



WORK REDESIGN: EIGHT OBSTACLES AND OPPORTUNITIES

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Successful work-design initiatives must overcome many obstacles in order to have their intended impact. This article outlines eight obstacles to work redesign: (1) influences on multiple outcomes, (2) trade-offs between different approaches, (3) difficulty in choosing appropriate units of analysis, (4) difficulty in predicting the nature of the job, (5) complications from individual differences, (6) job enlargement occurring without job enrichment, (7) creating new jobs as part of growth or downsizing, and (8) differences between long-term and short-term effects. This article examines the nature of these eight obstacles, reviews prior research on this topic, and outlines suggestions for managing these obstacles in practice. © 2005 Wiley Periodicals, Inc.

The dawn of the Industrial Revolution changed the nature of work, spawning the use of assembly-line systems that maximized employee efficiency and minimized the employee skills needed to perform the work (e.g., Gilbreth, 1911; Taylor, 1911). This new nature of work simultaneously led to employee problems with morale, working conditions, and safety (Losey, 1998). As limitations in these approaches became obvious, personnel practitioners and researchers began to focus their attention upon a more motivationally oriented approach (Hackman & Oldham, 1975; Hulin & Blood, 1968). Derived from psychological research on job enrichment and en-

largement and theories of work motivation, it primarily sought to enhance worker satisfaction and provide for intrinsic needs. Both the mechanistic and motivational trends in designing work illustrate an important insight—the nature of work has a substantial impact on an employee's performance and attitude.

Work design continues to be of great practical significance to organizations as they try to attain conflicting outcomes such as efficiency and satisfaction. The popularity of such programs as total quality management (Deming, 1986; Juran & Gryna, 1988; Waldman, 1994) and reengineering (Hammer & Champy, 1993), which contain substantial work-design components, attests to

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the practicality of the topic. In addition, current trends in human resource management research that consider strategic HR (Delery & Shaw, 2001) and human capital management (Lepak & Snell, 1999) can be aided by considering theoretical and practical implications of job-design research. For example, Delery and Shaw (2001) and Tsui, Pearce, Porter, and Tripoli (1997) argue that many strategic HR policies should differ by job in

the organization. Decisions surrounding such differential policies would benefit from knowledge of the design of those jobs. For example, a decision to implement a gainsharing compensation system for a subgroup of jobs necessitates an understanding of the interdependencies among those jobs. Similarly, the human capital management perspective, which concerns the effective utilization of human capabilities, would clearly benefit from enhanced knowledge of job design, in part because job design has implications for what people do and how effectively they do it.

HR professionals today can profit greatly from the knowledge gained through these years of research and practice with job design.

There are several clear relationships between characteristics of work and employee reactions that can guide efforts to simultaneously maximize efficiency and satisfaction in the workplace. Several challenges, or obstacles, remain, however, for practitioners attempting to implement work-design changes.

These challenges emerge for diverse reasons, such as conflicting constituent needs, the complexity of organizations, and the practical realities of the workplace. For example, work designed according to mechanistically oriented principles will be radically different from work designed according to motivationally oriented principles. The seemingly irreconcilable trade-offs between the two approaches represent an obstacle to research and practice because they suggest a dichotomy: work can be either efficient or satisfying.

The purpose of this article is to improve understanding of these eight obstacles and to provide direction for managing them. As these obstacles are formidable and defy simple solutions, it is not our intention to completely solve each of them. Rather, we hope to clarify sufficiently the issues involved and to aid practitioners in making informed and rational work-design decisions that complement their particular situation.

Obstacle #1: Work Design Influences Multiple Outcomes

The first obstacle lies in recognizing that work design influences multiple outcomes. In fact, different scientific disciplines have produced several distinct approaches to job design and research. Further complicating matters is that each approach has been conducted relatively independently of the others. The interdisciplinary job-design perspective of Campion (1988, 1989; Campion & Thayer, 1985) highlights this fact and suggests that there are at least four basic approaches to work design, each focused on a distinct set of outcomes. These four approaches are labeled mechanistic, motivational, perceptual, and biological (Table I). Practitioners need to consider all four approaches when redesigning work. Failure to simultaneously acknowledge differences in the purpose, primary outcomes, and findings of each approach has impeded the progress of work-design research in defining comprehensive and practical models to aid practitioners. If the number and type of outcomes considered are constrained to those found within a given model, practitioners will face obstacles implementing effective work-design changes.

The first approach, the mechanistic model, is grounded in classical industrial engineering research (Barnes, 1980; Gilbreth, 1911; Taylor, 1911). This model evolved largely to manage pressures for efficiency that arose during the Industrial Revolution. Simplification, specialization, and repetition of work are the central tenets of the model. Advocates of this approach believe it can increase efficiency, make staffing easier, reduce training costs, and lower compensation

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TABLE I Interdisciplinary Perspective on Job Design and Associated Benefits and Costs

Model	Discipline Base	Illustrative Recommendations	Typical Benefits	Typical Costs
Mechanistic	Industrial Engineering	Specialization Simplification Repetition	Efficiency Easier staffing Reduced training	Decreased satisfaction Decreased motivation
Motivational	Organizational Psychology	Variety Autonomy Participation	Satisfaction Intrinsic motivation Retention Customer service	Training Errors Stress
Perceptual	Human Factors Experimental Psychology	Reduce information-processing requirements	Reduced errors Fewer accidents Less mental overload	Boredom Monotony
Biological	Ergonomics Medical Sciences	Reduce physical requirements Reduce environmental stressors	Physical comfort Reduced physical stress Reduced fatigue	Financial costs Inactivity

Note. These models are drawn from research in multiple disciplines that is exemplified by Taylor (1911) for mechanistic, Hackman and Oldham (1980) for motivational, Meister (1971) for perceptual, and Grandjean (1980) for biological. Recent evidence for the benefits and costs is contained in Campion (1988; 1989), Campion and Berger (1990), Campion and McClelland (1991; 1993) and Campion and Thayer (1985).

requirements. This approach is similar to control-oriented HR strategies (Arthur, 1992, 1994) and compliance-based HR configurations (Lepak & Snell, 1999).

Proceeding primarily from research in organizational psychology (Hackman & Oldham, 1980; Herzberg, 1966), the *motivational model* evolved in response to job dissatisfaction, the deskilling of industrial jobs, and the alienation of workers that resulted from the overapplication of the mechanistic model. The approach usually provides “job enriching” recommendations such as increasing the variety of tasks performed or the autonomy with which they are executed. The intended benefits of this model include increased job satisfaction, intrinsic motivation, retention, and customer service. This work has clear connections with commitment-oriented HR strategies (Arthur, 1992, 1994) and HR configurations (Lepak & Snell, 1999).

Based on human factors and experimental psychology research (Fogel, 1967;

McCormick, 1976; Meister, 1971), the *perceptual model* arose from increases in technological complexity and a shift in many jobs from manually performing work to operating and monitoring. This approach is primarily concerned with reducing the information-processing requirements of work in order to reduce the likelihood of errors, accidents, and mental overload.

Emerging from ergonomics and medical sciences research (Astrand & Rodahl, 1977; Grandjean, 1980), the *biological model* sought to alleviate physical stresses of work. Reductions in physical requirements and environmental stressors and increased consideration of postural factors are common recommendations. Taking these factors into account when designing jobs can reduce physical discomfort, physical stress, and fatigue.

As mentioned, each of these approaches tends to be studied within a single discipline and focuses primarily on the benefits for solving one particular problem. It is clear,

however, that each of these approaches is associated with certain costs, although the costs were not clearly recognized until interdisciplinary research was conducted that directly compared the models (e.g., Campion, 1988; Campion & Thayer, 1985). The costs represent the loss of benefits that would have been attained if an alternative model had been chosen.

Decisions about how to work and job-redesign work may very well depend on whether a job is considered to be core to the strategic aims of the organization.

For example, the costs associated with the motivational model, such as increased training requirements, likelihood of errors, and on-the-job stress, parallel the benefits of the mechanistic and perceptual models (Table I). In a similar fashion, designing work according to the perceptual model can result in the undesirable outcomes of boredom and monotony, two benefits of the motivational model. Finally, the biological model is independent of the others but still involves costs in the form of financial expenses to modify technology and work conditions, as well as worker inactivity that may result if too

many of the job's physical requirements are removed. When practitioners conduct work redesign within one or only some of these approaches and ignore others, the costs are typically unrecognized. This omission may impede successful work-design interventions.

The obstacle is particularly problematic to HR practitioners because each of the key variables typically is important to organizations. Managers do not have the luxury of maximizing job satisfaction at the expense of efficiency. Similarly, neglecting ergonomics to focus on efficiency is not an acceptable option. Thus, in dealing with this obstacle, HR managers and researchers should consider several key issues.

First, practitioners must ask the questions "Do the costs always occur?" or "Under what conditions are the costs more or less likely to occur?" to determine which outcome variables are of greatest relevance to their situation. Organizational culture and individual differences are two sample vari-

ables that a practitioner could account for when making decisions about important outcomes.

Second, attention should be paid to links between the appropriate job-design approach and the HR strategy of the organization. For example, the mechanistic approach might fit better with a control-oriented HR strategy, while the motivational approach might complement a commitment-oriented HR strategy (Arthur, 1992, 1994).

Third, current research on strategic HR has distinguished between core jobs and noncore jobs, with core jobs being more critical to the core competencies of the organization (Delery & Shaw, 2001). Decisions about how to work and job-redesign work may very well depend on whether a job is considered to be core to the strategic aims of the organization. These considerations will help assure that design of work in the organization adequately fits the organizational culture and strategy, precursors to a successful intervention.

Obstacle #2: Trade-offs between Different Work-Design Approaches

Implied in the previous discussion, a second major obstacle is the inherent tension between the various models. That is, changes recommended from each discipline, aimed at improving its specific outcomes, tend to be incompatible, or even in direct conflict with, changes recommended from another work-design model. Recent research has acknowledged the trade-offs between different job-design approaches and under what circumstances the trade-offs are more likely to occur (Campion, 1988; Campion & McClelland, 1993; Edwards, Scully, & Brtek, 1999, 2000). In addition, these studies have investigated whether or not trade-offs can be minimized if jobs are redesigned (Morgeson & Campion, 2002).

The most prominent example is found in the apparent trade-offs between the mechanistic and motivational models of work design (Campion, 1988; Campion & McClelland, 1991, 1993; Campion & Thayer, 1985). This trade-off arises from the fact that many

recommendations from the motivational model increase satisfaction but reduce efficiency, whereas the recommendations from the mechanistic model increase efficiency but reduce satisfaction. This tension creates conflict for practitioners who wish to capture the benefits of the mechanistic model without incurring its costs. One manufacturing company implemented lean production to improve quality and standardize work flow. They found that the motivational properties of the jobs, such as autonomy, skill utilization, and participation in decision making, all declined. This implementation also resulted in reduced organizational commitment, role breadth self-efficacy, and increased job depression (Parker, 2003), thus demonstrating the trade-offs that may occur when redesigning work.

Researchers in this field have been unable to provide clear direction to practitioners wanting to maximize multiple outcomes that span disciplinary boundaries, such as attaining both efficient and satisfying work. Recent work-redesign research suggests a number of approaches practitioners can use in response to this obstacle. However, the most appropriate approach will depend upon a host of factors, including the strategic objectives of the work design.

The *compromise approach* involves a direct judgment about the outcomes that are chosen as the focus of the work-redesign intervention. The desired outcomes then dictate the job-design model used. This approach is useful because all parties are aware of the trade-offs and difficulty of simultaneously maximizing all outcomes. Managers make informed decisions based upon the outcomes they value most and the costs they will accept. For example, in Campion and McClelland (1991), the motivational model was used in redesigning the work in order to increase job satisfaction and customer service, knowing that there would be no gain (and maybe even losses) in efficiency and training times.

The *level-separation approach* involves designing different levels of the organization using different models. For example, organizational structures can be designed accord-

ing to the mechanistic model, and jobs within departments can be designed based upon the motivational model. In this way, basic efficiencies are built into the flow of the work, yet individual jobs are satisfying. This raises a question for practitioners in terms of whether the approaches should be viewed as hierarchical, with the mechanistic approach more appropriate for higher levels.

The *sequential approach* to reconciling conflicts may involve applying one model first, followed by the other. For example, the mechanistic model could be used to first make the jobs more efficient, and then the motivational model could be applied to make the jobs more satisfying. Alternatively, the motivational model could be used to create motivating work, such as a work team having responsibility for an entire product, and then individual jobs could be made as efficient as possible, such as having each person in the team perform a specialized task. However, practitioners should consider whether jobs require some minimum level of efficiency in order to be motivating, because inefficient jobs often are viewed as frustrating. Sequential strategies also highlight two features of virtually all job-design activities: there is equifinality (i.e., multiple configurations can sometimes produce the desired outcomes) and the process is iterative (i.e., improvements in jobs often proceed in many small steps).

The *synthesis approach* focuses on specifying areas in which gains can be made based on one model without sacrificing the other models. It is sometimes possible to reap some of the benefits of one model without incurring large costs in terms of another, if careful attention is paid to the specific changes made. For example, costs of the motivational model are more likely if mental demands are increased (e.g., increased autonomy and skill utilization), but less likely when other changes are made (e.g., increasing feedback and social support; Campion & McClelland, 1993), because increased mental

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demands create costs in terms of the outcomes of the mechanistic approach (e.g., training times and compensation requirements). Practitioners should investigate which work-design principles in each model create costs and which do not.

It is also possible that trade-offs that exist at the individual level are less apparent at the team level. The *team approach* involves using team-based design to simultaneously reap efficiency, cost savings, and motivational benefits. For example, team members are able to learn from each other via cross-training, thereby lowering training costs and increasing workforce flexibility. Team designs may also increase motivation through increases in social facilitation, skill variety, task significance, and feedback (Campion, Medsker, & Higgs, 1993). In addition, workload sharing by team members can help avoid downtime. On the other hand, practitioners should be advised that teams may incur greater total costs as a result of well-known group process losses (e.g., social loafing, conformity). Therefore, further inquiry is sorely needed on this issue.

There are several well-publicized approaches to work design that may be popular because they represent hybrids of multiple models and thus may help practitioners reduce or balance the trade-offs. *Total quality management* (TQM) is one strategy that attempts to combine elements of both the mechanistic and motivational models of job design. The general focus of TQM is to continually improve processes and product quality (Deming, 1986).

TQM's focus on work processes reflects a mechanistic orientation. Management by data (i.e., the importance of feedback), however, is a central construct in motivational, as well as mechanistic, models of work design. Continuous learning is the same as an orientation to learning and development that is inherently motivational, as is the use of cross-functional teams and quality circles. Deming also highlighted the importance of

leadership, communication, and training (DeVor, Chang, & Sutherland, 1992). TQM appears to have withstood the fad stage, perhaps because it balances competing perspectives in work-design theory and, thus, offers a viable option for practitioners.

The principles of *reengineering* also reflect concepts from both the motivational and mechanistic models of job design. Reengineering is primarily a mechanistic approach to job design because of its focus on creating efficiency of methods, facilities, materials, and work flows (Hammer & Champy, 1993). However, reengineering also has components of the motivational approach. For example, combining jobs, creating process teams, and increasing the complexity of jobs all are clearly linked to principles of the motivational model. Likewise, reducing the number of checks and controls, performing processes in their natural order, and flattening the organization, all seem related to the motivational model. The long-term survival of this hybrid remains to be seen, however, because of its frequent association with downsizing and uncertain record of productivity improvement (Hammer & Stanton, 1995).

The *socio-technical systems approach* seeks to improve productivity and satisfaction by considering both technological systems (mechanistic model) and human systems (motivational model) in designing work so that the two can be jointly optimized (Cummings, 1978). One of the primary contributions of this perspective is the use of autonomous work teams to accomplish work. Other motivational principles of this approach include increasing task variety, creating a meaningful pattern of tasks that are related to a whole task, establishing optimum work-cycle length, enabling discretion in performance standards and feedback, enlarging jobs to include "boundary tasks," and increasing skill levels (Trist & Bamforth, 1951). Socio-technical systems theory has a relatively long history, but its key principles have not been completely tested and validated (i.e., joint optimization and controlling variance at its source; Morgeson & Campion, 2003), something we view as warranting further investigation by practitioners.

Total quality management is one strategy that attempts to combine elements of both the mechanistic and motivational models of job design.

This obstacle also can be problematic for practitioners who need to achieve desired outcomes from the redesign process. Practitioners may well be faced with the task of redesigning work in order to achieve both efficiency and satisfaction. Research offers several suggestions for practitioners faced with this obstacle (Morgeson & Campion, 2002). First, practitioners should consider adopting an interdisciplinary perspective on work design, a factor also indicated in the first obstacle. Explicitly acknowledging multiple work-design models will enable practitioners to focus job redesign on specific aspects of jobs and minimize inherent trade-offs.

Second, practitioners should specify the desired outcomes of the redesign process. Most redesigns are aimed at achieving just a handful of important outcomes and there may be several options for design that achieve these outcomes while avoiding trade-offs. Finally, the principle of joint optimization from socio-technical systems theory suggests that the key to minimizing trade-offs is balance in work design (Morgeson & Campion, 2002). Thus, practitioners should consider a variety of approaches to work design in order to reduce needed trade-offs.

Obstacle #3: Difficulty in Choosing an Appropriate Unit of Analysis

A pragmatic issue in applying job-design principles is choosing a unit of analysis. Unfortunately, no guidelines exist for determining the proper unit of analysis for a given situation. This lack of guidance is an obstacle to creating unified theories of job design and to making practical changes to jobs. For example, most job-design efforts focus on the properties that “jobs” should possess, but then create change at the task level. This disconnect between the theory and the application makes it even more difficult for practitioners to conduct a successful job design.

Practitioners face this obstacle when redesigning jobs for specific purposes. For example, companies may centralize activities from numerous geographical locations, with the goal of consolidating activities and gain-

ing efficiencies. In this case, analysis conducted at the job level may make it difficult to recognize potential opportunities for consolidation. The analysis should be conducted at a different level in order to consolidate and gain efficiencies. Due to these challenges, a practically useful and theoretically meaningful unit of analysis is needed.

We propose four possible levels of analysis for practitioners to utilize when redesigning work. These choices include jobs, duties, tasks, and task clusters. *Jobs* represent the highest level of analysis and can be defined as a group of duties performed by a single individual. The next level of analysis consists of *duties*, which are composed of multiple tasks that form a major portion of the work performed. The lowest level of analysis is *tasks*, which are typically defined as discrete work activities (Harvey, 1991; McCormick, 1979). Finally, we propose a fourth level of analysis, the *task cluster*, as an intermediary level between tasks and duties.

Given the distinct advantages and disadvantages associated with using each unit of analysis, practitioners should be advised that the choice of unit used can influence the effectiveness of a work-design intervention. For example, researchers studying the well-being of nurses divided jobs into four integrated task categories. This division allowed practitioners to see which interventions most improved the nurses’ well-being, since the intervention differed depending on the task (Le Blanc, de Jonge, de Rijk, & Schaufeli, 2001). This research highlights the fact that the appropriate unit of analysis depends upon the purpose and scope of the job-design intervention. It is critical that the unit of analysis be aligned with the specific needs of the intervention.

Job as the Unit of Analysis

It is possible to reinvent jobs by analyzing them as a whole. For example, the motivational model (e.g., Hackman & Oldham, 1980) has focused on specifying various job

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characteristics (e.g., autonomy and feedback) and their impact on motivational levels. Jobs are also a useful unit for designing organizational workflow. The drawback of this level of analysis, however, is that it is often too large and does not provide insight into within-job variation. In addition, it provides little direction for specific ways to improve the job (Roberts & Glick, 1981). Using the examples above, if the job level of analysis were used in centralizing activities, it would not provide information on how jobs could be combined to achieve efficiencies or on what particular aspects of a job lead to the increased well-being of employees.

One of the advantages of using the task level is that a large amount of specific and detailed information can be obtained about the job.

Duties as the Unit of Analysis

The duties involved in a job can also be used as the units of analysis. Using duties provides more information than the job level and keeps the number of units manageable. With jobs typically consisting of 3–5 duties, however, there are a limited number of ways to combine duties to reconfigure jobs. This may be a good level of analysis for some inter-

ventions, but for other contexts there may be too few options in terms of redistributing duties, modifying duties, or combining duties into new jobs. This suggests that the duty level may still be too gross and limit the amount of information that can be brought to bear on the intervention.

Task as the Unit of Analysis

One of the advantages of using the task level is that a large amount of specific and detailed information can be obtained about the job. This provides many different options when redesigning work, because tasks can be regrouped, eliminated, or changed in a large number of ways. For example, tasks from various geographical locations may be combined to achieve efficiencies. However, as the number of tasks increases, the complexity of the analysis increases. For example, if three

jobs consist of 50 tasks each, 1,225 paired comparisons would have to be made to understand task interrelationships.

In addition, because task inventories typically consist of as many as 200–300 separate task statements, the possibility for inaccuracy also increases (Morgeson & Campion, 1997). For example, if an excessively large amount of information is requested of subject-matter experts, it is possible that their motivation to provide accurate information will be decreased. Likewise, these high information-processing requirements could also result in information overload, which may increase reliance on simplifying heuristics or categorization.

Task Cluster as the Unit of Analysis

Recent research suggests that one way of overcoming this obstacle is to utilize an intermediate unit of analysis. As the following discussion suggests, the task level of analysis is often too detailed, and the duty and job levels of analysis are often too broad. What is needed in many work-redesign situations is a unit of analysis between a duty and a task that allows adequate description of the work, but does not produce information overload. Such an intermediate unit of analysis has been called a *task cluster* (Cascio, 1995), defined as the “smallest collection of logically related tasks that are normally performed by a single person such that they form a whole or natural work process” (Morgeson & Campion, 2002, p. 593).

A task cluster has four distinguishing characteristics. First, a task cluster is broader than a task and narrower than a duty, such that it typically takes between 10 to 15 task clusters to adequately describe most jobs. It provides a unit of analysis that contains sufficient precision to describe a job, but remains manageable in terms of the total number of units. This is particularly important when attempting to understand interdependencies among each pair of units of work.

Second, it is the smallest collection of logically related tasks normally performed by one person. For example, the job of a data-entry analyst has several tasks that include creating new electronic database files, saving

and organizing particular files in specified directories, and creating macros to facilitate data entry. Although each of these represents a distinct task, they could also be effectively grouped into a unit of work called “develops data-entry strategies.”

Third, a task cluster is recognized by job incumbents as a whole or natural piece of work. Often, it consists of an entire work process or subprocess. Similar to the notion of *identity* in describing an entire job (Hackman & Oldham, 1976), the task cluster is seen as distinct from other units of work and as complete in itself, thereby constituting a natural segment of work. This allows jobs to be reinvented using units high in identity, thereby facilitating motivation and satisfaction.

Fourth, task clusters are composed of tasks that have at least moderate levels of task interdependence (Wong & Campion, 1991). There are many advantages to grouping interdependent tasks. For example, the interdependence of tasks increases the likelihood that performance on one task will provide some form of feedback about the performance on a prior task. In addition, when interdependent tasks are performed by one individual, it requires fewer resources to coordinate the tasks than if multiple people were responsible for completing them. Using our running example, a task cluster may be able to provide the right level of analysis to combine data-entry strategies from each geographical location.

Thus, overcoming this obstacle requires practitioners to use the unit of analysis that is best suited to the scope of the intervention. The task cluster concept provides one possible solution. Practitioners should further evaluate the value of task clusters for redesign purposes across a range of occupations and interventions. To aid practitioners, future research should seek to provide advice for choosing among the units, and discuss implications for using specific units on the work-design results obtained.

Obstacle #4: It Is Difficult to Predict the Nature of a Job Before It Exists

Work redesign involves the creation of new jobs or modification of existing ones. In

either case, one objective is to predict the characteristics of the resulting job prior to its actual redesign. This objective is an obstacle for practitioners because our capacity for making accurate predictions is inadequate. More important, we must ensure that employees perceive the new job as we intended, something that does not always occur. One reason why conceptual job redesign does not always match actual redesign is that the latter often is based on changes in the job’s component parts. Our inability to predict arises, at least partially, from the fact that the whole job generally is not equal to the sum of the parts and that certain combinations of changes may produce unforeseen outcomes.

Several factors help explain why knowledge of individual components may prove insufficient for predicting the new job as a whole. First, some job-level characteristics simply do not exist at lower levels. For example, task variety only exists when tasks are viewed together. An evaluation of individual tasks would be insufficient for understanding how combinations of tasks impact the variety of the entire job. Similarly, the degree to which an individual completes a “whole” portion of work (i.e., identity) cannot be judged by looking at single parts of the job in isolation.

Second, looking only at individual parts of jobs ignores the *interdependencies* among them. That is, tasks are interdependent when the inputs, processes, or outputs of one task affect or depend on the inputs, processes, or outputs of other tasks within the same job (Wong & Campion, 1991). Because tasks may be interdependent, the evaluation of the tasks taken as a group can be quite different from their evaluation in isolation. For example, the level of feedback present in a job may depend on whether an individual performs several steps of a process. The presence of feedback may only be evident when one considers interdependencies among the parts. Likewise, the interdependencies among jobs and work systems within the organization impact the differentiation in HR

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strategy that can be effectively employed within an organization (Delery & Shaw, 2001).

In support of these notions, Campion and Stevens (1991) and Wong and Campion (1991) found that the motivational value of a job could be only modestly predicted by summing the motivational value of the individual tasks. For example, Campion and Stevens (1991) had experts rate a set of 40 tasks on dimensions reflecting the extent to which the tasks represented motivational, mechanistic, biological, or perceptual job-design models. Subjects were then asked to group the 40 tasks into jobs, and independent subjects rated each of the *jobs* in terms of the four job-design models. They found small relationships between the *job* and the *task* ratings for three of the four job-design models (-.10 to .22) in this initial study, and for only two of the four in a follow-up. This finding suggests that simply having knowledge of the tasks does not allow one to fully predict the job as a whole.

Wong and Campion (1991) found that a measure of task interdependence could enhance the prediction of the motivational value of the job beyond the sum of the mo-

tivational value of the tasks. In a sample of 188 employees in 67 jobs, employees rated their jobs in terms of the motivational job-design model, and independent experts rated the tasks on their motivating value, interdependence, and similarity. The results showed that the motivational design of the tasks was only modestly related to the motivational design of the jobs, and task similarity added little to the prediction. However, prediction was improved by considering interdependencies among the tasks. Specifically, as interdependencies among tasks increased, satisfaction with the job also increased, but only up to a point (see Figure 1). Very high levels of interdependence were associated with lower ratings of the motivational design of the jobs. It may be that extreme levels of interdependence result in either role overload or narrowly designed jobs with limited stimulation (Wong & Campion, 1991).

Similarly, for a new job, practitioners may find it difficult to predict the consequences that occur from making changes in combination. For example, consider the implementation of manufacturing technologies designed to increase attentional demand and

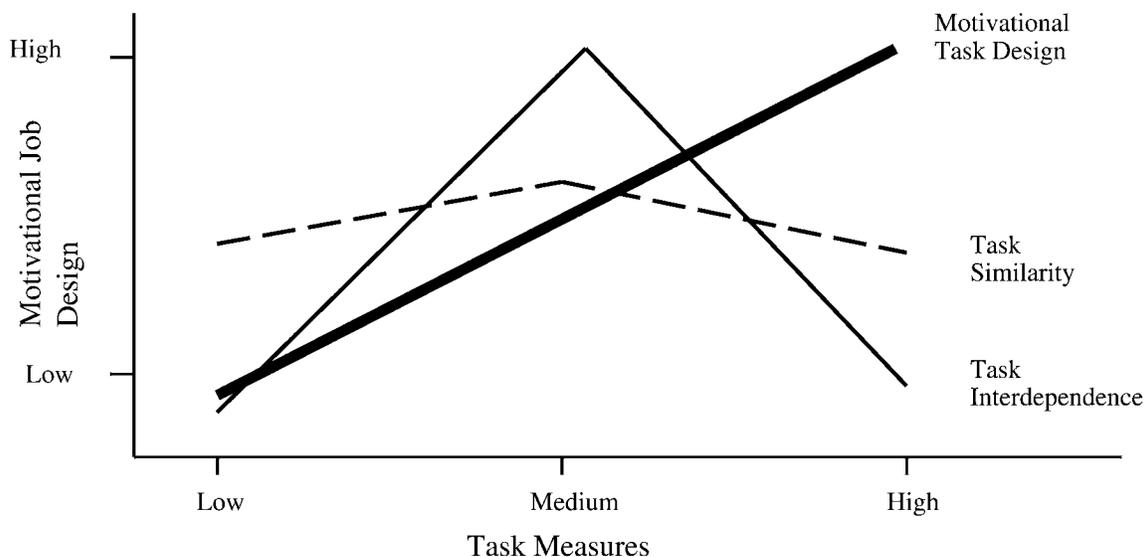


FIGURE 1. Relationship between motivational job-design and task level measures (from Wong & Campion, 1991).

cost responsibility for operators. Research indicates that the combination of high levels of attentional demand coupled with added cost responsibility causes psychological strain compared to employees working in other combinations of the variables (Martin & Wall, 1989). Practitioners may find it difficult to predict the combinations that will produce the undesirable outcomes prior to the implementation of new technologies.

Research into the role of interdependence and combinations of changes has added to our understanding of both work-design theory and practice. More important, this research helps practitioners overcome the obstacle of predicting the nature of jobs. A partial solution to the problem of predicting the nature of a job before it exists is to first take into account both the motivational value and the interdependencies of *tasks*. Once the job is designed, it must be viewed in its entirety to fully understand the nature of the job being created, and the likely reaction of employees.

Practitioners should consider a wide range of possible interdependencies between jobs, such as the 14 types of interdependence defined by Wong and Campion (1991), including inputs (e.g., materials and information), processes (e.g., scheduling and supervision), and outputs (e.g., goals and performance). This investigation would also help practitioners to align the job design with the organization's HR architecture. For example, increased interdependencies among jobs would be consistent with the collaborative HR configuration proposed by Lepak and Snell (1999). Likewise, practitioners should consider the different combinations of changes and the potential impact of each change on employees. Accounting for the numerous combinations may help minimize the undesirable outcomes of redesigned jobs.

Obstacle #5: Individual Differences Complicate Job Redesign

Individuals differ in terms of the attitudes and beliefs they hold, what they value, and how they respond to their environment. To

the extent people also differ in how they respond to characteristics of their work environment, an obstacle to designing work effectively is created. This obstacle becomes particularly relevant when incumbents are involved in the work design. Their input into the design may be based on their own individual preferences, which may not hold across employees. Individual differences also complicate job redesign when organizations are redesigning into teams, as individual differences affect a variety of team outcomes. Fortunately, several studies have used the motivational model to study teams, thus providing insight to practitioners on how individual differences may influence responses to work design.

Early Moderator Research

The early work on moderators originated with Turner and Lawrence (1965), who found evidence that urban/rural background moderated the relationship between job characteristics and satisfaction. Individuals from rural backgrounds responded more positively to enriched work. At about the same time, other researchers (Blood & Hulin, 1967; Hulin & Blood, 1968) investigated "alienation from middle class norms" and found limited evidence for the moderator among blue-collar respondents. Others also found significant moderating effects for job involvement (Ruh, White, & Wood, 1975) and need for achievement (Steers, 1975). However, still other researchers investigating moderators such as community size (Shepard, 1970) and Protestant Work Ethic (Stone, 1975, 1976) found little to no evidence (White, 1978).

Growth Need Strength

The most commonly studied moderator of the work design-work outcome relationship is Growth Need Strength (GNS). GNS is the preference or need individuals have for stimulating and challenging work. The basic

Individuals differ in terms of the attitudes and beliefs they hold, what they value, and how they respond to their environment.

premise is that motivation and satisfaction result from a "goodness of fit" between the task characteristics and the needs of the employees, while the relationship between motivating job design and job satisfaction is strongest for high-GNS individuals (Hackman & Oldham, 1980). There has been considerable research investigating this premise, with some studies finding evidence for GNS as a moderator (Hackman & Lawler, 1971; Hackman, Pearce, & Wolfe, 1978) and others finding a weaker relationship (Lawler, Hackman, & Kaufman, 1973).

In most instances where jobs are being designed for multiple employees, it is best to design jobs in accordance with the average or typical employee.

Several meta-analytic studies have summarized this research and have reached optimistic conclusions about the moderating role of GNS. For example, after conducting a meta-analysis of 28 studies, Loher, Noe, Moeller, and Fitzgerald (1985) concluded that GNS was useful as a moderating variable of the job design–job satisfaction relationship. Fried and Ferris (1987) also suggested that GNS moderated the relationship between motivational job design and job performance, although they only found five studies that actually examined this relationship. The meta-analytic evidence,

however, should be balanced against the overall criticisms leveled against this research due to its overreliance on self-report measures (Johns, Xie, & Fang, 1992; Roberts & Glick, 1981), consistency artifacts (Podsakoff & Organ, 1986), and potential for response-response bias (Salancik, Staw, & Pondy, 1980).

Other Moderators

Campion (1988) investigated whether preferences for work designed from each of four different models would moderate responses to jobs designed from those models, but found only limited support for preferences as a moderator. It is also possible that employee-ability levels influence reactions to job-redesign efforts. If the cognitive ability required for the job is beyond that possessed by the individual, change may be perceived

less positively. For example, Schneider, Reichers, and Mitchell (1982) and Dunham (1977) found significant relationships between motivational characteristics of jobs and various ability requirements. From the multidisciplinary perspective, Campion (1989) found that motivational job design has a positive relationship with a wide range of mental ability requirements and that jobs designed from a mechanistic or a perceptual perspective were negatively related to mental ability requirements. Although it remains an important research question, there is a dearth of research specifically investigating the moderating role of employee abilities (Fried & Ferris, 1987).

Other researchers have hypothesized that the quality of interpersonal relationships at work may moderate the impact of job design on job attitudes, arguing that when workers enjoy satisfying relationships on the job it minimizes the detrimental impact of negative job design. In one particular study (Fretz & Leong, 1982), for example, the results were generally in the predicted direction, but most relationships were not significant. In addition, Oldham (1976) studied the moderating role of supervisory and coworker satisfaction on the relationship between job design and intrinsic motivation. Other studies have found mixed (Abdel-Halim, 1979; Johns et al., 1992; Oldham, Hackman, & Pearce, 1976) or negative results, leaving the role of interpersonal context as a moderator in question.

The weight of the evidence suggests that individual differences may influence the way individuals respond to their work. These differences, however, do not appear to present an obstacle to job-design interventions for two reasons. First, in most instances where jobs are being designed for multiple employees, it is best to design jobs in accordance with the average or typical employee. If jobs are tailored to the individual preferences of each current incumbent, the jobs may not be suited to future incumbents who might possess different preferences. Furthermore, redesigning the job for each new employee is impractical, and predicting the preferences of future employees is likely to become more

difficult with changes in labor market demographics. In addition, if a company decides to move to a team-based work design, it is often impossible to exclude certain employees from working in teams, and thus work cannot be redesigned around individual job holders. However, practitioners can take into account the members' individual differences when redesigning work as well as their preferences for working in a team (Hollenbeck, DeRue, & Guzzo, 2004).

Second, the relationships between the job-design models and their outcomes tend to be in the same direction for all employees, even if they differ in strength between employees. For example, although some employees may respond more positively to the motivational model than others, the relationship is rarely negative. That is, typically all employees respond positively to motivating work, but some employees respond more positively than others (White, 1978). Research on GNS is a good illustration. Even those employees low in GNS showed small increases in job satisfaction in response to the motivating job characteristics (Loher et al., 1985). In addition, there is evidence that people generally prefer work that is designed to be motivating. Champion and McClelland (1991) found that individuals generally preferred jobs designed from the motivational perspective and not the perceptual perspective, and were ambivalent about jobs designed from the mechanistic or biological perspective.

Understanding individual differences is key for practitioners when redesigning work either for individuals or for teams. When designing jobs for individual workers, practitioners should account for individual differences. However, when designing jobs for multiple employees, the role of individual differences should be considered, but not viewed as a major obstacle. In these instances, practitioners should examine the preferences of large groups of employees (e.g., in a specific occupation) rather than the preferences of particular individuals. When redesigning work into teams, practitioners may be able to align the individual differences of team members with the

desired outcomes of the team. In addition, practitioners can utilize selection, training, and structures such as rewards to enhance team functioning (Hollenbeck et al., 2004).

Obstacle #6: Job Enlargement Can Occur without Job Enrichment

Organizations often redesign jobs to enhance their motivational value (Herzberg, 1966). However, this accomplishment is not always an easy matter. Sometimes jobs are enlarged but not enriched, and the motivational benefits do not occur. This limitation creates an obstacle for practitioners because although the distinction between job enlargement and enrichment may be fairly straightforward, it may be difficult to predict if employees will perceive the changes as enrichment or as enlargement. For example, research on downsizing has demonstrated that management perceives changes such as increased responsibility and decision making as job enrichment, while employees perceive the same changes as job enlargement and increased role overload (Tombaugh & White, 1990). In addition, practitioners may come to the false-negative conclusion that job enrichment did not bring the intended benefits, when in reality the lack of improvement was due to the inadequate implementation of the enrichment principles.

Job enlargement refers to increasing the motivational value of a job through the performance of a greater number and variety of similar-level tasks (Lawler, 1969). Herzberg (1968) referred to this combination as *horizontal loading*, and Lawler (1969) labeled it *horizontal enlargement*. Horizontal enlargement has been criticized, however, because it may do little more than replace one boring task or responsibility with two or three boring tasks or responsibilities. Job-enrichment strategies attempt to overcome these weaknesses.

Job enrichment represents the vertical loading of jobs (Herzberg, 1968), such as the

Understanding individual differences is key for practitioners when redesigning work either for individuals or for teams.

adding of tasks for planning and controlling work (Lawler, 1969). It involves adding tasks and decisions that typically are performed by someone higher up in the organizational hierarchy (e.g., a supervisor). Hackman and Oldham (1975) more fully articulated the notion of job enrichment. Their model delineates the psychological states (e.g., experienced meaningfulness of work, felt responsibility) that mediate the relationship between the job-design principles (e.g., autonomy, skill variety) and such outcomes as intrinsic motivation, job satisfaction, and performance. Recent research

It is likely that there is a point at which adding more tasks, responsibilities, or knowledge requirements leads to decrements in performance and satisfaction.

has also investigated the role of job enrichment on outcomes such as role breadth self-efficacy, or an employee's perceived capability of carrying out a broader and more proactive role. Results indicate that increased job enrichment leads to the development of greater self-efficacy (Axtell & Parker, 2003; Parker, 1998).

One of the obstacles faced during a work-design intervention is how to actually enrich a job instead of simply enlarging it. Recent research has made progress in understanding job enrichment versus job enlargement. Two studies on role breadth self-efficacy found that the key to increasing

an employee's self-efficacy was the degree of enrichment in the work redesign rather than the extent of enlargement (Axtell & Parker, 2003; Parker, 1998). In fact, one of the studies found that after controlling for greater involvement, job enlargement actually had a negative effect on role breadth self-efficacy. The implications support the idea that simply expanding the breadth of tasks (enlarging a job), without increasing motivational aspects (enriching the job), might actually reduce an employee's role breadth self-efficacy. As noted by the authors, "[T]his finding is important because organizations often believe they are 'empowering' the workforce when in fact all they are doing is enlarging their tasks" (Axtell & Parker, 2003, p. 126).

One recent form of enrichment, knowledge enrichment, may aid practitioners in

job-design interventions. Knowledge enrichment involves adding requirements for understanding job-related procedures or rules. As a research construct, it appears related both to job satisfaction and performance. Campion and McClelland (1993) collected data on a wide range of costs and benefits from over 400 employees whose jobs had been redesigned at a financial service institution. The longitudinal data indicated that task enlargement resulted primarily in costs, whereas knowledge enrichment resulted primarily in benefits.

An additional important distinction for practitioners to consider is the implementation of the job-enrichment changes. The process used to implement the change, whether top-down or bottom-up, may impact whether employees perceive the change as enrichment or enlargement. A top-down approach to enrichment (i.e., the job modifications are prescribed by management to employees) may differ substantially in its effects from a bottom-up approach (i.e., job modifications are suggested by employees to management). One might surmise that identical changes made to enrich jobs may have different effects depending on whether or not they were created and implemented in a top-down or bottom-up manner, with the bottom-up approach likely resulting in greater employee acceptance.

Another question faced by practitioners is whether there is a limit to the amount that a job can be enriched. It is likely that there is a point at which adding more tasks, responsibilities, or knowledge requirements leads to decrements in performance and satisfaction. This may occur if the changes in the job require knowledge, skills, and abilities (KSAs) that the incumbents do not possess or if the changes overload the incumbent with too many tasks to perform effectively. We refer to such a situation as *job engorgement*. An example is when the addition of tasks should have a positive effect on satisfaction and motivation, but instead increases role ambiguity, role overload, and work stress (e.g., Abdel-Halim, 1978; Jamal, 1984). Research indicates that increases in role ambiguity, role overload, and role conflict result in un-

desired outcomes such as decreased satisfaction and increased intent to leave (Tombaugh & White, 1990). These situations may be especially common for new employees or high-potential employees who may find it difficult to refuse additional tasks and responsibilities.

Thus, in attempting any work-redesign intervention, it is necessary for practitioners to explicitly consider how to enrich the job rather than simply enlarge it. One suggestion for practitioners is to implement work designs that involve decision-making influence and control rather than simply increasing the number of tasks. This may lead to desired outcomes such as employees carrying out more proactive, integrative, and interpersonal tasks, which are important in today's organizations (Axtell & Parker, 2003). Additional research and greater judgment on the part of practitioners is needed, however, to further explicate the empirical distinctions between job enlargement, job enrichment, and knowledge enrichment, and how to avoid job engorgement in the process. This research will further aid practitioners in designing jobs to enhance their motivational value.

Obstacle #7: New Jobs Need to Be Created as Part of Growth or Downsizing

One of the defining characteristics of the modern workplace is rapid change. For practitioners, the obstacle created by rapid change is how jobs should change in response to growth or contraction. An essential feature of this obstacle is the large-scale nature of the change, leading to increases or decreases in the number of employees available to perform the work. In addition, practitioners also must consider the consequences of contraction on employees who remain in the organization. As mentioned previously, research indicates that management may view downsizing as increasing responsibility and decision making, while employees report increased stress due to role overload, role conflict, and role ambiguity. The result of this perceptual difference is

higher levels of employee dissatisfaction along with increased intent to leave the organization (Tombaugh & White, 1990). Fortunately for practitioners, numerous options are available on how to redesign work in the midst of growth or contraction.

Growth

As organizations grow, so do the number and type of jobs that are used to organize the work. What are the ways in which an organization can create new jobs to keep up with the growth, and what are the likely consequences for the employees? There are a number of alternatives in new job growth (Figure 2), and predictions regarding outcomes can be made based on interdisciplinary job-design theory.

Uncoupling involves separating tasks into two jobs at the same level. It is the type of expansion that is most likely under conditions of gradual growth, or when the additional work to be done is not qualitatively different from current job demands. For example, as a retail outlet prepares for seasonal fluctuations in the number of customers and volume sold, it must create new jobs. It may hire additional sales associates whose duties do not differ substantially from other sales associates. In this way, the volume of work is simply divided between the initial jobs and the new jobs. Since the jobs are at the same level, outcomes such as satisfaction, ability, training, and compensation requirements are likely to remain the same.

Unstacking involves separating tasks into two jobs at different levels. The creation of a manager position is an example of unstacking. This approach is most likely used if growth has created coordination or control problems within the workforce. Complex duties (such as planning, monitoring, and reporting) may be assigned to a manager, with basic production or service responsibilities given to lower-level employees. Practitioners should note that this approach to job cre-

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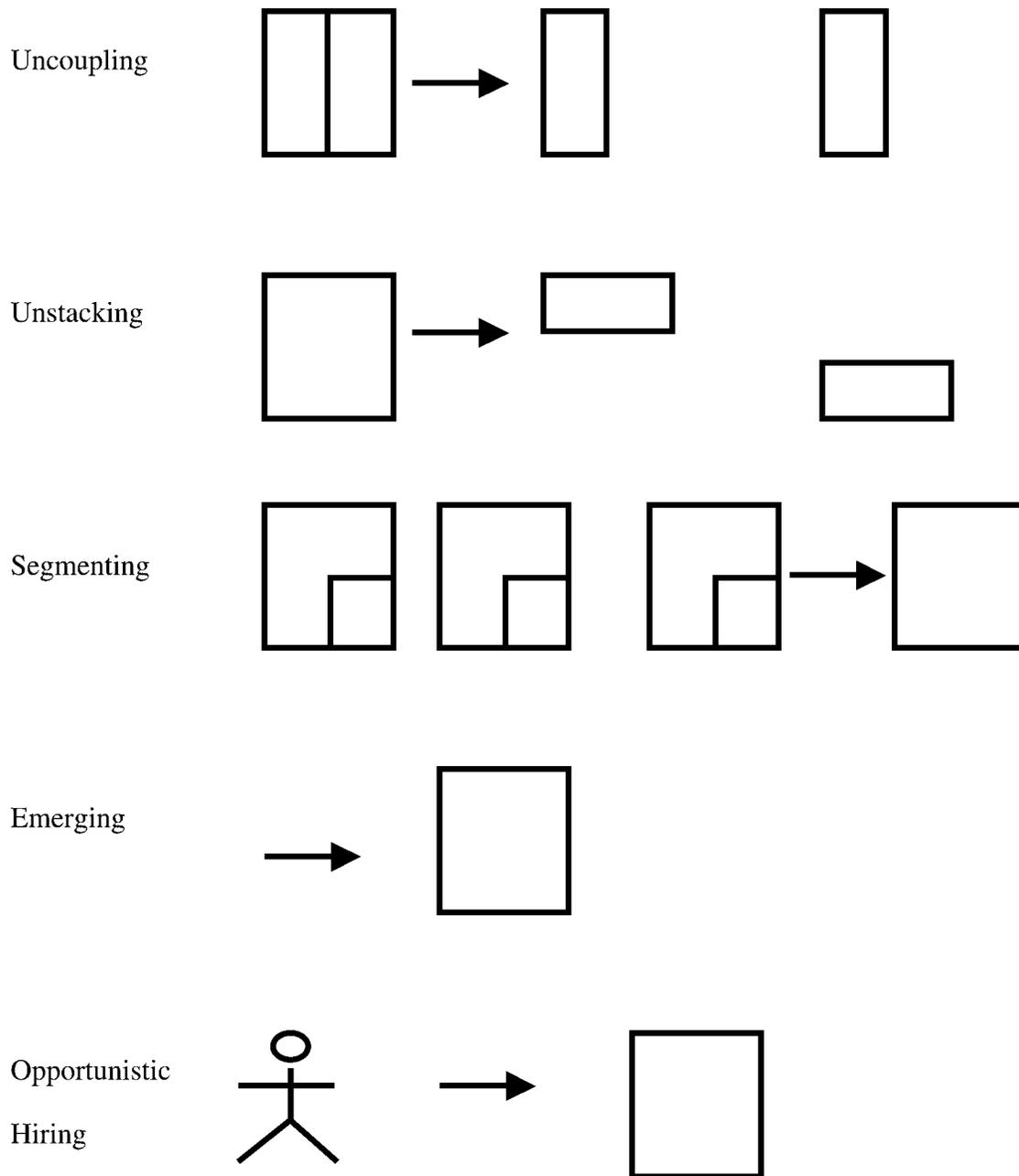


FIGURE 2. Alternatives in new job growth.

ation may result in lower-level employees having relatively lower job satisfaction, training, and compensation requirements compared to upper-level employees. On the other hand, a potential benefit for the organization is that the lower-level employees may be more efficient due to opportunities for specialization and repetition.

Segmenting results from taking portions out of other jobs and combining them into a new job. The organizational level of the new job may be higher or lower. For example, when small companies grow, it is often the case that the HR tasks performed by a variety of employees are pulled together to form a dedicated HR job. Thus, instead of each em-

ployee being responsible for some recruiting, a single job would be created to handle all the recruiting responsibilities. These new jobs should create efficiencies, because tasks are grouped by specialty. The influence on motivation is uncertain, however. These jobs may motivate employees due to the interdependence among the tasks and resulting high task identity, or these jobs may fail to motivate due to excessive repetition and the potential for overspecialization.

Emergent jobs result from the merging of tasks that had not been previously performed or that had been contracted out. As organizations respond to environmental demands, new tasks may be necessary to meet customer expectations, improve business processes, or use modern technology. In addition, organizations may perform functions internally that had previously been outsourced. Although these jobs may lack efficiency in the short term as roles, procedures, and best practices are established, they may yield benefits in the long term in terms of customized service and quicker response time. Allowing job incumbents a degree of autonomy in defining these unique roles is also likely to yield motivation and satisfaction benefits.

Finally, in circumstances of *opportunistic hiring*, jobs are created to match the skills of new organizational members. In an effort to recruit and hire high-potential employees, jobs may be created that are tailored to the skills and preferences of individual employees. These jobs have clear developmental benefits, because new hires are given a degree of latitude and individual discretion in defining the job. This type of hiring may bring motivational benefits as well as increased role innovation. Costs may also be incurred, however, because the job may not be well integrated with other jobs, and some individuals may flounder with an unstructured job.

Contraction

Another obstacle organizations face is the redesign of jobs due to restructuring or downsizing. There are many possible conse-

quences of this process in terms of the design of jobs and impact on employees. Better job-design decisions may be possible by knowing the possible alternatives and evaluating the potential outcomes based on an interdisciplinary job-design perspective (Figure 3). In addition, if noncore jobs are identified, they are prime candidates for contraction or outsourcing.

Jobs that remain following downsizing may be expanded to perform tasks that had previously been part of the jobs that were eliminated. It is likely that some jobs may be *enlarged* through the addition of tasks that are on a similar level in terms of their responsibilities. At best, the likely result of such enlargement is jobs that have a little more variety. However, as noted previously, enlargement without enrichment often is not motivating.

Similarly, some jobs may be *overloaded* if the employees are expected to accomplish much of the work that was previously performed by other jobs. The likely results are dissatisfaction, turnover, and reduced performance. However, there are possible positive consequences of both enlargement and overloading. In addition to labor cost savings, work systems may be streamlined, and unnecessary tasks may become more visible and dropped.

The remaining jobs also may be *enriched* through the addition of higher-level tasks or tasks that require additional ability and training. A typical example occurs when management positions are eliminated and their responsibilities are given to work teams. This type of change can have a positive effect on motivation and satisfaction, although costs may be incurred due to increased errors and the need for additional training, along with efficiency losses, while the team assimilates the new responsibilities.

As organizations are restructured and jobs are eliminated, it is likely that certain tasks simply may not be *performed* because the worker is no longer there. Also, some

Jobs that remain following downsizing may be expanded to perform tasks that had previously been part of the jobs that were eliminated.

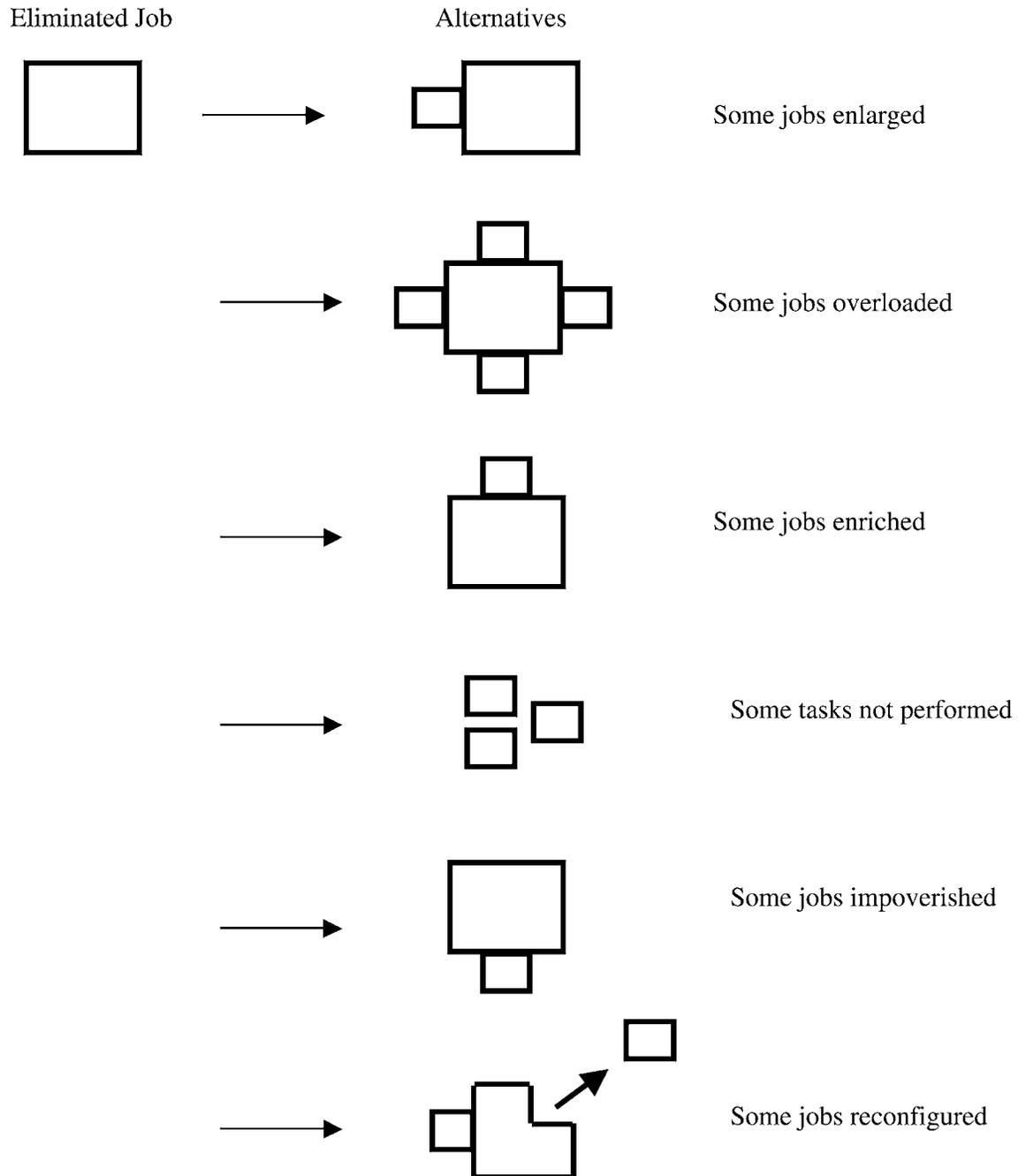


FIGURE 3. Alternatives in job contraction.

jobs may be *impoverished* as a result of the downsizing. Alternatively, some individuals will have their tasks or duties reduced. In particular, managers may suffer a reduced span of control due to employee layoffs, moving them to other areas, or cutting proj-

ects. The result of impoverishment can be a reduction in the motivational value of the job due to the performance of lower-level tasks or a smaller job scope.

Finally, still other jobs may be *reconfigured*. The reconfiguration of jobs results from

the shifting of tasks, duties, or responsibilities among jobs. In an effort to redistribute workload, avoid impoverishment, and prevent overloading, organizations may reconfigure jobs to more evenly distribute the amount of work among the employees and jobs that remain after the downsizing effort. The consequences of reconfiguration for job design will depend on the precise nature of the changes. This is a prime opportunity to reconfigure jobs to make them more closely related to the organization's strategic goals and to further its human resource management strategy.

Another challenge resulting from contraction that practitioners face is the consequences of the change to those who remain in the organization. Research on downsizing provides practitioners with evidence on how to best manage the change for the survivors in the organization. Parker, Chmiel, and Wall (1997) investigated the long-term implications of strategic downsizing for employee well-being as a function of its effect on work characteristics. Results provide strong support that increased clarity about roles and responsibilities and increased participation in the change are particularly important predictors of both strain and job satisfaction. The study also indicates that increased control is positively associated with job satisfaction (Parker et al., 1997).

This research provides several guidelines for practitioners redesigning jobs during contraction. First, to offset the negative consequences of demand, practitioners should establish clear roles and responsibilities for employees and inform and involve employees in the change. Second, in order to enhance employee-well being, practitioners should enhance levels of control over the timing and methods of work. Finally, practitioners should pay attention to the design of work and the wider organizational context in order to enhance an organization's ability to achieve contraction without incurring long-term negative consequences for employees (Parker et al., 1997).

Whether in the midst of growth or contraction, several options are available to practitioners for redesigning work. The key will be for practitioners to align redesign

effort with the strategic goals of the organization and its human resource management strategy. In addition, practitioners can utilize interdisciplinary job-design theory to consider the consequences of each alternative.

Obstacle #8: Long-Term Effects May Differ from Short-Term Effects

Although seldom investigated, the long-term effects of work-design interventions may not be the same as the short-term effects. It is possible that the short-term evaluation of an intervention may indicate that desired changes in satisfaction or productivity have been achieved, but that these positive effects dissipate with time. Similarly, there may be unanticipated long-term costs or benefits associated with the interventions that were not present at the short-term evaluation. Thus, practitioners face the obstacle of how to sustain the benefits from job design over the long term. Practitioners may need to measure changes in jobs and evaluate these changes on a periodic basis. Overcoming this obstacle is critical to fully understanding the strategic implications of changes in HR management systems (Delery & Shaw, 2001).

As the majority of field research evaluating the impact of job-design interventions is conducted over a period of six months to a year, studies that evaluate these interventions over the long term are informative. For example, Campion and McClelland (1991, 1993) conducted both a short-term evaluation and a two-year follow-up to a job-redesign intervention. They found that although jobs designed from the motivational model were more satisfying in the short term, certain applications of the motivational model were negatively related to satisfaction over a longer period. Other research demonstrates that potentially negative outcomes may not appear immediately after the intervention. For example, Parker (2003) evaluated the longitudinal effects of lean production and found that organizational

Although seldom investigated, the long-term effects of work-design interventions may not be the same as the short-term effects.

commitment did not differ between groups at the outset, but after three years, one group had lower commitment than the other groups combined.

Short-term and long-term effects may differ for several reasons. First, the efficiency and quality of work may increase over time as employees gain experience with the task, gain a better understanding of performance standards, increase proficiency at catching errors, and become more aware of the most relevant sources of feedback. Second, training costs decrease over time. Immediately

following changes in job design, training on the new tasks, responsibilities, and technologies is necessary for employees and supervisors (Hackman & Oldham, 1980). With time, however, these costs decrease as employees complete the training (Campion & McClelland, 1993).

Third, the novelty of change may be short-lived. That is, the changes themselves may initially appeal to employees who enjoy the increased attention, the change of pace, and the new tasks

that result in increased interest in and satisfaction with the job. Over time, however, employees may become habituated to the modified job, returning job attitudes to their baseline levels (Homans, 1950; Roethlisberger & Dickson, 1939). Thus, boredom with the work may return in the long run. Fourth, too much enrichment may decrease employee preferences for enriched work in the future. Campion and McClelland (1993) illustrated this when they found that a decreased preference for enriched work was seen after the enrichment intervention.

Fifth, as they habituate to the new work environment, employees may realize that the new jobs are more difficult and require more skill. Demand for higher compensation is likely to follow. This occurs as employees realize they are doing more highly skilled work. Their value in the labor market is increased because of the new skills, and replacement of employees forces organizations to pay market wages (Campion & Berger, 1990).

Sixth, individuals may act to simplify a job that has been enlarged. For example, Campion and Stevens (1991) found that in designing jobs, people tend to group similar tasks in such a way that reflects the mechanistic perspective. That is, in an attempt to minimize work, people tend to break work down into simple repetitive tasks. There is also anecdotal evidence that this occurred in actual jobs (Campion & McClelland, 1993).

Finally, the form of the intervention itself may evolve over time. In Campion and McClelland (1993), the initial task enlargement evolved to either task enlargement or knowledge enrichment at different parts of the company. As noted previously, task enlargement had negative effects in the long term, whereas knowledge enrichment had primarily positive effects.

All this evidence suggests that long-term outcomes are likely to diverge from short-term outcomes. For practitioners, this creates an obstacle in redesigning work, since the outcomes may dissipate and costs may increase over time. Thus, it is critical that practitioners conduct more extended evaluations of job changes. Furthermore, from the planning stages of the job-design intervention, practitioners should consider the long-term effects of job design as well as the short-term effects.

Conclusion

Work-design issues are ubiquitous in organizations, and practitioners continue to face several challenges, or obstacles, when implementing work-design changes. We set out in this article to examine eight obstacles that may impede practitioner efforts to redesign work. In the discussion, we reviewed work-design research and provided direction to aid practitioners in dealing with the obstacles. Although we have not completely overcome each obstacle, we hope the discussion helps to clarify the issues for practitioners and provides guidance on what pitfalls to avoid for a successful job-design implementation.

Going forward, we feel continued dialogue among HR management professionals and researchers could provide significant insight on strategies to surmount these obsta-

It is critical that practitioners conduct more extended evaluations of job changes.

cles and implement even more successful work-design interventions. Continued research on work design is particularly critical because it influences a large number of important outcomes (e.g., satisfaction, efficiency, performance) and accounts for a large amount of statistical variance in these outcomes. Work-design research represents a tremendous opportunity to enhance the contribution of HR research to organizations. In addition, encouraging the theory-

based redesign of work from an interdisciplinary perspective will help us overcome these obstacles and meet the challenges of designing work in the twenty-first century.

Note

This paper is based on the Presidential Address the first author delivered at the 1996 Annual Meeting of the Society for Industrial and Organizational Psychology, San Diego, California.

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REFERENCES

- Abdel-Halim, A. A. (1978). Employee affective responses to organizational stress: Moderating effects of job characteristics. *Personnel Psychology, 31*, 561–579.
- Abdel-Halim, A. A. (1979). Individual and interpersonal moderators of employee reactions to job characteristics: A reexamination. *Personnel Psychology, 32*, 121–137.
- Arthur, J. B. (1992). The link between business strategy and industrial relations systems in American steel minimills. *Industrial and Labor Relations Review, 45*, 488–506.
- Arthur, J. B. (1994). Effects of human resource systems on manufacturing performance and turnover. *Academy of Management Journal, 37*, 670–687.
- Astrand, P. O., & Rodahl, K. (1977). *Textbook of work physiology: Physiological bases of exercise* (2nd ed.). New York: McGraw-Hill.
- Axtell, C. M., & Parker, S. K. (2003). Promoting role breadth self-efficacy through involvement, work redesign and training. *Human Relations, 56*, 113–131.
- Barnes, R. M. (1980). *Motion and time study: Design and measurement of work* (7th ed.). New York: Wiley.
- Blood, M. R., & Hulin, C. L. (1967). Alienation, environmental characteristics, and worker responses. *Journal of Applied Psychology, 51*, 284–290.
- Campion, M. A. (1988). Interdisciplinary approaches to job design: A constructive replication with extensions. *Journal of Applied Psychology, 73*, 467–481.
- Campion, M. A. (1989). Ability requirement implications of job design: An interdisciplinary perspective. *Personnel Psychology, 42*, 1–24.
- Campion, M. A., & Berger, C. J. (1990). Conceptual integration and empirical test of job design and compensation relationships. *Personnel Psychology, 43*, 525–553.
- Campion, M. A., & McClelland, C. L. (1991). Interdisciplinary examination of the costs and benefits of enlarged jobs: A job design quasi-experiment. *Journal of Applied Psychology, 76*, 186–198.
- Campion, M. A., & McClelland, C. L. (1993). Follow-up and extension of the interdisciplinary costs and benefits of enlarged jobs. *Journal of Applied Psychology, 78*, 339–351.
- Campion, M. A., Medsker, G. J., & Higgs, A. C. (1993). Relations between work group characteristics and effectiveness: Implications for designing effective work groups. *Personnel Psychology, 46*, 823–850.
- Campion, M. A., & Stevens, M. J. (1991). Neglected questions in job design: How people design jobs, task-job predictability, and influence of training. *Journal of Business & Psychology, 6*, 169–191.
- Campion, M. A., & Thayer, P. W. (1985). Development and field evaluation of an interdisciplinary measure of job design. *Journal of Applied Psychology, 70*, 29–43.
- Cascio, W. F. (1995). Whither industrial and organizational psychology in a changing world of work? *American Psychologist, 50*, 928–939.
- Cummings, T. G. (1978). Self-regulating work groups: A socio-technical synthesis. *Academy of Management Review, 3*, 625–634.
- Delery, J. E., & Shaw, J. D. (2001). The strategic management of people in work organizations: Review, synthesis, and extension. *Research in Personnel and Human Resources Management, 20*, 165–197.
- Deming, W. E. (1986). *Out of the crisis*. Cambridge, MA: Massachusetts Institute of Technology, Center for Advanced Engineering Study.
- DeVor, R. E., Chang, T. H., & Sutherland, J. W. (1992). *Statistical quality design and control*. Upper Saddle River, NJ: Prentice-Hall.
- Dunham, R. B. (1977). Relationships of perceived job design characteristics to job ability requirements and job value. *Journal of Applied Psychology, 62*, 760–763.
- Edwards, J. R., Scully, J. A., & Brtek, M. D. (1999). The measurement of work: Hierarchical representation of the multimethod job design questionnaire. *Personnel Psychology, 52*, 305–334.
- Edwards, J. R., Scully, J. A., & Brtek, M. D. (2000). The nature and outcomes of work: A replication and

- extension of interdisciplinary work-design research. *Journal of Applied Psychology*, 85, 860–868.
- Fogel, L. J. (1967). *Human information processing*. Englewood Cliffs, NJ: Prentice-Hall.
- Fretz, B. R., & Leong, F. T. (1982). Vocational behavior and career development, 1981: A review. *Journal of Vocational Behavior*, 21, 123–163.
- Fried, Y., & Ferris, G. R. (1987). The validity of the Job Characteristics Model: A review and meta-analysis. *Personnel Psychology*, 40, 287–322.
- Gilbreth, F. B. (1911). *Motion study: A method for increasing efficiency of the workman*. New York: Van Nostrand.
- Grandjean, E. (1980). *Fitting the task to the man: An ergonomic approach* (3rd ed.). London: Taylor & Francis.
- Hackman, J. R., & Lawler, E. E. (1971). Employee reactions to job characteristics. *Journal of Applied Psychology*, 55, 259–286.
- Hackman, J. R., & Oldham, G. R. (1975). Development of the Job Diagnostic Survey. *Journal of Applied Psychology*, 60, 159–170.
- Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior & Human Decision Processes*, 16, 250–279.
- Hackman, J. R., & Oldham, G. R. (1980). *Work redesign*. Reading, MA: Addison-Wesley.
- Hackman, J. R., Pearce, J. L., & Wolfe, J. C. (1978). Effects of changes in job characteristics on work attitudes and behaviors: A naturally occurring quasi-experiment. *Organizational Behavior & Human Decision Processes*, 21, 289–304.
- Hammer, M., & Champy, J. (1993). *Reengineering the corporation: A manifesto for business revolution*. New York: Harper Business.
- Hammer, M., & Stanton, S. A. (1995). *The reengineering revolution*. New York: Harper Business.
- Harvey, R. J. (1991). Job analysis. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (2nd ed.) (pp. 71–163). Palo Alto, CA: Consulting Psychologists Press.
- Herzberg, F. (1966). *Work and the nature of man*. Cleveland, OH: World Publishing Company.
- Herzberg, F. (1968, January-February). One more time: How do you motivate employees? *Harvard Business Review*, 48, 53–62.
- Hollenbeck, J. R., DeRue, D. S., & Guzzo, R. (2004). Bridging the gap between I/O research and HR practice: Improving team composition, team training and team task design. *Human Resource Management*, 43, 353–366.
- Homans, G. (1950). *The human group*. New York: Harcourt Brace Jovonovich.
- Hulin, C. L., & Blood, M. R. (1968). Job enlargement, individual differences, and worker responses. *Psychological Bulletin*, 69, 41–55.
- Jamal, M. (1984). Job stress and job performance controversy: An empirical assessment. *Organizational Behavior & Human Decision Processes*, 33, 1–21.
- Johns, G., Xie, J. L., & Fang, Y. (1992). Mediating and moderating effects in job design. *Journal of Management*, 18, 657–676.
- Juran, J. M., & Gryna, F. M. (Eds.). (1988). *Juran's quality control handbook*. New York: McGraw-Hill.
- Lawler, E. E. (1969). Job design and employee motivation. *Personnel Psychology*, 22, 426–435.
- Lawler, E. E., Hackman, J. R., & Kaufman, S. (1973). Effects of job redesign: A field experiment. *Journal of Applied Social Psychology*, 3, 49–62.
- Le Blanc, P. M., de Jonge, J., de Rijk, A. E., & Schaufeli, W. B. (2001). Well-being of intensive care nurses (WEBIC): A job analytic approach. *Journal of Advanced Nursing*, 36, 460–470.
- Lepak, D. P., & Snell, S. A. (1999). The human resource architecture: Toward a theory of human capital allocation and development. *Academy of Management Review*, 24, 31–48.
- Loher, B. T., Noe, R. A., Moeller, N. L., & Fitzgerald, M. P. (1985). A meta-analysis of the relation of job characteristics to job satisfaction. *Journal of Applied Psychology*, 70, 280–289.
- Losey, M. (1998, March 15). HR comes of age. *HR Magazine*, pp. 44–53.
- Martin, R., & Wall, T. D. (1989). Attentional demand and cost responsibility as stressors in shopfloor jobs. *Academy of Management Journal*, 32, 69–86.
- McCormick, E. J. (1976). *Human factors in engineering and design*. New York: McGraw-Hill.
- McCormick, E. J. (1979). *Job analysis*. New York: AMA-COM.
- Meister, D. (1971). *Human factors: Theory and practice*. New York: Wiley.
- Morgeson, F. P., & Campion, M. A. (1997). Social and cognitive sources of potential inaccuracy in job analysis. *Journal of Applied Psychology*, 82, 627–655.
- Morgeson, F. P., & Campion, M. A. (2002). Minimizing tradeoffs when redesigning work: Evidence from a

- longitudinal quasi-experiment. *Personnel Psychology*, 55, 589–612.
- Morgeson, F. P., & Campion, M. A. (2003). Work design. In W. C. Borman, D. R. Ilgen, & R. J. Klimoski (Eds.), *Handbook of psychology: Industrial and organizational psychology* (pp. 423–452). Hoboken, NJ: John Wiley & Sons.
- Oldham, G. R. (1976). The motivational strategies used by supervisors: Relationships to effectiveness indicators. *Organizational Behavior & Human Decision Processes*, 15, 66–86.
- Oldham, G. R., Hackman, J. R., & Pearce, J. L. (1976). Conditions under which employees respond positively to enriched work. *Journal of Applied Psychology*, 61, 395–403.
- Parker, S. K. (1998). Enhancing role breadth self-efficacy: The roles of job enrichment and other organizational interventions. *Journal of Applied Psychology*, 83, 835–852.
- Parker, S. K. (2003). Longitudinal effects of lean production on employee outcomes and the mediating role of work characteristics. *Journal of Applied Psychology*, 88, 620–634.
- Parker, S. K., Chmiel, N., & Wall, T. D. (1997). Work characteristics and employee well-being within a context of strategic downsizing. *Journal of Occupational Health Psychology*, 2, 289–303.
- Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, 12, 531–544.
- Roberts, K. H., & Glick, W. (1981). The job characteristics approach to task design: A critical review. *Journal of Applied Psychology*, 66, 193–217.
- Roethlisberger, F. J., & Dickson, W. J. (1939). *Management and the worker*. Cambridge, MA: Harvard University Press.
- Ruh, R. A., White, J. K., & Wood, R. R. (1975). Job involvement, values, personal background, participation in decision making, and job attitudes. *Academy of Management Journal*, 18, 300–312.
- Salancik, G. R., Staw, B. M., & Pondy, L. R. (1980). Administrative turnover as a response to unmanaged organizational interdependence. *Academy of Management Journal*, 23, 422–437.
- Schneider, B., Reichers, A. E., & Mitchell, T. M. (1982). A note on some relationships between the aptitude requirements and reward attributes of tasks. *Academy of Management Journal*, 25, 567–574.
- Shepard, J. M. (1970). Functional specialization, alienation, and job satisfaction. *Industrial and Labor Relations Review*, 23, 207–219.
- Steers, R. M. (1975). Effects of need for achievement on the job performance-job attitude relationship. *Journal of Applied Psychology*, 60, 678–682.
- Stone, E. F. (1975). Job scope, job satisfaction, and the Protestant Ethic: A study of enlisted men in the U.S. Navy. *Journal of Vocational Behavior*, 7, 215–224.
- Stone, E. F. (1976). The moderating effect of work-related values on the job scope-job satisfaction relationship. *Organizational Behavior & Human Decision Processes*, 15, 147–167.
- Taylor, F. W. (1911). *The principles of scientific management*. New York: Norton.
- Tombaugh, J. R., & White, L. P. (1990). Downsizing: An empirical assessment of survivors' perceptions in a post-layoff environment. *Organizational Development Journal*, 8, 32–43.
- Trist, E. L., & Bamforth, K. W. (1951). Some social and psychological consequences of long-wall methods of coal getting. *Human Relations*, 4, 3–38.
- Tsui, A. S., Pearce, J. L., Porter, L. W., & Tripoli, A. M. (1997). Alternative approaches to the employee-organization relationship: Does investment in employees pay off? *Academy of Management Journal*, 40, 1089–1121.
- Turner, A. N., & Lawrence, P. R. (1965). *Industrial jobs and the worker: An investigation of responses to task attributes*. Boston: Harvard Graduate School of Business Administration.
- Waldman, D. A. (1994). The contribution of total quality management to a theory of work performance. *Academy of Management Review*, 19, 510–536.
- White, J. K. (1978). Generalizability of individual difference moderators of the participation in decision making-employee response relationship. *Academy of Management Journal*, 21, 36–43.
- Wong, C. S., & Campion, M. A. (1991). Development and test of a task level model of motivational job design. *Journal of Applied Psychology*, 76, 825–837.