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ABSTRACT

Thirty-three adult male employees at a chemical plant completed a Worker Opinion Questionnaire (WOQ) designed to yield a measure of worker satisfaction. The quality of their job performance was obtained by means of supervisor ratings. Eighteen of the subjects were involved in "skilled labor and fifteen in "unskilled" labor. It was hypothesized that the relationship between satisfaction and performance would be significantly different for the two groups. The mean WOQ scores for the two groups did not differ significantly, nor did the mean performance ratings. The Pearson product-moment coefficients of correlation between performance ratings and WOQ scores were significantly different. The authors offer a reformulation of their original hypothesis based on an operant behavior model. (Authors/TL)

SKILL LEVEL AS A FACTOR IN THE RELATIONSHIP BETWEEN WORKER SATISFACTION AND WORKER PERFORMANCE

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The relationship between worker satisfaction and productivity has long been a source of controversy. Some researchers have found a positive correlation between the two variables while others have either found no systematic relationship or have detected a negative correlation. One way to interpret these contradictory findings is to argue that the relationship between worker satisfaction and performance is dependent upon some other variable (or set of variables) not accounted for in previous studies.

The present research project grew out of the investigators' "hunch" that the relationship between worker satisfaction and performance is influenced by the type of work being done. More specifically, it was hypothesized that the relationship between satisfaction and performance would be significantly different for a group of skilled workers than for a group of unskilled workers. This hypothesis grew out of a belief that performance on tasks involving considerable cognitive activity would be more influenced by attitudinal factors than would performance on tasks involving minimal cognitive activity. In other words, the researchers expected to find that when a person is required to perform complex, skilled behaviors, the quality of his performance is influenced largely by his attitude toward his work. When behavior is less skilled and more a matter of physical prowess, however, attitude was expected to play little role in determining quantity and quality of performance.

METHOD

Subjects

Subjects (Ss) for the study were 33 adult male non-salaried employees at a large chemical plant located in the western United States. The plant employs approximately 400 men and is engaged in a continuous production, process type operation. The workers are non-unionized and perform a variety of tasks from simple menial labor to complex maintenance millwrighting, welding and machining. Eighteen of the subjects were from the Maintenance Department of the plant and 15 of the subjects were "Tappers" from the Furnace Department.

The maintenance men are located throughout the plant and are engaged in millwrighting, welding, metal work, light construction and general maintenance and repair. Although the hourly pay for maintenance workers is not significantly different from that of other workers, the maintenance work is almost exclusively day work with great opportunities for overtime, and is considered to be the non-salaried position of highest status and skill in the plant.

Because of the nature of their work, tappers were chosen as the unskilled group for our study. As their classification describes, these men are responsible for removing the waste products, in the form of molten rock or metal, from the electrical furnaces. They are equipped with asbestos suits and a long metal bar weighing approximately 35 pounds which is used to rod the hole as the molten metal flows out through a silica sand channel. After the hole has been plugged, the tappers are then required to dig out and clean the channels for the next tap. Because of the great physical strain, the extreme heat and a greater probability of injury, the tapper's job is one of the least sought jobs in the plant.

Procedure

Each subject was given a Worker Opinion Questionnaire (WOQ) patterned after those developed by the Cornell Study researchers (Smith, 1967). The questionnaires were distributed to the various subjects during working hours by a member of the Personnel Department. The subjects were told that the research was being carried out by students of industrial behavior and that filling out the questionnaire was completely voluntary. It was also explained to them that the results would have no effect upon their job security because no one but the researchers would know of individual answers. The questionnaires were then placed in envelopes by each subject and delivered to the researchers unopened. Instruction on the questionnaires explained to the workers that their responses would be kept anonymous and would be used for research purposes only.

A measure of worker performance was obtained by having supervisors rate each man on a 5 point scale from A or 5 (Superior) to E or 1 (Unsatisfactory) regarding the quantity and quality of his work.

RESULTS

A total score for each subject on the WOQ was obtained by summing his sub-test scores. The mean WOQ score was found to be 48.78 for workers and 43.40 for tappers. These means were compared using the procedure outlined by Garrett (1958, pp. 223-225) for testing the significance of the difference between means in small independent samples; the means did not differ significantly at the .05 level of confidence.

The mean of performance ratings was found to be 2.33 for maintenance workers and 2.27 for tappers. These means did not differ significantly at the .05 level of confidence.

WOQ scores were correlated with performance ratings within each group of subjects. The Pearson product-moment coefficient of correlation was -.06 for maintenance workers and +.62 for tappers. The latter coefficient was significantly different from zero at the .05 level of confidence. The difference between the two correlation coefficients attained significance at the .05 level but in the opposite direction from that expected.

DISCUSSION

The value of any study resides in its implications for action, be it reformulation of theory or recommendation for behavioral change. The findings of the present study, if accepted at face value, certainly suggest the need for reformulation of the investigators original "theory".

A careful reexamination of the actual work performed by each of the groups of workers studied suggests a possible explanation for the unexpected findings. Tappers are required to stand near a hot furnace and, with a long metal rod, remove a wooden plug so that molten rock (slag) runs down a trough and away from the furnace area. A few minutes later he is required to drive a new plug into the hole in the furnace. In both cases the tapper received immediate visual and kinesthetic "feedback" regarding the quality of his performance. Errors may cause spilling of slag and possible injury to the tapper and his fellow workers; at best an error requires that he perform the task again.

Among maintenance workers feedback information regarding quality of performance is seldom immediate. A replaced bearing may appear to work only to "go out" in a few hours, a machine part may appear to be the

correct size until it is actually carried to another part of the plant and fitted, a weld may hold for years or for only a few minutes.

If, as Skinner (1968) has argued, immediate feedback concerning the appropriateness of a response is positively reinforcing, we would expect workers who receive such feedback to repeat the behavior. At first the new worker would receive positive reinforcement (from self and from others in the form of verbal praise) for a "satisfactory" performance but, as he continued, the quality of performance would increase through a process of successive approximation until a high level of performance is attained. Any given work situation involves not only overt behaviors, but feelings or affections as well. In a situation where the worker has received immediate positive reinforcement we would expect him to report positive feelings--verbal expressions of satisfaction, accomplishment, etc., associated with his behavioral responses. On the other hand, if a worker does not perform a response adequately he receives no immediate positive reinforcement and his self reported feelings are not of a positive nature. Note that this behavioral model does not necessarily imply a cause and effect relationship between performance and satisfaction--both are a by-product of immediate reinforcement.

What about those workers, such as the maintenance men, who receive little if any immediate feedback regarding the quality of their work? A behavioral model suggests that feedback greatly separated in time from an antecedent response would not be reinforcing. Quality of performance, therefore, could not be expected to be systematically related to attitude.

Making inferences about a population from sample results is, at best, a risky undertaking. In the present study toppers were selected to repre-

sent unskilled workers and maintenance workers were chosen to represent skilled workers. The degree to which these sub-samples are truly representative is open to question. We are probably quite safe in making inferences about tappers and maintenance workers at the particular plant, less safe in making inferences about tappers and maintenance workers in general, and even less safe in inferring about unskilled and skilled workers. Results of the present study are in need of cross-validation using subjects from a variety of occupations representative of skilled and unskilled workers. It is possible that our "new theory" based on operant behavior concepts would not hold up in situations where work is so simple that satiation of reinforcement occurs quickly. At any rate, the present project strongly suggests a need for further research.

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