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ABSTRACT
        In presenting a new strategy for redesigning jobs to
increase the work motivation and satisfaction of employees, the paper
examines a basic theory of job motivation, a group of core dimensions
of jobs which create the conditions for such internal motivation to
develop on the job, a set of diagnostic tools for evaluating jobs and
people's reaction to them, for pinpointing exactly what aspects of
specific jobs are most critical to a successful change attempt, and a
set of five action steps to increase employee motivation,
satisfaction, and productivity. The five implementing concepts are:
(1) forming natural work units, (2) combining tasks, (3) establishing
client relationships, (4) vertical loading, and (5) opening feedback
channels. A job enrichment project conducted at The Travelers
Insurance Companies is summarized to illustrate practical
applications of the change procedures. (MW)

A NEW STRATEGY FOR JOB ENRICHMENT

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Technical Report No. 3
Department of Administrative Sciences
Yale University

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Abstract

A new strategy for redesigning jobs to increase the work motivation
and satisfaction of employees is described. Included is a statement of
the theory on which the strategy is based, discussion of how to carry
out and interpret a diagnosis of jobs prior to change, and specification
of action steps for job redesign which have been found to lead to
beneficial personal and organizational outcomes. The report, which is
oriented primarily to managers and behavioral science practitioners in
organizations, concludes with a summary of findings from organizational
tests of the theory and the change strategy.

A New Strategy for Job Enrichment[1]

J. Richard Hackman   Greg Oldham   Robert Janson and Kenneth Purdy
  Yale University   University of Illinois   Roy W. Walters & Associates

Practitioners of job enrichment have been living through a time of excitement, even euphoria. Their craft has moved from the psychology and management journals to the front page and the Sunday supplement. Job enrichment, which began with the pioneering work of Herzberg and his associates, originally was intended as a means to increase the motivation and satisfaction of people at work--and to improve productivity in the bargain.[2] Now it is being acclaimed in the popular press as a cure for problems ranging from inflation to drug abuse.

Much current writing about job enrichment is enthusiastic, sometimes even messianic, about what it can accomplish. But the hard questions of exactly what should be done to improve jobs, and how, tend to be glossed over. Lately, because the harder questions have not been dealt with adequately, critical winds have started to blow. Job enrichment has been described as yet another management fad," as nothing new, even as a fraud. And reports of job enrichment failures are beginning to appear in management and psychology journals.

This article attempts to redress the excesses which have characterized some of the recent writings about job enrichment. As job enrichment increases in popularity as a management tool, top managers inevitably will find themselves making decisions about its use. The intent of this paper is to help both managers and behavioral sciences practitioners become better able to make those decisions on a solid base of fact and data.

Succinctly stated, we present here a new strategy for going about the redesign of work. The strategy is based on three years of collaborative work and cross-fertilization among the authors--two of whom are academic

researchers, and two of whom are active practitioners in job enrichment.
Our approach is new, but it has been tested in many organizations.
It draws on the contributions of both management practice and psychological
theory--but it is firmly rooted in the middle ground between them. It
builds on and complements previous work by Herzberg and others, but provides
for the first time a set of tools for diagnosing existing jobs--and a map
for translating the diagnostic results into specific action steps for change.

What we have, then, is the following·

1. A theory which specifies when people will get personally "turned on"
to their work. The theory shows what kinds of jobs are most likely to
generate excitement and commitment about work, and what kinds of employees
it works best for.

2. A set of action steps for job enrichment based on the theory, which
prescribe in concrete terms what to do to make jobs more motivating for the
people who do them.

3. Evidence that the theory holds water, and that it can be used to
bring about measurable--and sometimes dramatic--improvements in employee
work behavior, in job satisfaction, and in the financial performance of
the organizationa: unit involved.

<center>THE THEORY BEHIND THE CHANGE STRATEGY</center>

What Causes People To Get Turned On To Their Work?

For workers who are really prospering in their jobs, work is likely to
be a lot like play. Consider, for example, a golfer at a driving range,
practicing to get rid of a hook. His activity is meaningful to him; he has
chosen to do it because he gets a "kick" from testing his skills by playing
the game. He knows that he alone is responsible for what happens when he
hits the ball. And he has knowledge of the results within a few seconds.

4

Behavioral scientists have found that the three "Psychological States" experienced by the golfer in the above example also are critical in determining a person's motivation and satisfaction on the job.

1. <u>Experienced meaningfulness</u>: The individual must perceive his work as worthwhile or important by some system of values he accepts.

2. <u>Experienced responsibility</u>: He must believe that he personally is accountable for the outcomes of his efforts.

3. <u>Knowledge of results</u>: He must be able to determine, on some fairly regular basis, whether or not the outcomes of his work activities are satisfactory.

When these three conditions are present, an individual tends to feel very good about himself when he performs well. And those good feelings will prompt him to try to continue to do well--so he can continue to earn these positive feelings in the future. That is what is meant by "internal motivation"--being turned onto one's work because of the positive internal feelings that are generated by doing well, rather than being dependent on external factors (such as incentive pay or compliments from the boss) for the motivation to work effectively.

What if one of the three Psychological States is missing? Motivation drops markedly. Suppose, for example, that our golfer has settled in at the driving range to practice for a couple of hours. Suddenly a fog drifts in over the range. He can no longer see if the ball starts to tail off to the left a hundred yards out. The satisfaction he got from hitting straight down the middle--and the motivation to try to correct something whenever he didn't--are both gone. If the fog stays, it's likely that he soon will be packing up his clubs.

The relationship between the three Psychological States and on-the-job outcomes are illustrated in Figure 1. When all three are high, then internal work motivation is high, job satisfaction is high, work quality is

CORE JCB DIMENSIONS

CRITICAL PSYCHOLOGICAL STATES

PERSONAL AND WORK OUTCOMES

Skill Variety
Task Identity
Task Significance

Autonomy

Feedback

Experienced Meaningfulness of the Work

Experienced Responsibility for Outcomes of the Work

Knowledge of the Actual Results of the Work Activities

High Internal Work Motivation

High Quality Work Performance

High Satisfaction With the Work

Low Absenteeism and Turnover
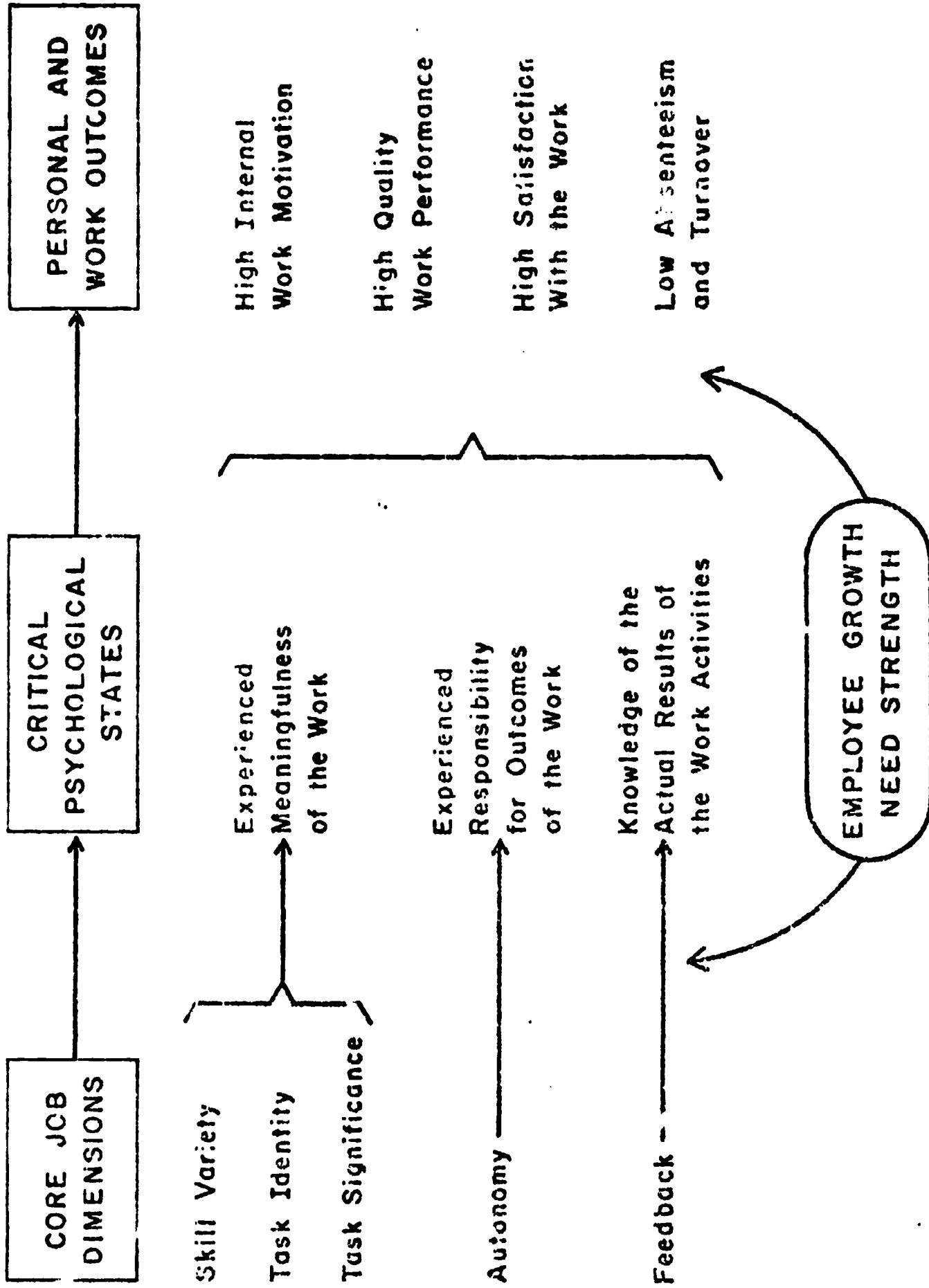
EMPLOYEE GROWTH NEED STRENGTH

Figure 1

The Relationships Among the Core Job Dimensions, The Critical Psychological States, and On-the-Job Outcomes

high, and absenteeism and turnover are low.

What Job Characteristics Make It Happen?

Recent research has identified five "core" characteristics of jobs which elicit the psychological states described above.[3] These five core job dimensions provide the key to objectively measuring jobs, and to changing them so they have high potential for motivating people who do them.

Toward Meaningful Work. Three of the five Core Dimensions contribute to a job's meaningfulness for the worker:

1. Skill Variety. The degree to which a job requires the worker to perform activities which challenge his skills and abilities. When even a single skill is involved, there is at least a seed of potential meaningfulness. When several are involved, the job has the potential of appealing to more of the whole person--and also of avoiding the monotony of performing the same task repeatedly, no matter how much skill it may require.

2. Task Identity. The degree to which the job requires completion of a 'whole' and identifiable piece of work--doing a job from beginning to end with a visible outcome. For example, it is clearly more meaningful to an employee to build complete toasters than to attach electrical cord after electrical cord--especially if he never sees a completed toaster. (Note that the whole job, in this example, probably would involve greater skill variety as well as task identity.)

3. Task Significance. This is the degree to which the job has a sub-stantial and perceivable impact on the lives of other people, whether in the immediate organization or the world at large. The worker who tightens nuts on aircraft brake assemblies is more likely to perceive his work as significant than the worker who fills small boxes with paper clips--even though the skill levels involved may be comparable.

Each of these three job dimensions represents an important route to experienced meaningfulness. If the job is high in all three, the worker is quite likely to experience his job as very meaningful. It is not necessary, however, for a job to he very high in all three dimensions. If the job is low in any one of them, there will be a drop in over-all experienced meaningfulness. But even when two dimensions are low the worker may find the job meaningful if the third is high enough.

Toward Personal Responsibility. A fourth core dimension leads a worker to experience increased responsibility in his job. This is Autonomy, the degree to which the job gives the worker freedom, independence, and discretion in scheduling work and determining how he will carry it out. People in highly autonomous jobs know that they are personally responsible for successes and failures. To the extent that their autonomy is high, then, how the work goes will be felt to depend more on the individual's own efforts and initiatives--rather than on detailed instructions from the boss or from a manual of job procedures.

Toward Knowledge of Results. The fifth and last core dimension is Feedback. This is the degree to which a worker, in carrying out the work activities required by the job, gets information about the effectiveness of his efforts. Feedback is most powerful when it comes directly from the work itself--as for example, when a worker has the responsibility for gauging and otherwise checking a component he has just finished, and learns in the process that he has lowered his reject rate by meeting specifications more consistently.[4]

Summary: The Overall "Motivating Potential" of a Job. Figure 1 shows how the five Core Dimensions combine to affect the psychological states which are critical in determining whether or not an employee will be internally motivated to work effectively. Indeed, using an instrument to be described later, it is possible to compute a "Motivating Potential Score" (MPS) for any

job. The MPS provides a single summary index of the degree to which the objective characteristics of the job will prompt high internal work motivation. Following the theory outlined above, a job high in Motivating Fotential must be high on at least one (and hopefully more) of the three dimensions which lead to experienced meaningfulness, and high on both autonomy and feedback as well. The MPS provides a quantitative index of the degree to which this is in fact the case.[5] As will be seen later, the MPS can be very useful in diagnosing jobs and in assessing the effectiveness of job enrichment activities.

Does the Theory Work for Everybody?

Unfortunately not. Not everyone is able to become internally motivated in his work, even when the Motivating Potential of a job is very high indeed.

Research has shown that the psychological needs of people are very important in determining who can (and who cannot) become internally motivated at work. Some people have strong needs for personal accomplishment, for learning and developing chemselves beyond where they are now, for being stimulated and challenged, and so on. These people are high in 'growth need strength.'

Figure 2 shows diagrammatically the proposition that individual growth needs have the power to moderate the relationship between the characteristics of jobs and work outcomes. Many workers with high growth needs will turn on eagerly when they have jobs which are high on the Core Dimensions. Workers whose growth needs are not so strong may respond less eagerly--or, at first, even balk at being 'pushed' or 'stretched' too far.

Psychologists who emphasize human potential argue that everyone has within him at least a spark of the need to grow and develop personally. Steadily accumulating evidence shows, however, that unless that spark is pretty strong, chances are it will get snuffed out by one's experiences in typical organizations. So, a person who has worked for 20 years in

High Internal Motivation

High Growth Satisfaction

High Quality Performance

Low Absenteeism & Turnover

Risk of "over-stretching"

the individual; possible

balking at the job

High Growth Need Employees

Low Growth Need Employees
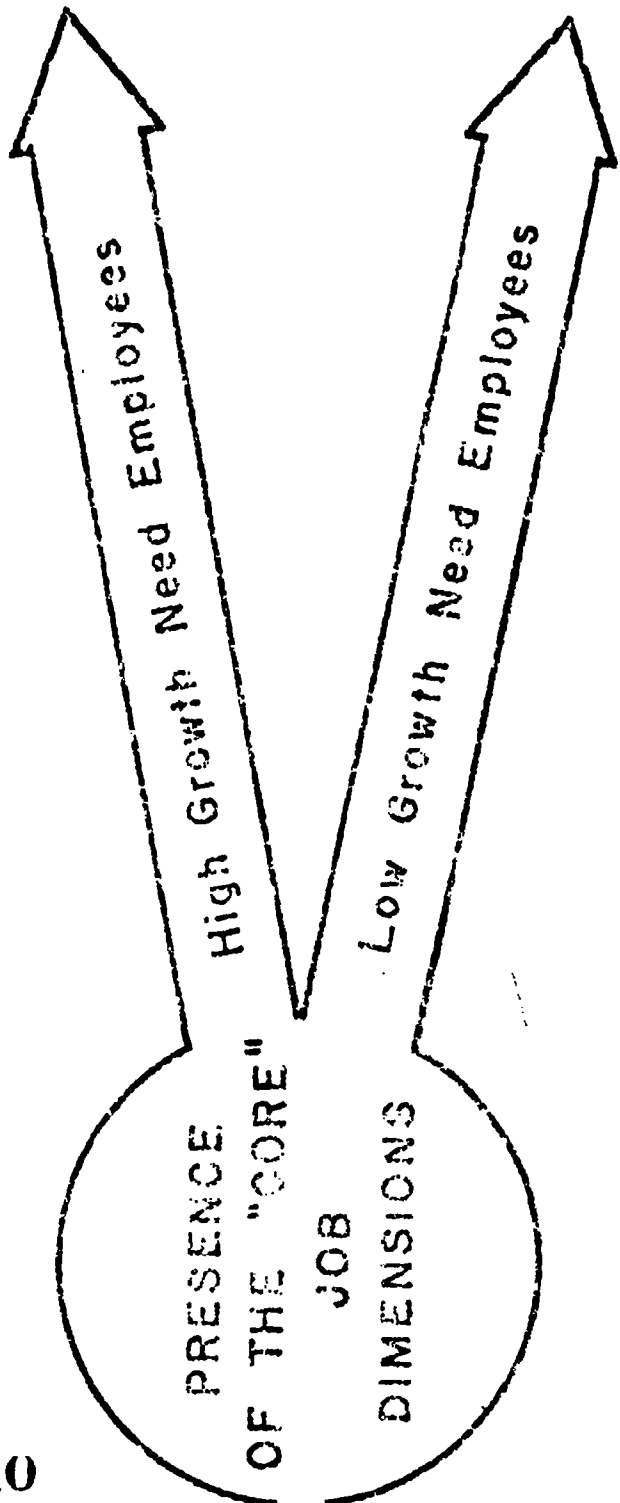
PRESENCE
OF THE "CORE"
JOB
DIMENSIONS

Figure 2

The Moderating Effect of Employee Growth Need Strength

stultifying jobs may find it difficult or impossible to become internally
motivated overnight when given the opportunity.

We should be cautious, however, about creating rigid categories of
people based on their measured growth need strength at any particular point
in time. It is true that we can predict from these measures who is likely
to become internally motivated on a job and who will be less willing or
able to do so. But what we do not know yet is whether or not the growth
need "spark can be rekindled for those individuals who have had their growth
needs dampened by years of growth-depressing experience in their organizations.

Since, in many cases, it is the organization which is responsible for
currently low levels of growth desires, we believe that the organization
also should provide the individual with the chance to reverse that trend
whenever it can. Even if that means putting a person in a job where he may be
"stretched" more than he wants to be stretched right now. He can always
move back later to the old job---and in the meantime the embers of his growth
needs just might burst back into flame, to his surprise and pleasure, and to
the good of the organization.

FROM THEORY TO PRACTICE: A TECHNOLOGY FOR JOB ENRICHMENT

When job enrichment fails, it often fails because of inadequate
diagnosis of the target job and employees' reactions to it. Often, for
example, job enrichment is assumed by management to be a solution to "people
problems on the job, and is implemented even though there has been no
diagnostic activity to indicate that the root of the problem is in fact how
the work is designed. Or, other times, some diagnosis is made--but it
provides no concrete guidance about what specific aspects of the job require
change. In either case, the success of job enrichment may wind up depending
more on the quality of the intuition of the change agent---or his luck--than
on a solid base of data about the people and the work.

In the paragraphs to follow, we outline a new technology for use in job enrichment which explicitly addresses the diagnostic as well as the action component of the change process. The technology has two parts:

1. A set of diagnostic tools which are useful in evaluating jobs and peoples' reactions to them prior to change--and in pinpointing exactly what aspects of specific jobs are most critical to a successful change attempt.

2. A set of "Implementing Concepts" which provide concrete guidance for action steps in job enrichment. The Implementing Concepts are tied directly to the diagnostic tools: the output of the diagnostic activity specifies which action steps are likely to have the most impact in a particular situation.

The Diagnostic Tools

Central to the diagnostic procedure we propose is a package of instruments to be used by employees, supervisors, and outside observers in assessing the target job and employees' reactions to it.[6] These instruments gauge the following:

1. The objective characteristics of the jobs themselves, including both an overall indication of the "motivating potential" of the job as it exists (i.e., the MPS score), and the score of the job on each of the five Core Dimensions described earlier. Because knowing the strengths and weaknesses of the job is critical to any work re-design effort, assessments of the job are made by supervisors and outside observers as well as the employees themselves--and the final assessment of a job uses data from all three sources.

2. The current levels of motivation, satisfaction, and work performance of employees on the job. In addition to satisfaction with the work itself, measures are taken of how people feel about other aspects of the work setting, such as pay, supervision, and relationships with co-workers.

3. The level of growth need strength of the employees. As indicated earlier, employees who have strong growth needs are more likely to be more

responsive to job enrichment than employees with weak growth needs. Therefore, it is important to know at the outset just what kinds of satisfactions the people who do the job are (and are not) motivated to obtain from their work. This will make it possible to identify which persons are best to start changes with, and which may need help in adapting to the new enriched job.

What, then, might be the actual steps one would take in carrying out a job diagnosis using these tools? Although the approach to any particular diagnosis depends upon the specifics of the particular work situation involved, the sequence of questions listed below is fairly typical.

Step 1. Are Motivation and Satisfaction Central to the Problem? Sometimes organizations undertake job enrichment to improve the work motivation and satisfaction of employees when in fact the real problem with work performance lies elsewhere--for example, in a poorly designed production system, in an error-prone computer, and so on. So the first step is to examine the scores of employees on the motivation and satisfaction portions of the diagnostic instrument. (The questionnaire taken by employees is called the "Job Diagnostic Survey," and will be refered to hereafter as the JDS). If motivation and satisfaction are problematic, the change agent would continue to Step 2 if not, he would look to other aspects of the work situation to identify the real problem.

Step 2. Is the Job Low in Motivating Potential? To answer this question, one would examine the Motivating Potential Score of the target job, and compare it to the MPS scores of other jobs to determine whether or not the job itself is a probable cause of the motivational problems documented in Step 1. If the job turns out ot be low on the MPS, one would continue to Step 3 if it scores high, attention should be given to other possible reasons for the motivational difficulties (e.g., the pay system, the nature of supervision, and so on).

Step 3. What Specific Aspects of the Job are Causing the Difficulty?

This step involves examining the job on each of the five Core Dimensions, to pinpoint the specific strengths and weaknesses of the job as it is currently structured. It is useful at this stage to construct a "profile" of the target job, to make visually apparent where improvements need to be made. An illustrative profile for two jobs (one "good" job and one job needing improvement) is shown in Figure 3.

Job "A" is an engineering maintenance job, and is high on all of the Core Dimensions; the MPS of this job is a very high 260.[7] Job enrichment would not be recommended for this job; if employees working on the job were unproductive and unhappy, the reasons are likely to have little to do with the nature or design of the work itself.

Job "B", on the other hand, has many problems. This job involves the routine and repetitive processing of checks in the "back room" of a bank. The MPS is 30, which is quite low--and indeed, would be even lower if it were not for the moderately high Task Significance of the job. (Task significance is moderately high because the people are handling large amounts of other people's money--and therefore the quality of their efforts potentially have important consequences for their unseen "clients.") The job provides the individuals with very little direct feedback about how effectively they are doing it; the employees have little autonomy in how they go about doing the job; and the job is moderately low in both skill variety and in task identity.

For Job B, then, there is plenty of room for improvement--and many avenues to examine in planning job changes. For still other jobs, the avenues for change often turn out to be considerably more specific: for example, feedback and autonomy may be reasonably high, but one or more of the Core Dimensions which contribute to the experienced meaningfulness of the job (i.e., skill variety, task identity, and task significance) may be
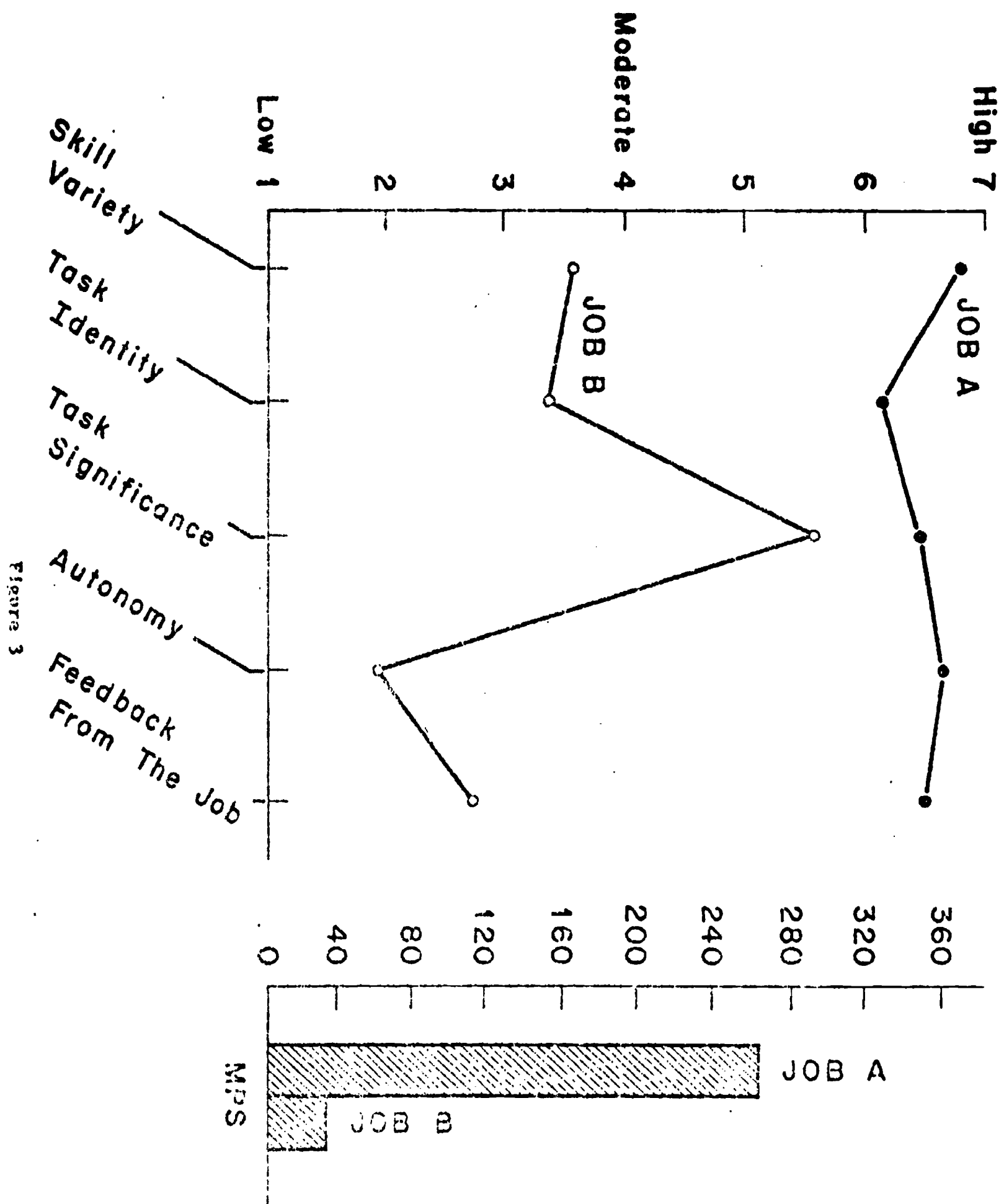
Figure 3

High 7

6

5

Moderate 4

3

2

Low 1

Skill Variety

Task Identity

Task Significance

Autonomy

Feedback From The Job

JOB A

JOB B

0 40 80 120 160 200 240 280 320 360

MPS

JOB A

JOB B

15

low. In such a case, attention would turn to ways to increase the standing of the job on these latter three dimensions.

Step 4. How "Ready" Are the Employees For Change? Once it has been documented that there is need for improvement in the job--and the particularly troublesome aspects of the job have been identified--then it is time to begin to think about the specific action steps which will be taken to enrich the job. An important factor in such planning is the level of growth needs of the employees, since employees high on growth needs usually respond more readily to job enrichment than do employees with little need for growth. The JDS provides a direct measure of the growth need strength of the employees. This measure can be very helpful in planning how to introduce the changes to the people (e.g., cautiously vs. dramatically), and in deciding who should be among the first group of employees to have their jobs changed.

In actual use of the diagnostic package, additional information is generated which supplements and expands the basic diagnostic questions outlined above. The point of the above discussion is merely to indicate the kinds of questions which we believe to be most important in diagnosing a job prior to changing it. We now turn to how the diagnostic conclusions are translated into specific job changes.

The Implementing Concepts[8]

Five "implementing Concepts" for job enrichment are identified and discussed below. Each one is a specific action step aimed at improving both the quality of the working experience for the individual and his work productivity. They are·

1. Forming natural work units.

2. Combining tasks.

3. Establishing client relationships.

4. Vertical loading.

5. Opening feedback channels.

The links between the Implementing Concepts and the Core Dimensions are shown in Figure 4--which illustrates our theory of job enrichment, ranging from the concrete action steps through the Core Dimensions and the Psychological States to the actual personal and work outcomes.

After completing the diagnosis of a job, a change agent would know which of the Core Dimensions were most in need of remedial attention. He could then turn to Figure 4 and select those Implementing Concepts which specifically deal with the most troublesome parts of the existing job. How this would take place in practice will be seen below.

1. Forming Natural Work Units. The notion of distributing work in some logical way may seem to be an obvious part of the design of any job. In many cases, however, the logic is one imposed by just about any consideration except jobholder satisfaction and motivation. Such considerations include technological dictates: level of worker training or experience; "efficiency," as defined by industrial engineering; and current workload. In many cases the cluster of tasks a worker faces during a typical day or week is natural to anyone but the worker.

For example, suppose that a typing pool (consisting of one supervisor and ten typists) handles all work for one division of a company. Jobs are delivered in rough draft or diccated form to the supervisor, who distributes them as evenly as possible among the typists. In such circumstances the individual letters, reports, and other tasks performed by a given typist in one day or week are randomly assigned. There is no basis for identifying with the work or the person or department for whom it is performed, or for placing any personal value upon it.

The principle underlying natural units of work, by contrast, is "ownership"--a worker's sense of continuing responsibility for an identifiable body of work.
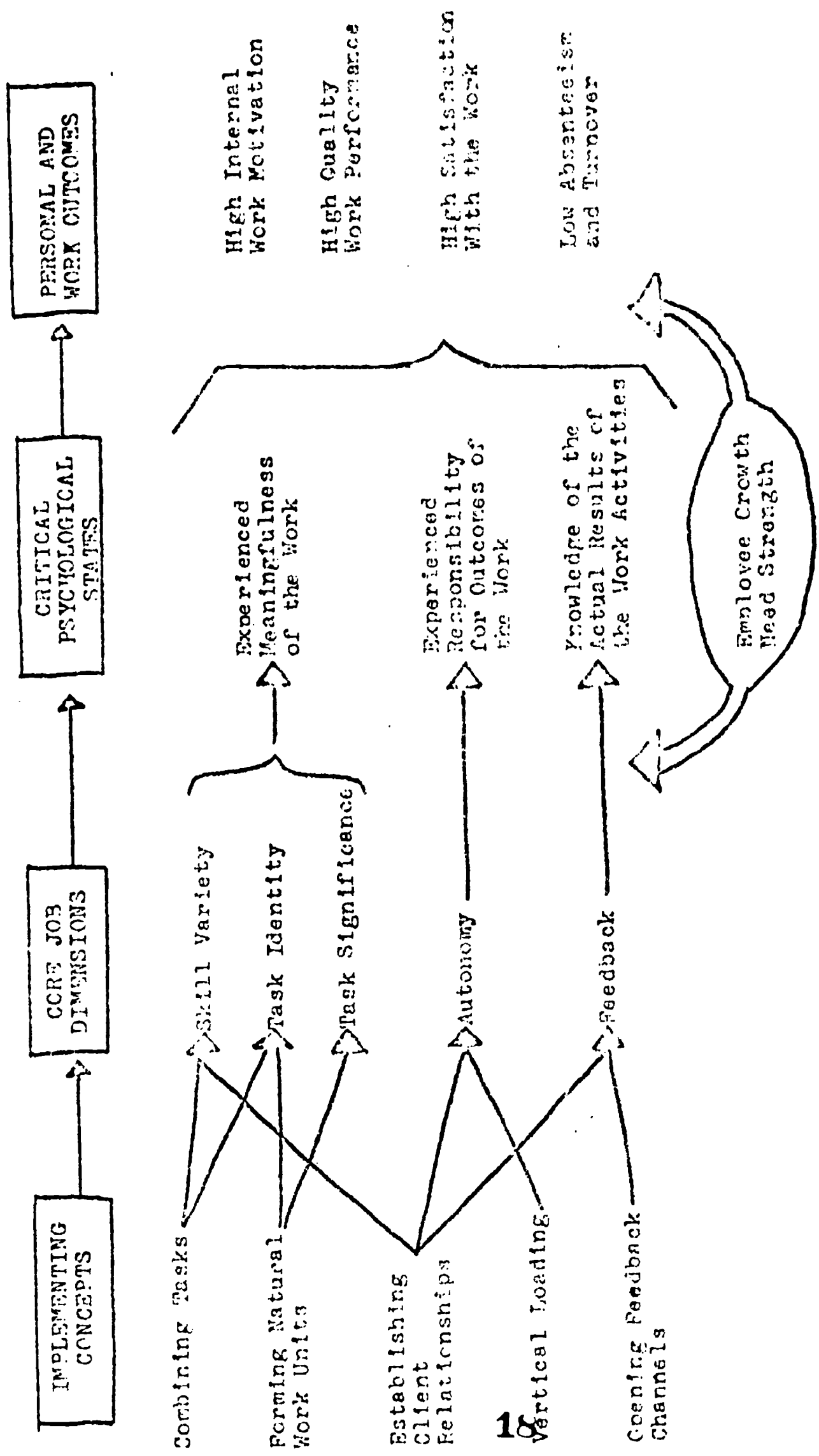
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IMPLEMENTING
CONCEPTS

CORE JOB
DIMENSIONS

CRITICAL
PSYCHOLOGICAL
STATES

PERSONAL AND
WORK OUTCOMES

High Internal
Work Motivation

High Quality
Work Performance

High Satisfaction
With the Work

Low Absenteeism
and Turnover

Experienced
Meaningfulness
of the Work

Experienced
Responsibility
for Outcomes of
the Work

Knowledge of the
Actual Results of
the Work Activities

Skill Variety

Task Identity

Task Significance

Autonomy

Feedback

Combining Tasks

Forming Natural
Work Units

Establishing
Client
Relationships

Vertical Loading

Opening Feedback
Channels

Employee Growth
Need Strength

18

Figure 4

The Full Model: How Use of the Implementing Concepts Can Lead to Positive Outcomes

There are two steps involved in c   ing natural work units. The first
is to identify the basic work items. In the typing pool, for example, the
items might be "pages to be typed.' The second step is to group the items
in natural categories. For example, each typist might be assigned continuing
responsibility for all jobs requested by one or several specific departments.
The assignments should be made, of course, in such a way that workloads are
about equal in the long run. (For example, one typist might end up with all
the work from one busy department, while another handles jobs from several
smaller 'accounts.")

At this point we can begin to see specifically how the Job Design
Principles relate to the Core Dimensions (:f. Figure 4). The 'ownership'
fostered by natural units of work can make the difference between a feeling
that work is meaningful and rewarding and the feeling that it is irrelevant
and boring. As the diagram shows, natural units of work are directly related
to two of the Core Dimensions: Task Identity and Task Significance.

A typist whose work is assigned naturally rather than randomly--say,
by departments--has a much greater chance of performing a whole job to
completion. Instead of typing one section of a large report, the individual
is likely to type the whole thing, with knowledge of exactly what the product
of the work is (task identity). Furthermore, over time the typist will
develop a growing sense of how the work affects co-workers in the department
serviced (task significance).

2. Combining Tasks. The very existence of a pool made up entirely of
persons whose sole function is typing reflects a fractionalization of jobs
which has been a basic precept of "scientific management." Most obvious in
assembly line work, fractionalization has been applied to non-manufacturing
jobs as well. It is typically justified by "efficiency," which is usually
defined in terms of either low costs or some time-and-motion type of criteria.

It is hard to find fault with measuring efficiency ultimately in terms of cost-effectiveness. In doing so, however, a manager should be sure to consider all the costs involved. It is possible, for example, for highly fractionalized jobs to meet all the time-and-motion criteria of "efficiency," but if the resulting job is so unrewarding that performing it day after day leads to high turnover, absenteeism, drugs and alcohol, and strikes, then productivity is really lower (and costs higher) than data on 'efficiency" might indicate.

The principle of Combining Tasks, then, suggests that whenever possible existing and fractionalized tasks should be put together to form new and larger modules of work. At the Medfield, Massachusetts plant of Corning Glass Works the assembly of a laboratory hotplate has been redesigned along the lines suggested here. Each hotplate now is assembled from start to finish by one operator, instead of going through several separate operations which are performed by different people.

Some tasks, if combined into a meaningfully large module of work, would be more than an individual could do by himself. In such cases, it is often useful to consider assigning the new, larger task to a small team of workers—who are given great autonomy for its completion. At the Racine, Wisconsin plant of Emerson Electric, the assembly process for trash disposal appliances was restructured this way. Instead of a sequence of moving the appliance from station to station, the assembly is now done from start to finish by one team. Such teams include both men and women to permit switching off the heavier and more delicate aspects of the work. The team responsible is identified on the appliance. In case of customer complaints, the team often drafts the reply.

As a Job Design Principle, task combination, like natural units of work, expands the Task Identity of the job. For example, the hotplate assembler can see and identify with a finished product ready for shipment, rather than

a nearly invisible junction of solder. Moreover, the more tasks are combined into a single worker's job, the greater the variety of skills he must call on in performing the job. Sc, task combination also leads directly to greater Skill Variety--the third Core Dimension which contributes to the overall experienced meaningfulness of the work.

   3. Establishing Client Relationships. One consequence of fractionalization is that the typical worker has little or no contact with (or even awareness of) the ultimate user of his product or service. By encouraging and enabling employees to establish direct relationships with the "clients" of their work, improvements often can be realized simultaneously on three of the Core Dimensions. Feedback increases, because of additional opportunities for the individual to receive praise or criticism of his work outputs directly. Skill Variety often increases, because of the necessity to develop and exercise one's interpersonal skills in maintaining the client relationship. And Autonomy can increase because the individual often is given personal responsibility for deciding how to manage his relationships with the "clients" of his work.

   Creating client relationships is a three-step process. First, identification of who the client actually is. Second, establishing the most direct possible contact between the worker and the client. Third, setting up some criteria by which the client can judge the quality of the product or service he receives. And, whenever possible, the client should have a means of relaying his judgments directly back to the worker.

   The contact between worker and client should be as great as possible, and as frequent as necessary. Face-to-face contact is highly desirable, at least occasionally. Where that is impossible or impractical, telephone and mail can suffice. In any case, it is important that the performance criteria by which the worker will be rated by the client must be mutually understood and agreed.

4. Vertical Loading. Typically the split between the "doing" of a job
and the "planning" and "controlling" of the work has evolved along with
horizontal fractionalization. Its rationale, once again, has been
"efficiency through specialization." And, once again, the excess of
specialization which has emerged has resulted in unexpected but significant
costs in motivation, morale, and work quality. In vertical loading, the
intent is to partially close the gap between the doing and the controlling
parts of the job--and thereby reap some important motivational advantages.

Of all the Job Design Principles, vertical loading may be the single
most crucial one. In some cases, where it has been impossible to implement
any other changes, vertical loading alone has had significant motivational
effects.

When a job is vertically loaded, responsibilities and controls which
formerly were reserved for higher levels of management are added to the job.
There are numerous means of carrying this out:

--Return to the job holder greater discretion in setting schedules,
deciding on work methods, checking on quality, and advising or helping to
train less experienced workers.

--Grant additional authority. The objective should be to advance
workers from a position of no authority or highly restricted authority to
positions of reviewed, and eventually, near-total authority for his own work.

--Time management. The job holder should have the greatest possible
freedom to decide when to start and stop work, when to break, and how to
assign priorities.

--Troubleshooting and crisis decisions. Workers should be encouraged
to seek problem solutions on their own, rather than calling immediately for
the supervisor.

--Financial controls. Some degree of knowledge and control over budgets and other financial aspects of a job can often be highly motivating. However, access to this information frequently tends to be restricted. Workers can benefit from knowing something about the costs of their jobs, the potential effect upon profit, and various financial and budgetary alternatives.

When a job is vertically loaded it will inevitably increase in autonomy. And, as shown in Figure 4, this increase in objective personal control over the work will also lead to an increased feeling of personal responsibility for his work--and ultimately to higher internal work motivation.

5. Opening Feedback Channels. In virtually all jobs there are ways to open channels of feedback to individuals or teams to help them learn whether their performance is improving, deteriorating, or remaining at a constant level. While there are numerous channels through which information about performance can be provided, it generally is better for a worker to learn about his performance directly as he does his job--rather than from management on an occasional basis.

Job-provided feedback usually is more immediate and private than supervisor-supplied feedback, and increases the worker's feelings of personal control over his work in the bargain. Moreover, it avoids many of the potentially disruptive interpersonal problems which can develop when the only way a worker has to find out how he is doing is from direct messages or subtle cues from the boss.

Exactly what should be done to open channels for job-provided feedback will vary from job to job and organization to organization. Yet in many cases the changes involve simply removing existing blocks which isolate the individual from naturally-occuring data about performance--rather than generating entirely new feedback mechanisms. For example:

--Establishing direct client relationships (discussed above) often removes blocks between the worker and natural external sources of data about his work.

--Quality control efforts in many organizations often eliminate a natural source of feedback. The quality check on a product or service is done by people other than the individuals responsible for the work. Feed-back to the workers--if there is any--is belated and diluted. It often fosters a tendency to think of quality as "someone else's concern." By placing quality control close to the worker (perhaps even in his own hands), the quantity and quality of data about performance that is available to him can dramatically increase.

--Tradition and established procedure in many organizations dictate that records about performance are kept by a supervisor and transmitted up (not down) in the organizational hierarchy. Sometimes supervisors even check the work and correct any errors themselves. The worker who made the error never knows it occurred--and is denied the very information which can enhance both his internal work motivation and the technical adequacy of his performance. In many cases, it is possible to provide standard summaries of performance records directly to the worker (as well as to his superior), thereby giving him personally and regularly the data he needs to improve his performance.

--Computers and other automated operations sometimes can be used to provide the individual with data now blocked from him. Many clerical operations, for example, are now performed on computer consoles. These consoles often can be programmed to provide the clerk with immediate feedback in the form of a CRT display or a print-out indicating that an error has been made. Some systems even have been programmed to provide the operator with a positive feedback message when a period of error-free performance has been sustained.

Many organizations simply have not recognized the importance of feedback as a motivator. Data on quality and other aspects of performance are viewed as being of interest only to management. Worse, the standards for acceptable performance often are kept from workers as well. As a result, workers who would be interested in following the daily or weekly ups and downs of their performance, and in trying accordingly to improve, are deprived of the very guidelines they need to do so. They are like the golfer we mentioned earlier, whose efforts to correct his hook are stopped dead by fog over the driving range.

THE STRATEGY IN ACTION: HOW WELL DOES IT WORK?

So far we have examined a basic theory of how people get "turned on" to their work; a group of Core Dimensions of jobs which create the conditions for such internal work motivation to develop on the job; and a set of five Implementing Concepts which are the action steps recommended to boost a job on the Core Dimensions and thereby increase employee motivation, satisfaction, and productivity.

The remaining question is straightforward and important: Does it work? In reality, that question is two. First, does the theory itself hold water, or are we barking up the wrong conceptual tree? And secondly, does the change strategy really lead to measurable differences when it is applied in an actual oranizational setting?

This section summarizes the findings we have generated to date on these questions.

Is the Job Enrichment Theory Correct?

In general, the answer seems to be 'yes.' The JDS instrument has been taken by over one thousand employees working on about 100 diverse jobs in more than a dozen organizations over the last two years. These data have

been analyzed to test the basic motivational theory--and especially the impact
of the Core Job Dimensions on worker motivation, satisfaction, and behavior
on the job. An illustrative overview of some of the findings are given
below.[9]

1. People who work on jobs high on the Core Dimensions are more
motivated and satisfied than are people who work on jobs which score low on
the dimensions. Employees with jobs high on the Core Dimensions (i.e., MPS
scores greater than 240) were compared to those who held unmotivating jobs
(MPS scores less than 40). As shown in Figure 5, employees with high MPS
jobs were higher on (a) the three psychological states, (b) internal work
motivation, (c) general satisfaction, and (d) "growth" satisfaction.

2. Figure 6 shows that the same is true for measures of actual behavior
at work--absenteeism and performance effectiveness--although less strongly
so for the performance measure.

3. Responses to jobs high in Motivating Potential are more positive
for people who have strong growth needs than for people with weak needs for
growth. In Figure 7, the linear relationship between the Motivating Potential
of a job and employees' level of internal work motivation is shown, separately
for people with high vs. low growth needs as measured by the JDS. While
both groups of employees show increases in internal motivation as MPS
increases, the rate of increase is significantly greater for the group of
employees who have strong needs for growth.

How Does the Change Strategy Work in Practice?

The results summarized above suggest that both the theory and the
diagnostic instrument "work" when used with real people in real organizations.
In this section, we summarize a job enrichment project conducted at The
Travelers Insurance Companies, which illustrates how the change procedures
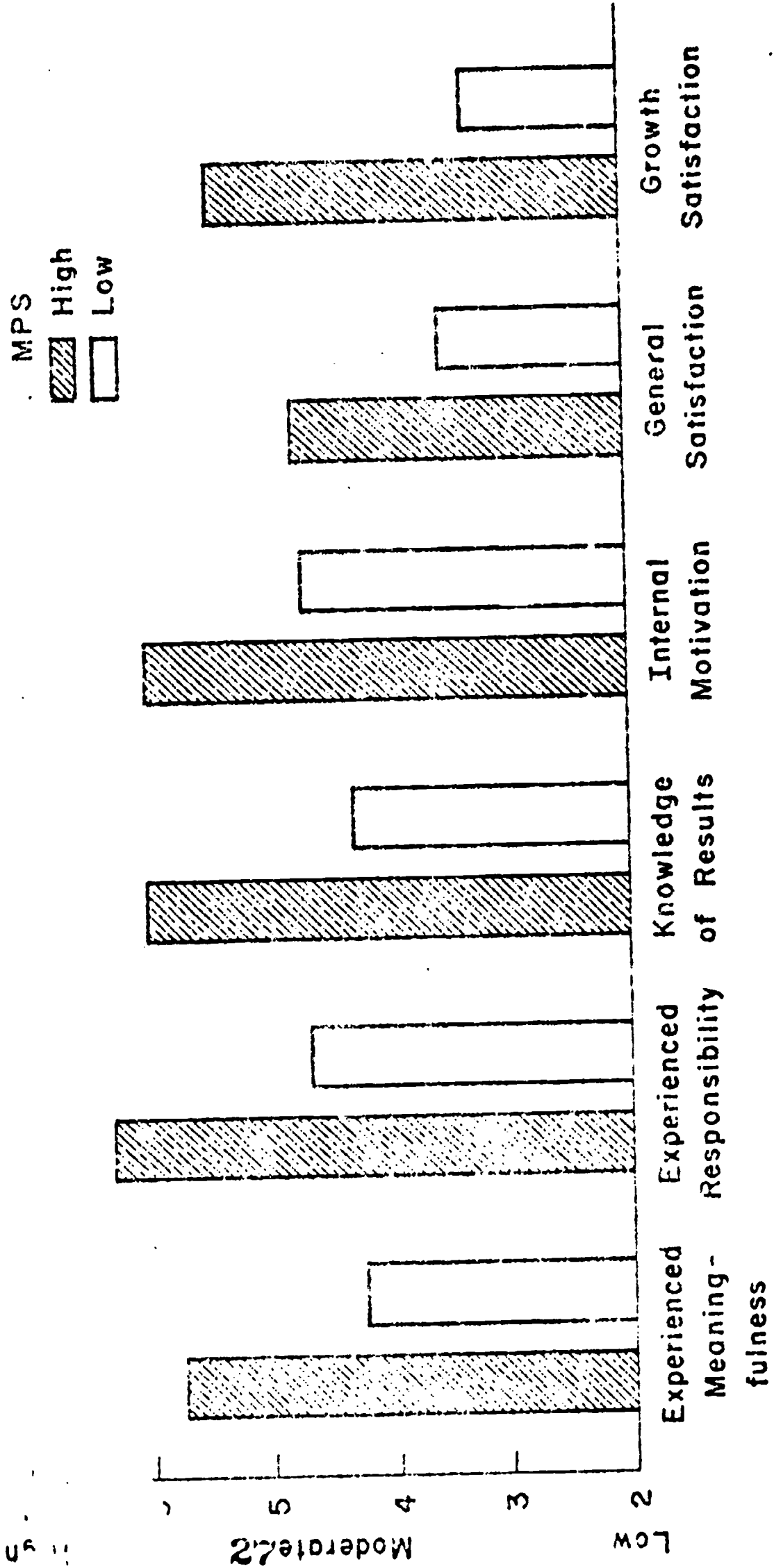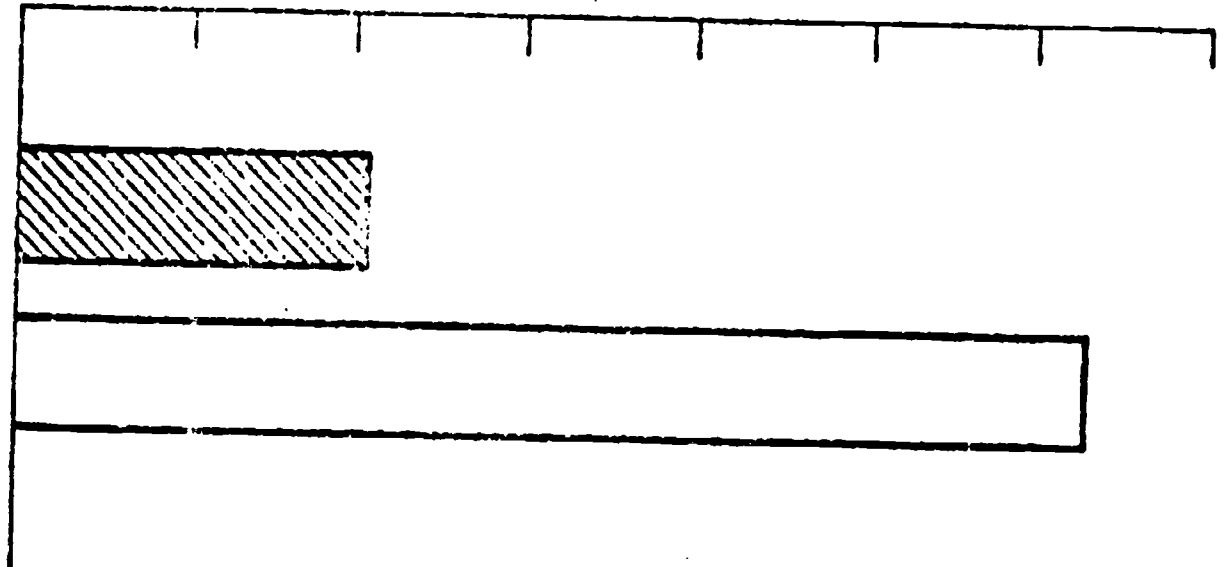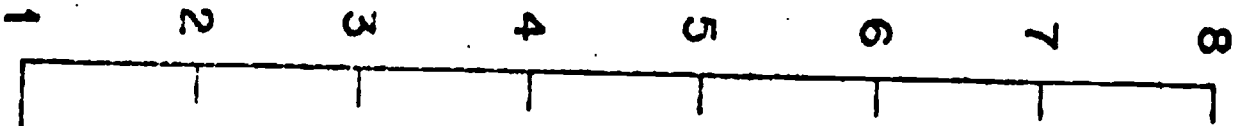themselves work in practice.

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Figure 5

Reactions to Jobs High and Low in Motivating Potential for Employees
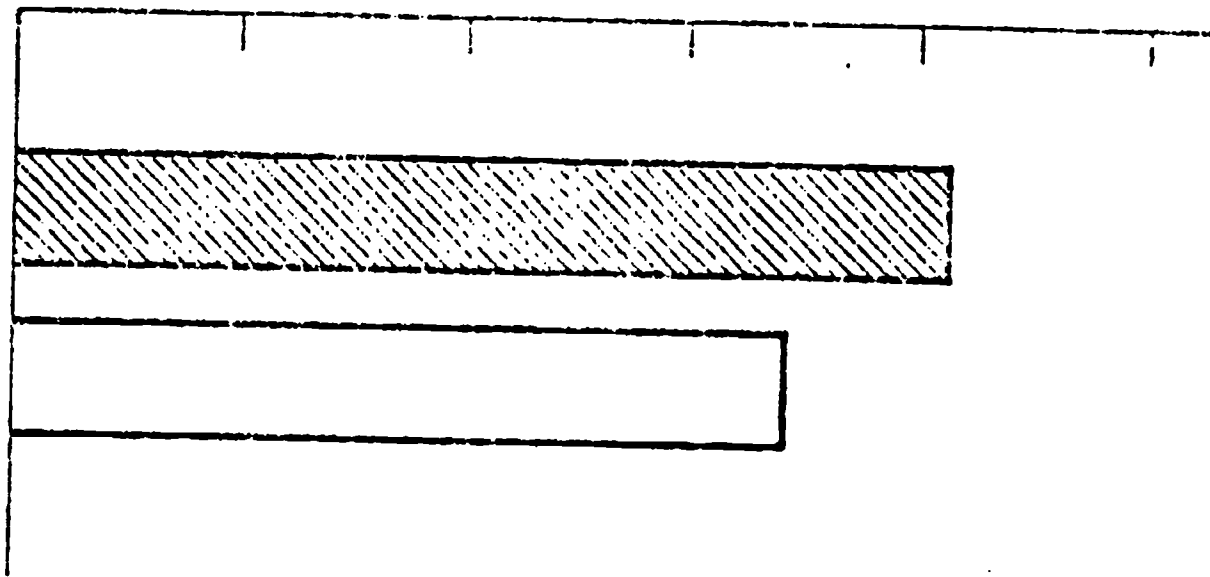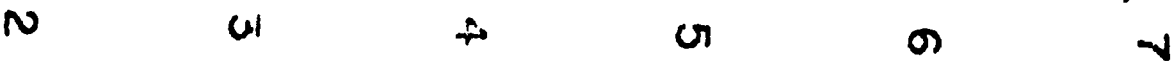
NUMBER OF DAYS ABSENT PER YEAR

OVERALL JOB PERFORMANCE
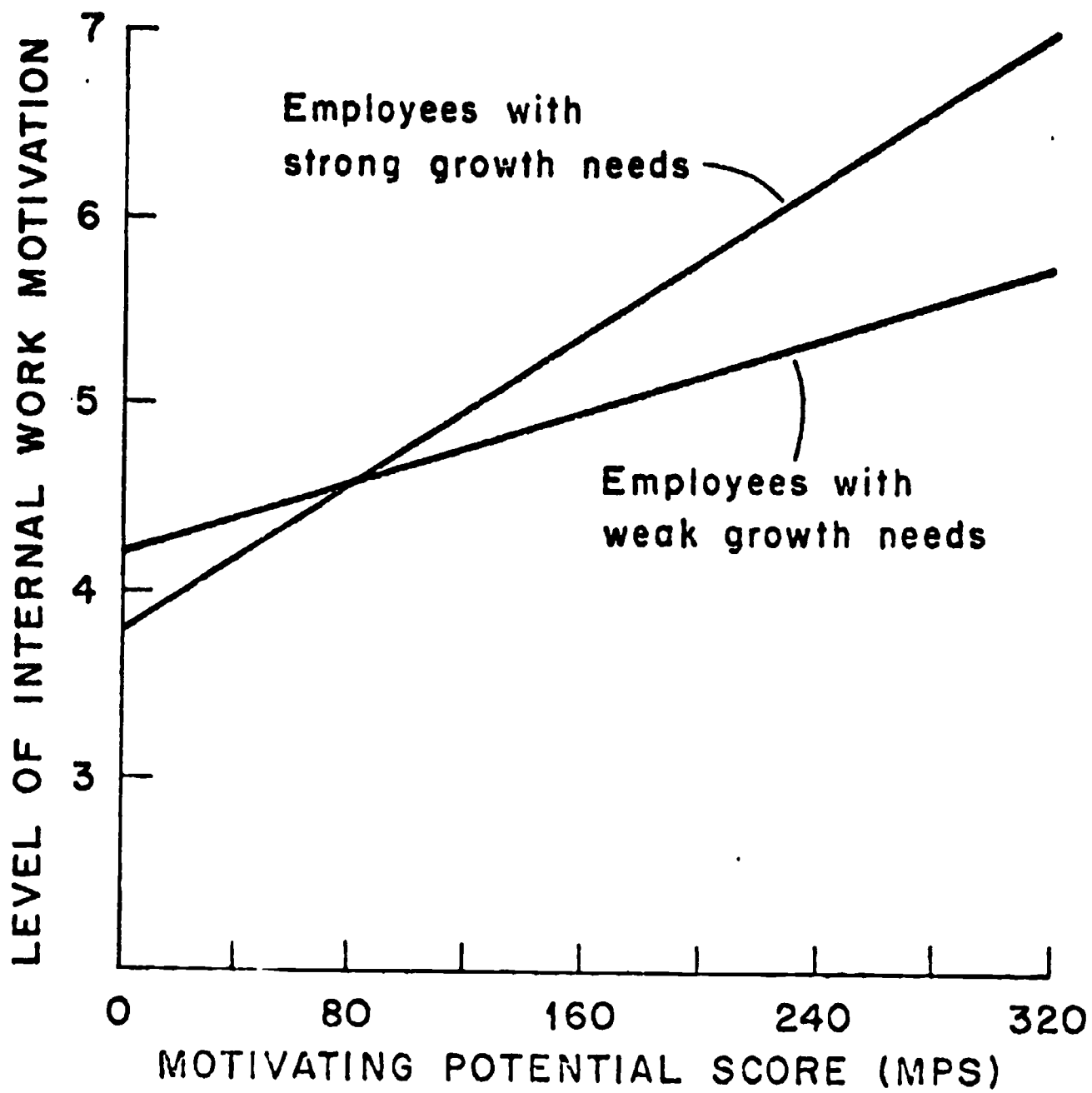(as rated by supervisors on a 1 to 7 scale)

Figure 7

Relationship Between the Motivating Potential of a Job and the
Internal Work Motivation of Employees
(Shown Separately for Employees with Strong vs. Weak Growth Need Strength)

The Traveler's project was designed with two purposes in mind. One was to achieve improvements in morale, productivity, and other indicators of employee well-being. The other was to test the general effectiveness of the strategy for job enrichment we have summarized in this paper.

The work group chosen was a keypunching operation. The group's function was to transfer information from printed or written documents onto punched cards for computer input. The workgroup consisted of 98 keypunch operators and verifiers (both in the same job classification), plus 7 assignment clerks. All reported to a supervisor, who, in turn, reported to the assistant manager and the manager of the data input division.

The size of individual punching orders varied considerably, from a few cards to as many as 2,500. Some work came to the work group with a specified delivery date, while other orders were to be given routine service on a predetermined schedule.

Assignment clerks received the jobs from the user departments. After reviewing the work for obvious errors, omissions, and legibility problems, the assignment clerk parceled out the work in batches expected to take about one hour. If the clerk found the work not suitable for punching it went to the supervisor, who either returned the work to the user department or cleared up problems by phone. When work went to operators for punching, it was with the instruction, "Punch only what you see. Don't correct errors, no matter how obvious they look.

Because of the high cost of computer time, keypunched work was 100% verified--a task that consumed nearly as many man-hours as the punching itself. Then the cards went to the supervisor, who screened the jobs for due dates before sending them to the computer. Errors detected in verification were assigned to various operators at random to be corrected.

The computer output from the cards was sent to the originating department, accompanied by a printout of errors. Eventually the printout went back to the supervisor for final correction.

A great many phenomena indicated that the problems being experienced in the work group might be due to poor motivation. As the only person performing supervisory functions of any kind, the supervisor spent most of his time responding to crisis situations, which recurred continually. He also had to deal almost daily with employee's salary grievances or other complaints. Employees frequently showed apathy or outright hostility toward their jobs.

Rates of work output, by accepted work measurement standards, was inadequate. Error rates were high. Due dates and schedules were frequently missed. Absenteeism was higher than average, especially before and after weekends and holidays.

The single, rather unusual exception was turnover. It was lower than the company-wide average for similar jobs. The company has attributed this fact to a poor job market in the base period just before the project began, and to an older, relatively more settled work force--made up, incidentally, entirely of women.

The Diagnosis. Using some of the tools and techniques we have outlined, a consulting team from the Management Services Department and from Roy W. Walters & Associates concluded that the keypunch operators' job exhibited the following serious weaknesses in terms of the Core Dimensions.

Skill Variety: There was none. Only a single skill was involved--the ability to punch adequately the data on the batch of documents.

Task Identity: Virtually nonexistent. Batches were assembled to provide an even workload, but not whole identifiable jobs.

Task Significance: Not apparent. The keypunching operation was a necessary step in providing service to the company's customers. The individual operator was isolated by an assignment clerk and a supervisor from any knowledge of what the operation meant to the using department--let alone its meaning to the ultimate customer.

Autonomy: None. The operators had no freedom to arrange their daily tasks to meet schedules, to resolve problems with the using department, or even to correct, in punching, information that was obviously wrong.

Feedback: None. Once a batch was out of the operator's hands, she had no assured chance of seeing evidence of its quality or inadequacy.

Design of the Experimental Trial. Since the diagnosis indicated that the Motivating Potential of the job was extremely low, it was decided to attempt to improve the motivation and productivity of the work group through job enrichment. Moreover, it was possible to design an experimental test of the effects of the changes to be introduced: the results of changes made in the target work group were to be compared with trends in a control work group of similar size and demographic make-up. Since the control group was located more than amile away, there appeared to be little risk of communication between members of the two groups.

A base period was defined before the start of the experimental trial period, and appropriate data were gathered on the productivity, absenteeism, and work attitudes of members of both groups. Data also were available on turnover; but since turnover was already below average in the target group, prospective changes in this measure were deemed insignificant.

An educational session was conducted with supervisors, at which they were given the theory and implementing concepts and actually helped to design the job changes themselves. Out of this session came an active plan consisting of about twenty-five change items that would significantly affect the design of the target jobs.

The Implementing Concepts and the Changes. Because the job as it existed was rather uniformly low on the Core Job Dimensions, all five of the Implementing Concepts were used in enriching it.

Natural Units of Work. The random batch assignment of work was replaced by assigning to each operator continuing responsibility for certain accounts"--either particular departments or particular recurring jobs. Any work for those accounts now always goes to the same operator.

Task Combination. Some planning and controlling functions were combined with the central task of keypunching. In this case, however, these additions can be more suitably discussed under the remaining three Implementing Concepts.

Client Relationships. Each operator was given several channels of direct contact with clients. The operators, not their assignment clerks, now inspect their documents for correctness and legibility. When problems arise, the operator, not the supervisor, takes them up with the client.

Feedback. In addition to feedback from client contact, the operators were provided with a number of additional sources of data about their performance. The computer department now returns incorrect cards to the operators who punched them, and operators correct their own errors. Each operator also keeps her own file of Xerox copies of her errors. These can be reviewed to determine trends in error frequency and types of errors. Each operator receives weekly a computer printout of her errors and productivity--which is sent to her directly, rather than given to her by the supervisor.

Vertical Loading. Besides consulting directly with clients about work questions, operators now have the authority to correct obvious coding errors on their own. Operators may set their own schedules and plan their daily work, as long as they meet schedules. Some competent operators have been given the option of not verifying their work and making their own program changes.

Results of the Trial. The results were dramatic. The number of operators declined from 98 to 60. This occurred partly through attrition and partly through transfer to other departments. Some of the operators were promoted to higher-paying jobs in departments whose cards they had been handling--something that had never occurred before. Some details of the results are given below.

Quantity of Work: The control group, with no job changes made, showed an increase in productivity of 8.1% during the trial period. The experimental group showed an increase of 39.6%.

Error Rates: To assess work quality, error rates were recorded for about 40 operators in the experimental group. All were experienced, and all had been in their job before the job enrichment project began. For two months before the study, these operators had a collective error rate of 1.53%. For two months toward the end of the study, the collective error rate was 0.99%. By the end of the study the number of operators with poor performance had dropped from 11.1% to 5.5%.

Absenteeism: The experimental group registered a 24.1% decline in absences. The control group, by contrast, showed a 29% increase.

Attitudes Toward the Job: An attitude survey given at the start of the project showed that the two groups scored about average, and nearly identically, in nine different areas of work satisfaction. At the end of the project the survey was repeated. The control group showed an insignificant 0.5% improvement, while the experimental group's overall satisfaction score rose 16.5%.

Selective Elimination of Controls: Demonstrated improvements in operator proficiency permitted them to work with fewer controls. Travelers estimates that the reduction of controls had the same effect as adding seven operators--a saving even beyond the effects of improved productivity and lowered absenteeism

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Role of the Supervisor. One of the most significant findings in the Travelers experiment was the effect of the changes on the supervisor's job, and thus on the rest of the organization. The operators took on many responsibilities that had been reserved at least to the unit leaders and sometimes to the supervisor. The unit leaders, in turn, assumed some of the day-to-day supervisory functions that had plagued the supervisor. Instead of spending his days supervising the behavior of subordinates and dealing with crises, he was able to devote time to developing feedback systems, setting up work modules and spearheading the enrichment effort--in other words, managing.[10]

Summary. By applying work measurement standards to the changes wrought by job enrichment---attitude and quality, absenteeism, and selective administration of controls--Travelers was able to estimate the total dollar impact of the project. Actual savings in salaries and machine rental charges during the first year totaled $64,305. Potential savings by further application of the changes were put at $91,937 annually. Thus, by almost any measure used--from the work attitudes of individual employees to dollar savings for the company as a whole- The Travelers test of the job enrichment strategy proved a success.

CONCLUSION

What we have presented in this paper is a new strategy for the re-design of work in general, and for job enrichment in particular. The approach has four main distinguishing characteristics.

1. It is grounded in a basic psychological theory of what motivates people in their work

2. The strategy specifies that planning for job changes should be done on the basis of data about the jobs and the people who do them--and a set of diagnostic instruments are provided to collect such data.

3. It provides a set of specific Implementing Concepts to guide actual job changes, as well as a set of theory-based rules for selecting which action steps are likely to be most beneficial in a given situation.

4. The strategy is buttressed by a set of findings showing that the theory holds water, that the diagnostic procedures are practical and informative, and that the Implementing Concepts can lead to changes which are beneficial both to organizations and to the people who work in them.

We believe that job enrichment is moving beyond the stage where it can be considered "yet another management fad." Instead, it represents a potentially powerful strategy for change which can help organizations achieve their goals for higher quality work--and at the same time further the equally legitimate needs of contemporary employees for a more meaningful work experience. Yet there are pressing questions about job enrichment and its use which remain to be answered.

Prominent among these is the question of employee participation in planning and implementing work redesign. The diagnostic tools and implementing concepts we have presented are neither designed nor intended for use only by management. Instead, our belief is that the effectiveness of job enrichment is likely to be enhanced when the tasks of diagnosing and changing jobs are undertaken collaboratively by management and by the employees whose work will be affected.

Moreover, the effects of work redesign on the broader organization remain generally uncharted. Evidence now is accumulating that when jobs are changed, turbulence can appear in the surrounding organization--for example, in supervisory-subordinate relationships, in pay and benefit plans, and so on. Such turbulence can be viewed by management either as a "problem" with job enrichment, or as an opportunity for further and broader organizational development by teams of managers and employees. To the

degree management takes the latter view, we believe, the oft-espoused
goal of achieving basic organizational change through the redesign of work
may come increasingly within reach.

The diagnostic tools and implementing concepts we have presented
are useful in deciding on and designing basic changes in the jobs themselves.
They do not address the broader issues of who plans the changes, how they
are carried out, and how they are followed up. The way these broader
questions are dealt with, we believe, may determine whether job enrichment
will grow up--or whether it will die an early and unfortunate death, like
so many other fledgling behavioral science approaches to organizational
change.

Footnotes

1. The authors acknowledge with great appreciation the editorial assistance of John Hickey in the preparation of this paper, and the help of Kenneth Brousseau, Daniel Feldman and Linda Frank in collecting the data which are summarized here. The research activities reported were supported in part by the Organizational Effectiveness Research Program of the Office of Naval Research, and the Manpower Administration of the U.S. Department of Labor, both through contracts to Yale University.

2. See, for example, Herzberg et al., 1959; Herzberg, 1966, 1968; Paul et al., 1969, Ford, 1969.

3. See Turner & Lawrence, 1965; Hackman & Lawler, 1971; Hackman & Oldham, 1974b.

4. Useful feedback can come from other sources as well--for example, from co-workers, from an immediate supervisor, or from higher levels of management. In focusing on the motivational potential of jobs in this article, we are restricting our discussion to feedback that the individual gets directly from his job as he does it.

5. For the algebraically inclined, the Motivating Potential Score is computed as follows:

$$MPS = \left[\frac{\text{Skill Variety} + \text{Task Identity} + \text{Task Significance}}{3}\right] \times \text{Autonomy} \times \text{Job Feedback}$$

It should be noted that in some cases the MPS score can be too high for positive job satisfaction and effective performance--in effect over-stimulating the person who holds the job. This paper focuses on jobs which are toward the low end of the scale--and which potentially can be improved through job enrichment.

6. The diagnostic package is described in more detail by Hackman & Oldham, 1974a.

7. MPS scores can range from 1 to about 350. An 'average' score would be about 125.

8. The nature of the Implementing Concepts and details about their use are described in more detail by Walters & Associates, in press.

9. Detailed results are reported by Hackman and Oldham, 1974a and 1974b.

10. It should be noted, however, that helping supervisors change their own work activities when their subordinates' jobs have been enriched is itself a challenging task. And if appropriate attention and help is not given to supervisors in such cases, they rapidly can become disaffected--and a job enrichment "backlash" can result (see, for example, Lawler, Hackman & Kaufman, 1973).

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