal goals compared to those in the distal-goal condition ($t = 22.05$; $df = 53.5$; $p < .001$). A t test for goal commitment was not significant ($t = .17$; $df = 66$; ns).

Group goal effect

A paired samples t test showed that on average team performance improved after goals were set ($M_{BLPERF} = 25.68$; $sd = 16.95$; $M_{PGPERF} = 61.26$; $sd = 12.17$; $t = 15.9$; $df = 18$; $p < .01$).

Mediating processes

Before testing for mediation using the control variables, I considered the zero-order correlations shown in Table 2, and found that the correlation between goal level and condition was moderately large and almost significant. To test the possibility that a significant correlation between these variables would be revealed when unrelated variance was controlled, I calculated the partial correlation between condition and goal level controlling for baseline performance and team efficacy. This calculation produced a significant result ($r = .56$; $df = 15$; $p < .01$), suggesting the model shown in Figure 2. The order of the variables corresponds to the order that the manipulation and goal setting took place and strategy development and performance were measured. It is also consistent with the zero-order correlations.

The effects of proximal

To test the revised model (Figure 2), I calculated the correlation between condition and post-goal performance controlling for team efficacy and baseline performance to be sure that a significant effect had been achieved. Results showed that condition had a significant effect on post-goal performance when variation associated with baseline performance and team efficacy is removed ($r = .62$; $df = 15$; $p < .01$).

To test for mediation, I broke the model into two mediated relationships (condition $\rightarrow$ goal level $\rightarrow$ strategy development and goal level $\rightarrow$ strategy development $\rightarrow$ performance), and tested each one. To test the first part, I calculated the correlation between condition and goal level, controlling for team efficacy and baseline performance; the correlation between goal level and strategy development, controlling for team efficacy and baseline performance; and calculated the correlation between condition and strategy development, controlling for team efficacy and baseline performance, and compared it to the correlation between them when goal level is also controlled. To test the second part, I calculated the correlation between strategy development and performance, controlling for team efficacy and baseline performance; and compared the correlation between goal level and performance, controlling for team efficacy and baseline performance, to the correlation between them when strategy development is also controlled. These partial correlations are shown in Table 3.

The effects of proximal

As Table 3 shows, the correlations between condition and goal level and goal level and strategy development are both significant, when the effects of team efficacy and baseline performance are controlled. It also shows that the correlation between condition and strategy development drops substantially when goal level is also controlled. However, the partial correlation is still moderately large and borders on significance. Table 3 also shows that although the zero-order correlation between strategy development and performance is significant (see Table 2), the correlation between them is not when the effects of team efficacy and baseline performance are controlled, although this partial correlation is moderately large. Consistent with this result, the correlation between goal level and post-goal performance changes very little when strategy development is controlled.

Finally, I compared the correlation between condition and performance with the control variables partialled out to the correlation between them when the control variables, goal level and strategy development are all controlled. Results showed that the correlation dropped from .62 ($df = 15$; $p < .01$) to .48 ($df = 13$; $p < .05$), indicating that goal level and strategy development account for some but not all of the effect of condition on post-goal performance.

Discussion

This study produced three important results. First, as expected, setting proximal goals in addition to distal goals produced better performance than distal goals alone. Second, this effect is due in part to the impact of condition on goal level. This unexpected result may have been produced by the method group members used to set their goals. I asked team members to set a distal goal that could be achieved in six to nine months. I expected team members in the proximal-plus-distal-goal condition to set a distal goal and then work backwards to set proximal goals leading to the distal goal. But they worked forward instead, setting progressively more difficult goals to arrive at the distal goal, and it seems that this procedure led group members to adopt a longer time-frame. Subsequent investigation showed that on average team members in the proximal-plus-distal-goal condition expected to achieve their distal goal in almost nine months versus seven months for teams in the distal-goal condition. Thus, it seems that this forward goal setting procedure led group members in the proximal-plus-distal goal condition to adopt a longer time frame and set more difficult goals compared to group members who set distal goals alone. If so, telling group members to set their distal goal first and then set proximal goals might eliminate the effect of condition on goal-level and produce a less desirable result. The impact of a forward versus backward goal setting procedure on time-frame and goal level should be tested in future research.

The effects of proximal

Third, consistent with previous studies (Weldon et al., 1991) group members who set higher goals spent more time developing strategies to improve performance. However, contrary to previous results (Weldon, et al., 1991), a significant correlation between strategy development and performance was not found. Although this result suggests that strategy development did not contribute to improved group performance, two pieces of evidence argue against that conclusion. First, the correlation was moderately large and neared significance, suggesting that teams engaging in more strategy development did perform better. Second, interviews with team members, their supervisors, and the department head indicate that strategy improvement did play an important role. For example, one team in the proximal-plus-distal-goal condition worked with its quality review person to develop a series of "cheat sheets" that listed the correct approach to its most frequent errors. In the past, team members did not check the manual for the right answer, but guessed instead. These "cheat sheets" spread to other teams through the team's supervisor, who instituted the innovation in other teams under her direction, and then told other supervisors, who also adopted the change. Similarly, another team changed the procedure for transferring reports to their quality control reviewer to reduce the time and effort required to perform that task, which allowed them to invest more time and energy in the production of an accurate report. This change also spread to other teams. Thus, strategy development improved performance, but a strong correlation between strategy development and performance

The effects of proximal was not found, because all teams benefited from strategies developed by any one team.

Future research

In the future, researchers might a) study different types of teams to test the generalizability of these results; b) test the impact of strategy development on performance in situations where the diffusion of strategy improvements can be controlled; and c) use path analysis with a larger sample to test the complete model shown in Figure 2. A path analysis would provide useful information about the roles that team efficacy and baseline performance play in the proximal goal effect.

Implications for practice

These results suggest that managers should use proximal goals in addition to a distal goal when goal setting interventions are used to improve group performance. Managers should also encourage the use of a forward goal-setting procedure, and be sure that improvements to work procedures are transferred across teams.

References

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1997). Self efficacy: The exercise of self control. New York: Freeman.

Bandura, A. & Schunk, D. (1981). Cultivating competence, self efficacy, and intrinsic interest through proximal self motivation. Journal of Personality and Social Psychology, 41, 586-598.

Bandura, A. & Simon, K. (1977). The role of proximal intentions in self regulation of refractory behavior. Cognitive Therapy and Research, 1, 177-193.

George, J. (1990). Personality, affect, and behavior in groups. Journal of Applied Psychology, 75, 107-116.

Hollenbeck, J., Klein, H., O'Leary, A., & Wright, P. (1989) Investigation of the construct validity of a self report measure of goal commitment. Journal of Applied Psychology, 74, 951-956.

James, L. & Brett, J. (1984). Mediators, moderators and tests for mediation. Journal of Applied Psychology, 69, 307-321.

James, L., Demaree, R., & wolf, G. (1984). Estimating within group inter rater reliability with and without response bias. Journal of Applied Psychology, 69, 85-98.

The effects of proximal

Latham, G. P. & Seijts, G. H. (In press). The effects of proximal and distal goals on performance on a moderately complex task. Journal of Organizational Behavior.

Locke, E. A. & Latham, G. P. (1990). A theory of goal setting and task performance. Englewood Cliffs, NJ: Prentice Hall.

Morgan, M. (1985). Self monitoring of attained subgoals in private study. Journal of Educational Psychology, 77, 623-30.

Stock, J. & Cervone, D. (1990). Proximal goal setting and self regulatory processes. Cognitive Therapy and Research, 14, 483-489.

Weingart, L., & Weldon, E. (1991). Processes that mediate the relationship between a group goal and group member performance. Human Performance, 4, 33-54.

Weldon, E., Jehn, K. A. & Pradhan, P. (1991). Processes that mediate the relationship between a group goal and improved group performance. Journal of Personality and Social Psychology, 61, 555-569.

Table 1

Means, standard deviations and inter-rater agreement

Variable	Condition	
	Proximal-plus-distal	Distal only
CHECK	6.54 (.61)	1.74 (1.12)
COMMIT	6.15 (.87)	6.11 (.86)
STRATDEV	6.62 (.27)	5.97 (.71)
PGPERF	65.88 (11.45)	57.10 (11.80)
BLPERF	26.00 (16.43)	25.40 (18.25)
GOAL LEVEL	68.33 (12.50)	59 (13.49)
EFFICACY	.316 (1.80)	.285 (2.17)

Note. Standard deviations are shown in parentheses.

Table 2

Zero order correlations

	1	2	3	4	5
1. CONDITION					
2. STRATDEV	.53**				
3. PGPERF	.37	.56**			
4. BLPERF	.02	.48**	.83**		
5. GOAL LEVEL	.35	.69**	.87**	.79**	
6. EFFICACY	.16	.30	.52*	.47**	.38

Note. df = 17

*p < .05 (one-tailed).

**p < .01 (one-tailed).

Table 3

Correlations used to test for mediation

Effect	Covariates	Value	df	p
1. CONDITION WITH	BLPERF			
GOAL LEVEL	EFFICACY	.56	15	.009
2. GOAL LEVEL WITH	BLPERF			
STRATDEV	EFFICACY	.58	15	.008
3. CONDITION WITH	BLPERF			
STRATDEV	EFFICACY	.59	15	.006
4. CONDITION WITH	BLPERF			
STRATDEV	EFFICACY			
	GOAL LEVEL	.39	14	.066
5. STRATDEV WITH	BLPERF			
PGPERF	EFFICACY	.31	15	.10
6. GOAL LEVEL WITH	BLPERF			
PGPERF	EFFICACY	.64	15	.0025
7. GOAL LEVEL WITH	BLPERF			
PGPERF	EFFICACY			
	STRATDEV	.60	14	.005

The effects of proximal

Figure 1. Effect of condition on strategy development and performance.

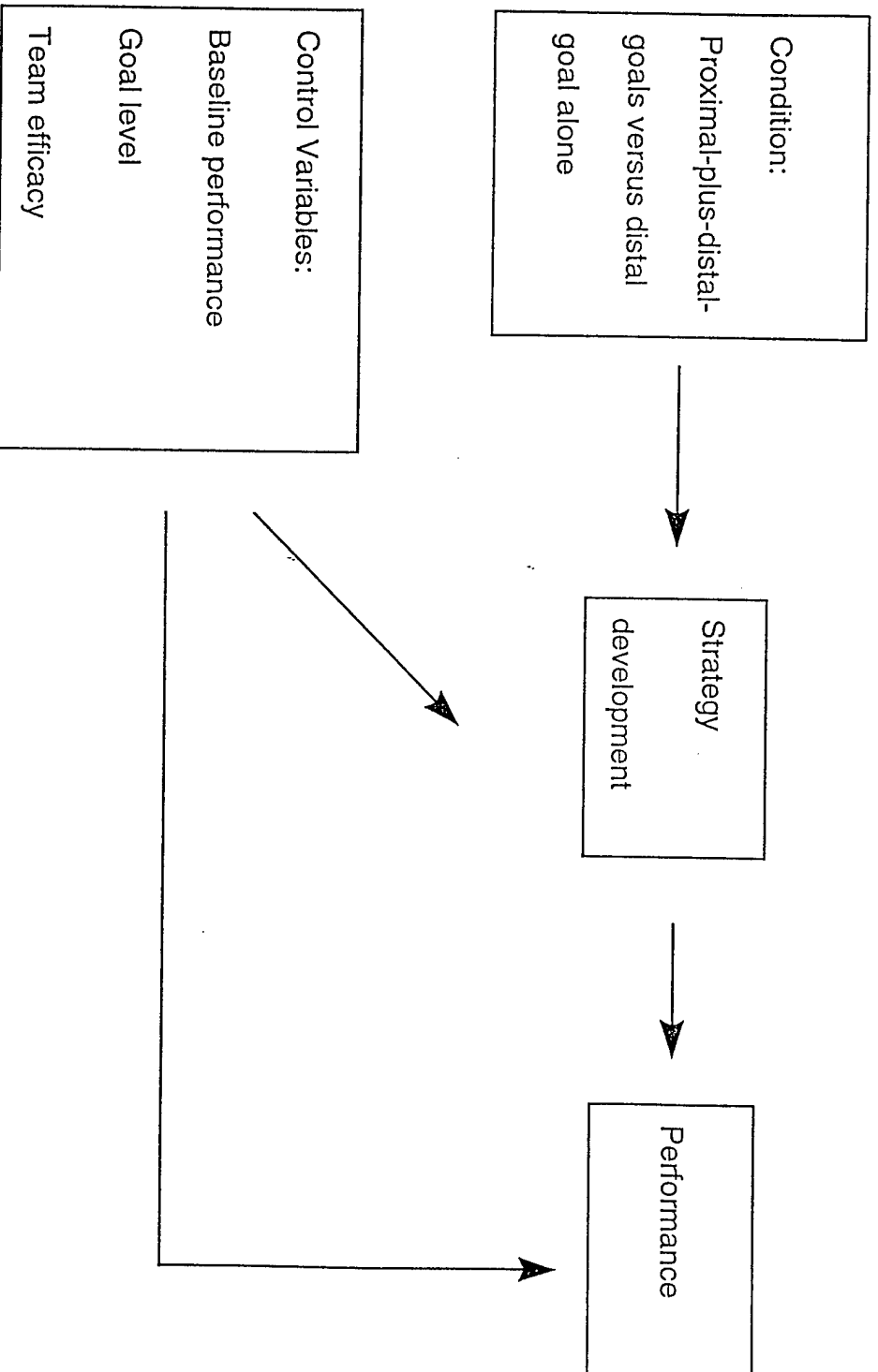


Figure 2. Revised model.

