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GOAL-SETTING, SUPERVISORY BEHAVIOR, AND EMPLOYEE
TURNOVER: A FIELD EXPERIMENT

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report summarizes in tabular form the results of 104 empirical studies of employee absenteeism. Summary information is provided for each study, including: 1) the specific factor under study; 2) the investigators; 3) the nature of the sample; 4) the sample size; 5) whether the study was a group or individual design; 6) the types of absence measures used; and 7) the findings. Study findings are further categorized by factor. The summary tables are intended to serve as a reference document. It is hoped that the availability of this document will facilitate more integrative research on the subject of employee absenteeism.		

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ABSTRACT

↙ This study examines the effects of experimentally introducing a participative goal-setting program aimed at reducing employee turnover in fifty branches of a West Coast bank. One half the branches received the goal-setting treatment (focusing on employee development goals), while the matched control groups received no treatment. Results showed that, for those branches that implemented the goals, turnover was reduced significantly compared to the matched control groups. Moreover, the extent to which the goals were actually implemented was found to be influenced by the efficiency level of the individual branches. Results are discussed in the light of relevant goal-setting and turnover literature. ↲

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Goal-Setting, Supervisory Behavior, and Employee Turnover:

A Field Experiment

Turnover has been the object of extensive investigation in organizational behavior. One reason for this has been organizations' concern over the dysfunctional consequences of high turnover rates. In addition, turnover is a specific behavior, easily measured, with interesting implications for both practitioners and theorists (Price, 1977). Although studies of employee turnover abound, the vast majority of these have been correlational in nature. While this literature is helpful in identifying potential determinants of turnover, a more pressing question concerns the extent to which variables can be manipulated to produce a change in turnover rates. It is the purpose of this study to examine the effects of such a change in increasing employee retention in an organization characterized by excessive turnover.

Past research has generally focused on the consistent negative relationship between job satisfaction and turnover (Brayfield and Crockett, 1955; Herzberg, Mausner, Peterson, and Capwell, 1957; Mobley 1977; Porter and Steers, 1973; Vroom, 1964). More specific associations with turnover have also been identified. For example, supervisory style has been linked to employee retention rates. Subordinates with a satisfactory relationship with their supervisor are more likely to stay with the organization (Fleishman and Harris, 1962; Hulin, 1968; Telly, French and Scott, 1971). Recognition and feedback are also related to increased retention levels (Ross and Zander, 1957). In one study (Bassett, 1967), the more experienced supervisors had subordinates who tended to stay longer with the company. Another set of factors concerning the job itself also correlates with turnover. Task variety tended to be

negatively associated with turnover rates (Guest, 1955; Wild, 1970). Those jobs which involved more autonomy and responsibility tended to retain workers longer (Walters and Roach, 1971). In addition to these correlational studies, a relatively small number of field experiments have been conducted on the effects of realistic job preview on turnover (e.g., Wanous, 1973). While these latter experimental studies have useful implications for selection and training procedures, there is still a need to study how an organization may reduce turnover of employees already on the job.

It is clear from this research that many approaches could be taken to reduce turnover, depending on the situation. The attempt in the present study was to focus on the potential effects of goal-setting (as it related to employee development) on reducing turnover. It was hypothesized, based on the literature, that the implementation of such a goal setting program---if accepted--- would lead to a reduction in employee attrition. Locke (1968) has proposed that increased goal specificity would result in higher goal attainment, assuming the goals are accepted. Subsequent investigations have generally supported this proposition (e.g., Latham and Yukl, 1975; Steers and Porter, 1974). In addition, it has been found that the success of the goal setting process in many cases is affected by participation (Ivancevich and McMahon, 1977; Latham and Yukl, 1975a; Steers, 1975). For the most part, however, these studies have concentrated on performance as the dependent variable. The goal-setting process as a possible method of reducing turnover has not been thoroughly explored. Hence, the present study was designed to shed light on this neglected application. Goals were participatively set by supervisors which specifically related to the development of their subordinates as contributing

members to the organization. It was expected that implementation of these goals would result in a reduced subordinate turnover rate.

Bank tellers were chosen as the subjects of the experiment for two reasons. First, tellers have a high turnover rate, frequently on the order of 50% annually. While the particular bank chosen has a turnover rate comparable to that of its competitors, top management nonetheless felt that it was too high and consequently detrimental to the effective operation of their organization. Second, the bank was composed of similar but physically separated working units (branches) which facilitated a matched group experimental design with little chance of confounding interaction between the experimental and control groups.

METHOD

Sample Selection

Fifty branch offices of a major west coast bank were selected for the experiment. The branches ranged in size from two to fifteen tellers, and represented a broad spectrum of locations and clienteles. Twenty-five pairs were matched by size, location (residential vs. commercial), and average income level of their depositors. The branches from each pair were then assigned randomly to either a control or experimental group.

Preliminary Data

Before the experiment, pilot data were gathered on tellers and their jobs. Twenty-four tellers and six branch managers (from a total of fifteen branches) were interviewed to determine what, if any, recurring themes in the teller's work environment might be associated with his or her decision to stay with or leave the organization. Generally, the tellers were concerned with such matters

as professional growth and development, working conditions, relationships with their supervisor, and communication to and from management.

In addition to these interviews, a questionnaire was administered to the tellers in each of the fifty branches. Questions focused on the issues revealed by the interviews, but also included were job attitude items and a question concerning how long the tellers intended to stay with the bank. With 60% of the questionnaires returned, responses supported the data from the interviews. Particularly strong was the association between supervisor relations and intended length of stay with the bank. These findings confirmed the investigators' feeling that one important way to influence the pivotal factors governing turnover (as perceived by the tellers questioned) would be through the supervisor.

The Supervisor Workshop

Supervisors from the experimental branches attended two workshops on teller turnover and its causes. At the first meeting, the workshop facilitators (composed of both training personnel from the bank and the project researchers) asked the supervisors to identify issues that they felt were contributing to the problem of turnover. These issues were discussed in light of what emerged from the preliminary interviews and questionnaires. Each supervisor was then asked to return to his or her branch and discuss the issues and their possible solutions with the tellers and managers.

At the second meeting (one week later), the supervisors discussed the reactions of the branch personnel to their ideas. They generated several possible specific goals which they felt could be reasonably accomplished within a four month period (the time allotted for this study), and which they felt would have a reasonable chance of improving the turnover rate.

Three of these goals were finally agreed upon by the supervisors at the workshop:

- 1) Meet informally with each teller individually at least once during the next three months. The purpose of this goal was multifaceted. In general, it provided an opportunity for the supervisor to focus on the personal needs, questions and complaints of each teller. In addition, the teller could receive feedback on his or her performance. The exact format and content of these meetings, however, were left up to the supervisor to work out mutually with the tellers.
- 2) Meet with the tellers as a group at least four times during the next three months. This goal was similar to the first in many respects: it provided a forum for the exchange of questions, information, and recognition. In addition, work group issues could be discussed and resolved. Again, the content and format of these meetings were left up to the supervisors to handle in a flexible way the needs of the particular branch.
- 3) Set up a specific cross-training schedule for those who desire cross-training as part of their job. (Cross-training involves allowing tellers the opportunity to become skilled at a number of functions within the branch). It was anticipated from the interviews and questionnaires that somewhere between one quarter and one half of the tellers would want such an opportunity. The supervisors felt that those tellers who were not ambitious or career oriented would probably consider cross-training an encumbrance, and therefore should be omitted from the implementation of this goal. For those who did want this opportunity, however, it was anticipated that the experience would be valued highly as a way of breaking up the monotony of teller work as well as a stepping stone toward advancement possibilities.

A reward was promised to all supervisors who successfully attained all three goals. The formal reward was to be a letter of commendation (to be placed in the supervisor's personnel file), along with recognition at a breakfast given an honor of all the participants by the regional vice presidents. Additionally, it was made clear to the supervisors that this project had the full endorsement of the top management of the bank and that there would be substantial recognition if they were successful in implementing the program.

In order to discover the extent to what the branches in the experimental group actually implemented each of the goals, questionnaires were sent at the conclusion of the intervention to the tellers who had participated in the experiment. They were asked whether or not they had been involved in the activities specified in the goals. A branch was considered to have met a goal if and only if, more than half of the respondents indicated that they had been involved in the specific activity during the intervention period.

RESULTS

Turnover data were obtained directly from the personnel department at bank headquarters. The results are shown in Table 1. As can be seen, the implementation of goals relating to employee development led to a lower branch turnover rate compared to the matched control counterpart (at the .05 level).¹

INSERT TABLE 1 ABOUT HERE

¹Of the twenty-five experimental branches, only individuals in twenty branches responded to the implementation questionnaires. The remaining five were ignored for this part of the analysis. Also, implementation of only two of the goals was used to predict turnover differences. The third goal, that of setting up a cross-training schedule for those who wanted it, was omitted for two reasons:

1. The fact that no tellers, or few tellers, were involved in this goal does not necessarily indicate that the supervisor did not in fact live up to the agreement made at the workshop. Consequently, the measure of attainment of this goal was deemed to have questionable validity.
2. While the implementation of this cross-training goal was positively associated with lower turnover, it added little to the overall predictive power of the other two goals. Specifically, in Table 1, if another column had been added to accommodate the implementation of three goals instead of just two, the overall association between number of goals implemented and turnover would have been increased only from .370 to .397.

Specifically, all of the experimental branches which implemented both the group meeting goal and the individual meeting goal had lower turnover during the course of the study than the corresponding control branch. On the other hand, turnover rates in the five experimental branches which implemented neither of the goals in question were no different from the control group branches, as would be expected in a random assignment. The difference in turnover rates was not improved noticeably in the groups which implemented only one of the goals. However, the strength of the success of those branches which implemented both goals was sufficient to produce a significant overall association between number of goals and implemented and turnover (Kendall's Tau = .37, $p < .05$).

The raw turnover data in Table 2 confirm the same trend. The experimental branches which implemented either none or only one of the goals did not show a (statistically significant) difference in turnover when compared to the matching control groups. However, those experimental branches which implemented at least two goals had a turnover rate which was one fifth the rate of the control counterparts (experimental turnover = 5% vs. control turnover = 26%, $p < .01$).

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INSERT TABLE 2 ABOUT HERE
- - - - -

The Effect of Efficiency

The question of why some branches chose to participate actively in the experiment while others refrained may be due to several local and independent reasons. It was observed at the supervisor workshops, however, that some supervisors were less enthusiastic about the nature of the experiment than others. Their major objection was the amount of time it would take out of

an already crowded working day. While the researchers did not measure directly how the supervisors responded in each case to this issue, they did have an indicator of "branch efficiency" (as computed monthly by the bank). This index is calculated by dividing the amount of work actually accomplished (number of checks processed, etc.) by the amount of work which should have been accomplished if everyone had been working at a standard efficiency level. Branches then could be identified as either high in efficiency (i.e., the output exceeded the standard) or low in efficiency.

As Table 3 shows, this efficiency rating is useful in predicting the number of goals implemented (overall association: Kendall's Tau = .45, $p < .05$).

INSERT TABLE 3 ABOUT HERE

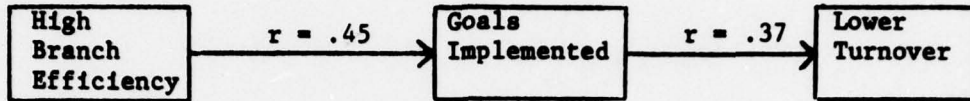
Only one of the nine low efficiency branches completed both goals, whereas over one third of the high efficiency branches were able to do so. Conversely, only one of the eleven high efficiency branches failed to meet either goal, while almost half (four out of nine) of the low efficiency branches failed to do so.

As one would expect, efficiency is also a reasonable predictor, then, of turnover. Table 4 shows that nearly two-thirds of the high efficiency experimental branches had lower turnover than their matched control branch, while only two of the fourteen high efficiency branches had higher turnover. The low efficiency branches were evenly split: half had lower turnover than their control counterparts, while half had higher turnover (again, as would be expected in a random assignment). The overall association between turnover and efficiency was a modest $r = .27$ ($p < .10$).

INSERT TABLE 4 ABOUT HERE

The model suggested by the data from this experiment is:

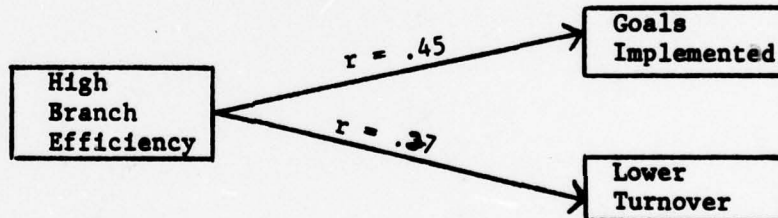
Model 1:



This model is supported by the overall correlations at both the links (from Tables 1 and 3), as well as the contingency table showing the comparison in turnover for those branches with both goals implemented (Table 2).

It could be argued however, that branch efficiency is the controlling variable, predicting both number of goals and turnover, thus obviating the need for goals as an intermediate variable. This possibility is represented in the following model:

Model 2:



The comparative strength of these models can be evaluated with the use of partial rank order correlations (Siegel, 1956):

Tau	(between turnover and goals implemented, partialling out efficiency)	=.34
Tau	(between turnover and efficiency, partialling out goals implemented)	=.15

These figures indicate that controlling for efficiency does little to undermine the primary relationship between turnover and goals implemented, as posited by Model 1. Additionally, if Model 2 were correct, then the relationship between efficiency and turnover would be unaffected by controlling for number of goals. In fact, however, this correlation is almost cut in half when so controlled. It was thus concluded that the implementation of the goals was a substantially stronger predictor of turnover than branch efficiency, and that Model 1 was therefore more strongly supported than the alternative Model 2.

DISCUSSION

The purpose of this investigation was to determine whether turnover could be reduced by the implementation of an employee development goal setting program. Results reported here suggest that such a program can indeed reduce turnover rates compared to a matched control group. The experimental branches which met their goals in the areas of group meetings and individual counseling sessions during the course of the experiment had significantly lower turnover than their control counterparts. Both the magnitude (5% vs. 26%) and the significance ($p < .01$) of this difference were substantial, indicating that the implementation of these goals was a major contributor to the reduction in turnover in the experimental branches. Such findings are consistent with both Locke's (1968) theory and subsequent studies (Latham & Yukl, 1975).

This conclusion must be tempered by two observations, however. First, the number of branches involved in this comparison is small (5 experimental, 5 control), as is the number of tellers leaving (2 in the experimental, 12 in the control group). While the probability level is sufficient to leave one confident that such a difference did not occur by chance, it is not clear how much of the difference is attributable to the intervention and how much may have been due to random fluctuations. Second, neither goal by itself made a

noticeable difference in turnover rates. It was anticipated that the goals would be additive; instead, it would appear that there may have been an interactive effect between them.

A question of the generalizability of these results is raised by use of a multiple-stage intervention strategy which is inherent in action research. In particular, the process of allowing the supervisors to derive their own goals cannot be separated from the content of the goals. If the goals had been imposed rather than arrived at through participation and group consensus, results may have been less dramatic (see, e.g., Latham & Yukl, 1975; Steers & Porter, 1974). A participative goal setting model would argue that it is the democratic process of arriving at the goals which is important.

Some of the supervisors did not implement even one of the goals, despite their verbal agreement to do so. This fact suggests that participation in the goal setting process was not sufficient by itself to induce implementation of the goals which would presumably result in subsequent higher retention. However, it cannot be ascertained from this study whether the mere assignment of these goals to the supervisors (and assuring implementation, by some means) without active participation in their choice would have been as effective at reducing turnover. In other words, it is possible that participation was a necessary but insufficient ingredient leading to the success of this experiment.

Perhaps somewhat puzzling, but nonetheless interesting, is the key role of branch efficiency as described in Model 1. One possible explanation here is that supervisors who are skilled at structuring the work efficiently at a branch are more likely to have the time to incorporate the implementation of the goals into their other tasks. However, according to the bank, variance in branch efficiency is not due to managerial or leadership skills, since personnel turnover produces little change in the efficiency ratings. Efficiency

appears to be a relatively stable branch characteristic, rather than a representation of the quality of the supervision. Hence, a more plausible explanation of its impact on the propensity of supervisors to implement the goals might be that high efficiency branches have more slack in their daily workload. They can take the time to have group meetings without jeopardizing their position as a branch producing "above standard" output. A low efficiency branch, however, might be concerned primarily with getting the day's work done; they may have less tolerance for supposedly "superfluous" interruptions such as those suggested by the intervention.

This raises another question about the possible replication of this study. If branches which were low on efficiency were "forced" to implement the goals, would they succeed in attaining the same reduction in turnover? Only one of the branches fell into this category (i.e., both low in efficiency and implementing two goals), and therefore no inference can be drawn from these data. However, given supervisors' voiced objections to the additional time commitment this project was going to take, it would be reasonable to expect that increased resentment and consequent dysfunctions would result from non-voluntary implementation. As an alternative, future attempts to reduce turnover using a similar intervention in this type of multi-branch organization might do well to include a preliminary stage aimed at improving the efficiency of below standard branches.

In conclusion, it would appear that it is possible to make changes in some of the correlates identified in the literature in order to reduce turnover. In addition, participative goal-setting was shown to be an effective technique for implementing selective goals aimed at manipulating these correlates under certain conditions. These conditions appear to be related to the amount of slack in the workload. When the proposed intervention did not interfere with the completion of the standard output for a working unit (i.e., there is slack

in the system), then goal setting had a high probability of succeeding at reducing turnover. From an organization's view, these findings suggest a potentially useful method for dealing with difficult and costly turnover problems. With a relatively low investment of time and money, the bank appeared to realize a substantial increase in retention rates. Although there are practical implications of this study, the usual caveats about further research being needed apply to this type of approach, so that the generalizability issues discussed earlier can be clarified and the replicability of these results can be determined on a broader scale.

REFERENCES

- Bassett, G. A. A study of factors associated with turnover of exempt personnel. Crotonville, N.Y. : Behavioral Research Service, General Electric Company, 1967.
- Brayfield, A. H. and Crockett, W. H., Employee attitudes and employee performance. Psychological Bulletin, 1955, 52, 396-424.
- Fleishman, E. A., and Harris, E. F. Patterns of leadership behavior related to employee grievances and turnover. Personnel Psychology, 1962, 15, 43-56.
- Guest, R. H. A neglected factor in labour turnover. Occupational Psychology, 1955, 29, 217-231.
- Herzberg, F., Mausner, B., Peterson, R. O., and Capwell, D. F. Job Attitudes: Review of research and opinion. Pittsburgh: Psychological Service of Pittsburgh, 1957.
- House, R. J., and Mitchell, T. R., Path-goal theory of leadership Journal of Contemporary Business, Autumn 1974, 81-97.
- Hulin, C. L. Job satisfaction and turnover in a female clerical population. Journal of Applied Psychology, 1966, 50, 280-285.
- Ivancevich, J. M., & McMahon, J. T. A study of task-goal attributes, higher-order need strength, and performance. Academy of Management Journal, 1977, 20, 552-563.
- Latham, G. P., and Yukl, G. A. Assigned versus participative goal setting with educated and uneducated woods workers. Journal of Applied Psychology, 1975, 60, 299-302. (a)

REFERENCES (Continued)

- Latham, G. P., and Yukl, G. A. A review of research on the application of goal setting in organizations. Academy of Management Journal, 1975, 18, 824-845. (b)
- Locke, E. A. Toward a theory of task motivation and incentives. Organizational Behavior and Human Performance, 1968, 3, 157-189.
- Mobley, W. H. Intermediate linkages in the relationship between job satisfaction and turnover. Journal of Applied Psychology, 1977, 62, 237-240.
- Porter, L. W., and Steers, R. M. Organizational, work, and personal factors in employee turnover and absenteeism. Psychological Bulletin, 1973, 80, 151-176.
- Price, J. L. The study of turnover. Ames, Iowa: The Iowa State University Press, 1977.
- Ross, I. C., and Sander, A. Need satisfaction and employee turnover. Personnel Psychology, 1957, 10, 327-338.
- Steers, R. M. Task-goal attributes, n achievement, and supervisory performance. Organizational Behavior and Human Performance, 1975, 13, 392-403.
- Steers, R. M., & Porter, L. W. The role of task-goal attributes in employee performance. Psychological Bulletin, 1974, 81, 434-452.
- Telly, C. S., French, W. L., and Scott, W. G. The relationship of inequity to turnover among hourly workers. Administrative Science Quarterly, 1971, 16, 164-172.

REFERENCES (Continued)

- Vroom, V. Work and motivation. New York: Wiley, 1964.
- Walters, L. K., and Roach, D. Relationship between job attitudes and two forms of withdrawal from the work situation. Journal of Applied Psychology, 1971, 55, 92-94.
- Wanous, J. P. Effects of realistic job preview on job acceptance, job attitudes, and job survival. Journal of Applied Psychology, 1973, 58, 327-332.
- Wild, R. Job needs, job satisfaction, and job behavior of women manual workers. Journal of Applied Psychology, 1970, 54, 157-162.

TABLE 1

TURNOVER (MATCHED PAIR COMPARISON) AS A FUNCTION OF
THE NUMBER OF GOALS IMPLEMENTED

TURNOVER (MATCHED PAIR COMPARISON)	NUMBER OF GOALS IMPLEMENTED IN EXPERIMENTAL BRANCHES		
	0	1	2
Number of pairs where the turnover in the experimental branch was <u>less than</u> the turnover in the matching control branch	2(40%)	5(50%)	5(100%)
Number of pairs where the turnover in the experimental branch was <u>equal to</u> the turnover in the matching control branch	1(20%)	1(10%)	0(0%)
Number of pairs where the turnover in the experimental branch was <u>greater than</u> the turnover in the matching control branch	2(40%)	4(40%)	0(0%)
Total number of pairs	5(100%)	10(100%)	5(100%)

Kendall's
Tau = .37
p < .05

TABLE 2
TURNOVER (RAW DATA) AS A FUNCTION OF THE
NUMBER OF GOALS IMPLEMENTED

<u>TURNOVER (RAW DATA)</u>	<u>NUMBER OF GOALS IMPLEMENTED</u> <u>IN EXPERIMENTAL BRANCHES</u>		
	0	1	2
in Experimental Branches (# who left/ # at start of study)	5/26 (=19%)	9/58 (=16%)	2/44 (=5%)
in Matching Control Branches (# who left/ # at start of study)	3/35 (=9%)	14/72 (=19%)	12/47 (=26%)
<hr/> Difference of Proportions Test	Z= -1.220 p=ns	Z= .583 p=ns	Z= 2.773 p < .01

TABLE 3

EFFICIENCY RATING AS A PREDICTOR
OF NUMBER OF GOALS IMPLEMENTED

<u>NUMBER OF GOALS IMPLEMENTED</u>	<u>EFFICIENCY RATING</u>	
	LOW	HIGH
Number of Experimental branches which implemented <u>0 goals</u>	4(44%)	1(9%)
Number of Experimental branches which implemented <u>1 goal</u>	4(44%)	6(55%)
Number of Experimental branches which implemented <u>2 goals</u>	1(11%)	4(36%)
TOTAL	9(100%)	11(100%)

Kendall's Tau = .45

P < .05

TABLE 4
 EFFICIENCY RATING AS A PREDICTOR
 OF TURNOVER (MATCHED PAIR COMPARISON)

<u>TURNOVER (MATCHED PAIR COMPARISON)</u>	<u>EFFICIENCY RATING</u>	
	LOW	HIGH
Number of pairs where the turnover in the experimental branch was <u>less than</u> the turnover in the matching control branch	5(45%)	9(64%)
Number of pairs where the turnover in the experimental branch was <u>equal to</u> the turnover in the matching control branch	1(9%)	3(21%)
Number of pairs where the turnover in the experimental branch was <u>greater than</u> the turnover in the matching control branch	5(45%)	2(14%)
Total number of pairs	11(100%)	14(100%)

Kendall's Tau = .27

p < .10

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