JOB AND TEAM DESIGN: TOWARD A MORE INTEGRATIVE CONCEPTUALIZATION OF WORK DESIGN

Frederick P. Morgeson and Stephen E. Humphrey

ABSTRACT

The design of work has been shown to influence a host of attitudinal, behavioral, cognitive, well-being, and organizational outcomes. Despite its clear importance, scholarly interest in the topic has diminished over the past 20 years. Fortunately, a recent body of research has sought to reenergize research into work design by expanding our view of work design from a narrow set of motivational work features to one that incorporates broader social and contextual elements. In this chapter we seek to review the literature on work design and develop a framework that integrates both job and team design research. We begin by briefly reviewing the history of work design in order to provide needed historical context and illustrate the evolution of job and team design. We then define work design, particularly as it relates to incorporating job and team design elements and transitioning from a view of jobs to one of roles. Following this, we identify a comprehensive set of work design outcomes that provide the basis for understanding the impact that different work characteristics can have on individuals and teams. We then offer an extended discussion of our integrative model of work design, which

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includes three sources of work characteristics (task, social, and contextual) and the worker characteristics implied by these characteristics. Having defined the range of work and worker characteristics, we then discuss some of the fit and composition issues that arise when designing work, as well as discuss the mechanisms through which the work characteristics have their impact on outcomes. Finally, we discuss research into informal forms of work design.

INTRODUCTION

> You can't take pride any more. You remember when a guy could point to a house he built, how many logs he stacked. He built it and he was proud of it ... It's hard to take pride in a bridge you're never gonna cross, in a door you're never gonna open. You're mass-producing things and you never see the end result of it. (Mike Lefevre, Steelworker, p. xxxi)

> It's a pretty good day layin' stone or brick. Not tiring. Anything you like to do isn't tiresome. It's hard work; stone is heavy. At the same time, you get interested in what you're doing and you usually fight the clock the other way. You're not lookin' for quittin'. You're wondering you haven't got enough done and it's almost quittin' time. (Carl Murray Bates, Stonemason, p. xlvi)

> My job as a reservationist was very routine, computerized. I hated it with a passion. Getting sick in the morning, going to work feeling, Oh, my God! I've got to go to work. (Beryl Simpson, Airline Reservationist, p. 49)

> I like my work because you're not stuck in a lousy office. And I think people are very interesting. You get beautiful material ... Pay's good, I got no complaints ... I plan staying in it a long time. It's a very important field. This is one industry that affects all industries. Security. It's also very helpful to the police department. We supply the police with a hell of a lot of information. (Anthony Ruggiero, Industrial Investigator, p. 144)

These quotes from Studs Terkel's (1972) classic book *Working* provides a vivid first-person account of how the nature of work can have a profound effect on ones life. Whether it is a lack of connection to the results of ones work, meaning derived from the work itself, overly routinized work, or social relationships and interactions at work, the design of work plays a central role in numerous aspects of individual, team, and organizational functioning. In fact, considerable research has shown that how work is designed can influence a host of attitudinal, behavioral, cognitive, well-being, and organizational outcomes (see Humphrey, Nahrgang, & Morgeson, 2007 for a meta-analytic summary).

There are at least three reasons why work design is so important. First, work is a central part of life and society. Individuals will typically spend half their waking lives involved in some form of formal work and as the quotes that began this chapter attest, the nature of the work individuals perform has a tremendous impact on their lives. As Warr and Wall (1975, p. 11) put it, "... work will always matter to people ... they will always love it and hate it, and that society, through changing the nature of some work, should help people to love it more than hate it." Work design is a structured approach to understanding what people love and hate about work as well as what can be done to make them love it more.

Second, there are trends in the general business environment that have a considerable impact on the nature of work. Manufacturing industries were once predominant, where work was marked by the creation of products through routinized, simplified jobs. Although such work remains, the last 20 years has witnessed the growth of service- and knowledge-oriented industries, where the key to success is providing high quality service and creating innovative products, often by using self-managing teams of workers. In addition, the forces of globalization and technological advancement have affected all industries, leading some to suggest that the competitive environment has been "flattened" (Friedman, 2005). In such an environment, collaboration, adaptability, and problem-solving become particularly important. Partly in response to these changes, work structures have continued to evolve, with the widespread introduction of team-based and virtual forms of work. Work design research and practice is at the forefront of understanding how these changes affect work-related outcomes.

Third, work design has considerable practical significance to managers, workers, and organizations. Unlike many other organizational aspects such as culture and structure, managers actually have considerable influence and control over work design choices. Managers are often charged with designing or redesigning the work of their subordinates, often needing to customize the work designs to the particular competencies of individual workers. For their part, workers are also proactive "crafters" of their work roles, often dynamically redesigning their own work to suit their particular capabilities, interests, or situation. Finally, organizations are concerned about achieving a potentially diverse set of outcomes, including productivity, cost control, innovation, learning, and worker morale. Research on work design provides insight into how to design work to achieve these different outcomes. For example, recent research has shown that work design features such as empowerment and teams can have a positive impact on organizational productivity (Birdi et al., in press).

Despite the clear importance of work design, scholarly interest in the topic has diminished over the past 20 years, leading some to conclude that "... this decline in research may be appropriate. After twenty years of research, a clear picture of the psychological and behavioral effects of job design has emerged" (Ambrose & Kulik, 1999, p. 262). Although one of the most popular topics of research in the 1970s and 1980s, relatively little scholarly research has been published in the "top-tier" journals since the late 1980s (Humphrey, Nahrgang, & Morgeson, 2007). This literature has shown some recent signs of life, however, through the empirical work of Parker and colleagues (Parker, 1998, 2003; Parker, Wall, & Jackson, 1997; Parker, Williams, & Turner, 2006), Morgeson and colleagues (Humphrey et al., 2007; Morgeson & Campion, 2002; Morgeson, Delaney-Klinger, & Hemingway, 2005; Morgeson & Humphrey, 2006; Morgeson, Johnson, Medsker, Campion, & Mumford, 2006) and Grant and colleagues (Grant, 2007; Grant, 2008a; Grant et al., 2007). This more recent research has sought to reenergize research into work design by expanding our view of work design from a narrow set of motivational work features to one that incorporates broader social and contextual elements.

In this chapter we seek to add to the momentum by reviewing the literature on work design and developing a framework that integrates across job and team design research. As we will show, the literatures on job and team design have evolved somewhat independently. This is unfortunate, as these literatures share many of the same constructs, suggesting a similarity that is not represented in current models of work design. The structure of the chapter is as follows.

First, we begin by briefly reviewing the history of work design. This not only provides needed historical context, it also helps us better understand the evolution of job and team design. Second, we define work design, particularly as it relates to incorporating job and team design elements and transitioning from a view of jobs to one of roles. Third, we identify a comprehensive set of work design outcomes that provides the basis for understanding the impact that different work characteristics can have on individuals and teams. Fourth, we offer an extended discussion of our integrative model of work design. This includes three sources of work characteristics (task, social, and contextual) and the worker characteristics implied by these characteristics. In this discussion, we have chosen to focus primarily on contemporary research and the latest developments in the field. Readers who are interested in an extended discussion of particular studies should consult more comprehensive reviews of the topic (e.g., Morgeson & Campion, 2003; Parker & Wall, 1998). Fifth, having defined the range of work and worker characteristics, we discuss some of the fit and composition issues that arise when designing work. Sixth, we discuss the mechanisms through which the work characteristics have their impact on outcomes. Seventh, we discuss research into informal forms of work design.

A BRIEF HISTORY OF WORK DESIGN

The history of work design extends back to the advent of organized work. For example, the ancient Egyptians had specialized roles throughout their society as well as for building the great pyramids (Andreu, 1997). Similarly, for thousands of years armies have been marked by specialized and differentiated work roles. In addition, when work is performed for the first time, there are numerous decisions that are made concerning what should be performed, the sequencing of activities, and the extent to which the work will be dependent on others. Thus, even prior to a systematic study of work, issues of work design were commonplace. Principles of work design were first codified in the writings of Smith (1776) and Babbage (1835), who forwarded the notion of a division of labor and articulated how such a division could enhance productivity and efficiency.

Taylor's (1911) "Scientific Management" took the concept of a division of labor and created techniques designed to specialize and simplify work down to its most basic elements (see also Gilbreth, 1911). This approach assumes that management would divide and design work and then create mechanisms (e.g., supervision, incentive systems) to shape and control worker behavior. Techniques such as these were used to revolutionize automobile manufacturing, with its first widespread application in 1913 at Ford Motor Company's Highland Park, Michigan assembly line. Despite the numerous drawbacks to such an approach (e.g., simplified, repetitive, boring jobs), many of its principles still underlie modern work design (Wall & Martin, 1987).

The next major influence in work design research was the research conducted between 1924 and 1933 at the Western Electric Company's Hawthorne Works in Cicero, Illinois (Homans, 1950; Mayo, 1946; Roethlisberger & Dickson, 1939). Although this research made a number of important discoveries, key for work design research was the discovery that work-related social relationships are important and can exert a powerful effect on work attitudes and behavior. This included social relationships arising from informal work groups as well as supervisory

relationships. As such, this represents the first recognition that there might be considerable value in designing work around small groups or teams.

The power of autonomous group work designs was confirmed in research conducted at the Tavistock Institute in Great Britain. Trist and Bamforth (1951) examined how changes from small group-structured "hand-got" coal mining methods to more independent individual "long wall" methods affected worker reactions. They found that when the social environment was altered via changes in work design, workers reacted negatively and productivity declined. The resulting socio-technical systems theory that arose from this research offered a general set of design principles which suggested that optimal organizational functioning would occur only if the social and technical systems were designed to fit each other (Trist, 1981). One of the key practical recommendations of socio-technical systems theory was the use of autonomous work groups (Parker & Wall, 1998).

The next major innovation in work design research was the motivator–hygiene theory (also known as two-factor theory) of Herzberg, Mausner, and Snyderman (1959). According to Herzberg et al., the world of work can be divided into two sets of factors. Motivators were intrinsic features of the work itself that were thought to lead to job satisfaction. Hygiene factors were features of the broader work context (i.e., extrinsic to the work) and included such things as supervisory and peer relationships and working conditions. If not satisfied, these hygiene factors were thought to lead to job dissatisfaction. Thus, this theory suggested that job satisfaction and dissatisfaction have different causes. Although this theory has been subject to numerous criticisms (see Locke, 1976 for a summary), it had a profound influence on subsequent work design research. By promoting a vision of two worlds of work and claiming that only intrinsic job features were important, it set the course for the next 40 years of work design research as primarily one of focusing on a limited set of intrinsic job features. As such, it led many to ignore the potential role of interpersonal relationships and work context, two factors shown to be important by prior research.

The next major influence in work design research was job characteristics theory (Hackman & Oldham, 1975, 1976). Although earlier research in this tradition incorporated social elements [e.g., Turner & Lawrence (1965) identified required social interaction and opportunities for social interaction and Hackman & Lawler (1971) identified dealing with others and friendship opportunities], the model articulated by Hackman and Oldham focused on the five intrinsic job characteristics of autonomy, skill variety, task identity, task significance, and feedback from the job itself. As such, it ignored the social environment and broader work context. Job characteristics theory has

been extremely influential and has dominated the area of work design. Despite the many problems associated with job characteristics theory (Roberts & Glick, 1981), it has been suggested that, "the job characteristics model has rapidly become the dominant paradigm in organization psychology's search for the alchemist's stone" (Evans, Kiggundu, & House, 1979, p. 354).

Although Griffin (1982, p. 43) warned that "researchers and managers must take care to not stop searching for better, more complete, and more accurate formulations for task design and to continually evaluate current formulations, such as job characteristics theory" and subsequent research expanded the focus beyond job characteristics theory's narrow set of intrinsic job features (e.g., Campion, 1988; Campion & Thayer, 1985; Karasek, 1979; Kiggundu, 1981; Sims, Szilagyi, & Keller, 1976), it is only relatively recently that a comprehensive account of intrinsic and extrinsic work design elements have been offered (Morgeson & Campion, 2003; Morgeson & Humphrey, 2006). Beginning with a wide range of work design features provides an initial framework through which the job and team design literatures can be integrated. Prior to articulating this framework, however, we first need to develop a definition of work design that spans the job and team domains.

DEFINING WORK DESIGN

To provide a comprehensive definition of work design, we first must understand something about jobs and teams and the elements of each. A job can be defined as a collection of related positions that are similar in terms of the work performed or goals they serve for the organization, where a position is the "set of duties, tasks, activities, and elements able to be performed by a single worker" (Brannick, Levine, & Morgeson, 2007, p. 7). Job design thus refers to the "content and structure of jobs that employees perform" (Oldham, 1996, p. 33). Defined in such a way, the focus of job design research tends to be on the tasks and activities that job incumbents perform on a day-to-day basis. Implicit in this definition is that certain worker characteristics are necessary for successful job performance and that there must be a match between these characteristics and the job requirements, although such worker characteristics have rarely been articulated.

A team can be defined as "(a) two or more individuals who (b) socially interact (face-to-face or, increasingly, virtually) (c) possess one or more common goals; (d) are brought together to perform organizationally

relevant tasks; (e) exhibit interdependencies with respect to workflow, goals, and outcomes; (f) have different roles and responsibilities; and (g) are together embedded in an encompassing organizational system, with boundaries and linkages to the broader system context and task environment" (Kozlowski & Ilgen, 2006, p. 79). Team design thus refers to the specification of team membership; definition and structure of a team's tasks, goals, and members' roles; and the creation of organizational support for the team and link to the broader organizational context (Campion, Medsker, & Higgs, 1993; Guzzo & Dickson, 1996; Hackman, 1987; Perretti & Negro, 2006; Stewart, 2006).

Common across these definitions is a focus on the work performed (in terms of tasks and activities). Historically, this is where research on job design has ended. But a narrow focus on jobs and the work itself only considers the relationship between worker and product (Davis & Taylor, 1979). This focus may have made sense when jobs were routine and independent, where standardization and efficiency were the primary work design goals. But as the research reviewed earlier suggests, there exist a set of social and contextual aspects of work that can have a profound influence on worker outcomes. In addition, changes in technology and working arrangements, "has demanded closer coordination and cooperation among workers and has therefore brought the social component into prominence" (Davis & Taylor, 1979, p. xiv). This focus is explicit in team design, and many team design principles apply even if the focus is individually oriented jobs.

One of the challenges associated with broadening the focus in work design revolves around an exclusive focus on jobs. Although jobs are important organizing units, they focus primarily on activities related to the creation or transformation of work products. A more flexible organizing unit is that of a role, which is "a set of rules and expectations from the employee as well as the organization, which direct all his occupational or 'at work' behavior" (Davis & Taylor, p. xiii). There are at least three advantages to focusing on roles. First, role requirements can emerge from the task, social, physical, and organizational environment. As such, it can accommodate the task domain (which is the focus of jobs) as well as the wider social, physical, and organizational context. Second, a role focus enables the consideration of prescribed or established task elements as well as discretionary or emergent task elements (Davis, 1979; Ilgen & Hollenbeck, 1991). Thus, instead of focusing solely on formal job requirements, a role perspective enables consideration of work elements that may emerge idiosyncratically or informally. Third, a focus on roles provides more explicit recognition that

certain individuals are a better fit for different roles and that considering the composition of workers in a given work unit is important.

Given these definitions and distinctions, work design can be defined as the study, creation, and modification of the composition, content, structure, and environment within which jobs and roles are enacted. As such, it concerns who is doing the work, what is done at work, the interrelationship of different work elements, and the interplay of job and role enactment with the broader task, social, physical, and organizational context. This definition encompasses both job and team design and forms the foundation for the rest of the chapter.

WORK DESIGN OUTCOMES

To begin to understand work design, it is important to articulate the different outcomes that may result from different work design features. One of the major limitations in work design research has been the tendency to focus on a relatively small set of outcomes (Parker & Wall, 1998). Our goal is to expand this set, even though there may not have been work design research investigating some of these outcomes. In describing a more complete range of work design outcomes, we seek to link various work design features to these different outcomes. This is important, in part, because research has demonstrated that the positive effects of one outcome often result in negative effects on other outcomes (Campion, Mumford, Morgeson, & Nahrgang, 2005). For example, high levels of skill variety are typically related to high levels of satisfaction, which is a positive outcome. Unfortunately, high levels of skill variety also are typically related to high compensation requirements, which is a negative outcome (at least from the organization's perspective; Morgeson & Humphrey, 2006). Similarly, creating a team-based reward often has positive effects on the quality of work, but can also hurt work quantity (Beersma et al., 2003).

Work design outcomes can be grouped into the major categories of attitudinal, behavioral, cognitive, well-being, and organizational (Table 1). Attitudinal outcomes reflect feelings about the job, team, and organization. This includes various aspects of satisfaction (e.g., job and team satisfaction; Hackman & Oldham, 1976; Warr, Cook, & Wall, 1979), team viability (the extent to which team members wish to stay together as a team; Hackman, 1987; Sundstrom, DeMeuse, & Futrell, 1990), organizational commitment (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002), job involvement

Table 1. Key Work Design Outcomes.

Attitudinal	Behavioral	Cognitive	Well-Being	Organizational
• Satisfaction	• Performance	• Learning/development	• Anxiety	• Compensation
○ Job	○ Quantity	• Role perceptions	• Stress	• Training demands
○ Supervisor	– Efficiency	○ Role ambiguity	• Emotions	• Skill requirements
○ Coworker	– Amount	○ Role conflict	• Burnout/exhaustion	• Organizational performance
○ Team	○ Quality	○ Role breadth self-efficacy	• Overload	
○ Growth	– Innovation	• Turnover intentions	• Work/family	
• Team viability	– Accuracy	• Team identification	• Occupational safety	
• Organizational commitment	– Customer service		• Physical health	
• Job involvement	○ Citizenship			
• Internal work motivation	– Interpersonal			
	– Organizational			
	• Counterproductive behaviors			
	• Absenteeism			
	• Turnover			

(Brown, 1996), internal work motivation (Ryan & Deci, 2000), and goal striving (Kanfer, 1990).

Behavioral outcomes reflect the specific actions of workers or teams. Traditionally, the focus has been on the quantity (e.g., efficiency or amount) and quality (e.g., innovation, accuracy, and customer service) of performance. However, innovation (Axtell et al., 2000), creativity (Shalley, Zhou, & Oldham, 2004), and citizenship behaviors are all important. Citizenship behaviors (i.e., behaviors designed to benefit other individuals or the organization) have been alternately labeled organizational citizenship behavior (Organ, 1988), contextual performance (Borman & Motowidlo, 1993), and extra-role behavior (Van Dyne, Cummings, & McLean Parks, 1995) includes factors such as helping (Grant et al., 2007), voice (LePine & Van Dyne, 1998), and the suggestion of improvements (Axtell et al., 2000). Other key behavioral outcomes include counterproductive behaviors (i.e., intentional employee behavior that is harmful to the legitimate interests of an organization; Dalal, 2005) and the withdrawal behaviors of absenteeism (Scott & Taylor, 1985) and turnover (Cotton & Tuttle, 1986).

Cognitive outcomes reflect the thoughts about or developmental outcomes of the work. This includes a set of role perceptions such as role ambiguity (i.e., confusion on their role responsibilities; Rizzo, House, & Lirtzman, 1970), role conflict (i.e., the intersection between multiple roles on specific task and social responsibilities; Rizzo et al., 1970), role breadth self-efficacy (i.e., confidence that one can perform a role that is broader than specified technical requirements; Parker, 1998), flexible role orientation (i.e., the focus and ownership of the components of one's role that span any given job; Parker et al., 1997), and team-member exchange (Seers, Petty, & Cashman, 1995). Other cognitive outcomes include learning and development (Edmondson, Bohmer, & Pisano, 2001), turnover intentions (Lee & Mitchell, 1994), and team identification (Van der Vegt & Bunderson, 2005).

Well-being outcomes reflect the physiological and psychological reactions to a job. This includes such reactions as anxiety (e.g., Sprigg, Stride, Wall, Holman, & Smith, 2007), stress (e.g., Sprigg & Jackson, 2006), positive and negative emotions (e.g., Fisher, 2002; Saavedra & Kwun, 2000), burnout or exhaustion (e.g., Bakker, Demerouti, & Euwema, 2005; Le Blanc, Hox, Schaufeli, Taris, & Peeters, 2007; Van Yperen & Hagedoorn, 2003), work/family issues (e.g., Valcour, 2007), occupational safety (e.g., Barling, Kelloway, & Iverson, 2003), and physical health outcomes such as coronary heart disease events (e.g., Aboa-Éboulé et al., 2007).

Finally, organizational outcomes reflect the specific requirements needed for effective performance of a job that must be supplied by the Human

Resource department as well as organizational level performance. This category of work outcomes includes worker compensation (Cordery & Parker, in press; Morgeson & Humphrey, 2006), training demands (Campion, 1988; Campion & Thayer, 1985), skill requirements (Cappelli & Rogovsky, 1994), and organizational performance (Ketchen et al., 1997).

OVERVIEW OF INTEGRATIVE MODEL OF WORK DESIGN

In order to develop a model of work design that integrates job and team design, we began by identifying the source of various work and worker characteristics. Our interest was in identifying the origin of different work and worker characteristics. We identified task, social, and contextual sources. Because these sources are independent of the target of investigation (i.e., jobs or teams), the sources can serve as an integrative mechanism across jobs and teams. Task characteristics arise from the task environment or the work itself. Social characteristics emerge from the social environment or when working with others. Contextual characteristics emerge from the physical and organizational environment. Specific work and worker characteristics for each of these sources is summarized in Table 2 and discussed in greater detail below. As illustrated in Fig. 1, the task environment is nested within a larger social environment and the social environment is nested within a broader physical and organizational environment. Thus, each of these environments contains work characteristics that influence one another. As such, a complete understanding of work design requires a consideration of all the different sources.

In the sections that follow, we first define each of the work characteristics, and then selectively review the relationships between these work characteristics and the outcomes. Where possible, we sought to focus on meta-analytically estimated effect sizes. We then discuss the different worker characteristics and their implications for work design research.

Task Characteristics

Work Characteristics

Work characteristics arising from the task environment have been studied more than the work characteristics arising from other sources. This is primarily attributable to the traditional focus of job design on the work

Table 2. Work and Worker Characteristics by Source.

	Task	Social	Contextual

Work Characteristics	• Autonomy
	• Task variety
	• Significance
	• Task identity
	• Feedback from the job
	• Job complexity
	• Information processing
	• Problem solving
	• Skill variety
	• Specialization
		• Social support
		• Feedback from others
		• Interdependence
		  ○ Between jobs/roles
		  ○ Between teams
		  ○ Feedback, rewards, and goals
		• Interaction outside the organization
			• Physical demands
			• Work conditions
			• Ergonomics
			• Equipment use
			• Boundary spanning
			• Organizational support
			  ○ Reward systems
			  ○ Information systems
			  ○ Training systems
			  ○ Resource availability
			  ○ Managerial support
			• Virtuality of work
			• Consequence of failure

Worker Characteristics	• Job knowledge
	• Technical skill
	• Self-management skill
	• Cognitive ability
	• Task experience
	• Proactive personality
		• Personality
		  ○ Conscientiousness
		  ○ Agreeableness
		  ○ Extraversion
		• Team experience
		• Teamwork KSAs
			• Physical ability
			• Propensity to trust
			• Organizational experience

itself. In addition, the range of task characteristics previously studied has been somewhat limited, largely owing to the influence of job characteristics theory. Recent research has demonstrated that there are other important task characteristics (Humphrey et al., 2007; Morgeson & Humphrey, 2006). In this section, we first discuss the various work characteristics arising from the task environment. We then discuss how several characteristics of the workers impact work outcomes.

Autonomy is "the freedom an individual has in carrying out work" (Humphrey et al., 2007, p. 1333). Concepts of empowerment and self-management are highly similar but of more recent origin. Of the numerous work characteristics at the task level, autonomy is both the most studied and generally the most influential. Meta-analytic results (Humphrey et al., 2007) have shown that, in terms of behavioral outcomes, autonomy has been

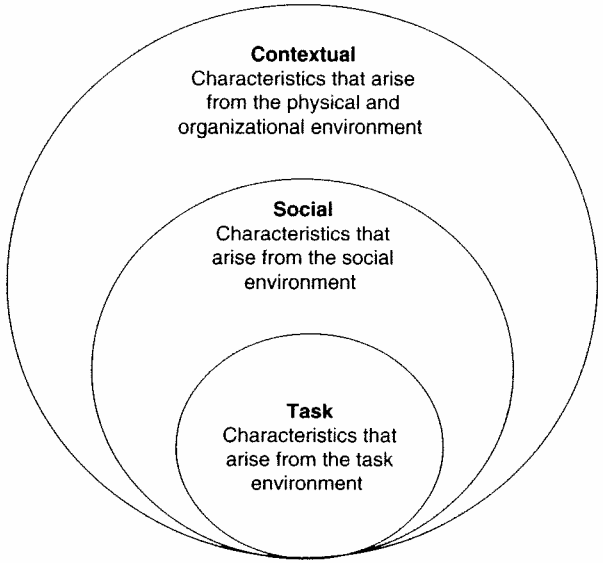

Fig. 1. Integrative Framework of Work Design.

linked to both objective ($\rho = .17$) and subjective ($\rho = .23$) performance ratings, as well as absenteeism ($\rho = -.15$). It has been shown to reduce a number of well-being outcomes, including anxiety ($\rho = -.10$), stress ($\rho = -.23$), and burnout ($\rho = -.30$), as well as reducing cognitive outcomes such as role ambiguity ($\rho = -.23$) and role conflict ($\rho = -.17$). In addition, autonomy is related to a number of attitudinal outcomes, such as job satisfaction ($\rho = .48$), organizational commitment ($\rho = .37$), and internal work motivation ($\rho = .38$).

Interestingly, research has noted that the autonomy construct is multifaceted (Breaugh, 1985; Jackson, Wall, Martin, & Davids, 1993; Morgeson & Humphrey, 2006), reflecting the ability to control the timing of work (i.e., *work scheduling autonomy*), the ability to control how work is performed (i.e., *work methods autonomy*), and the ability to make decisions at work (i.e., *decision-making autonomy*). Research has noted that although these dimensions are related to each other (ρ's ranging from .63 to .71; Humphrey et al., 2007), they have unique predictive validity. For example, in terms of job satisfaction, work scheduling autonomy has a relatively small impact ($\rho = .11$), work methods autonomy has a moderate impact ($\rho = .34$), and

decision-making autonomy has a large impact ($\rho = .58$). Future research is needed to determine how these facets of autonomy differentially impact numerous other work outcomes, as well as how they interact with each other to influence work.

In addition to this form of individual worker control, group autonomy has also been defined as "the amount of control and discretion the group is allowed in carrying out tasks assigned by the organization" (Langfred, 2000, p. 567). Team self-management has been found to be positively related to such performance behaviors as effort, intra-group cooperation, communication, and peer helping behaviors (Bailey, 1998; Campion et al., 1993; Campion, Papper, & Medsker, 1996; Stewart, 2006), as well as attitudinal outcomes such as commitment and satisfaction (Janz, Colquitt, & Noe, 1997).

Skill variety reflects the extent to which various skills are needed for job performance (Hackman & Oldham, 1980). Because using numerous skills in the course of work is challenging, having skill variety in a job is thought to engage workers (Hackman & Oldham, 1976). Meta-analytic results (Humphrey et al., 2007) have demonstrated that skill variety does have the expected effect, keeping workers motivated ($\rho = .42$), involved ($\rho = .30$) and satisfied ($\rho = .42$). Skill variety, however, has not had a consistent impact on other work outcomes, with the confidence intervals in meta-analytic findings crossing zero for all behavioral, cognitive, and well-being outcomes.

Task identity is the extent to which an individual completes an entire piece of work (Sims et al., 1976). According to job characteristics theory, being able to start and finish a piece of work (such as building a product or completing a unit of service) instills pride in the worker and keeps the worker motivated (Hackman & Oldham, 1976). Compared to the other work characteristics at the task level, the meta-analytic effect sizes (Humphrey et al., 2007) of the relationship between task identity and attitudinal outcomes are relatively smaller in magnitude. For example, task identity is related to worker motivation ($\rho = .26$), organizational commitment ($\rho = .19$), job satisfaction ($\rho = .31$), and subjective (but not objective) performance evaluations ($\rho = .17$). In addition, task identity is related to lower absenteeism ($\rho = -.09$), role conflict ($\rho = -.17$), and burnout ($\rho = -.28$).

Task significance reflects the degree to which a job impacts the lives of others, both inside and outside the organization (Hackman & Oldham, 1980). Although an original component of job characteristics theory, recent scholarly discussions have highlighted the increasing importance of task significance in today's society (Grant, 2008b) due to employees' interest in impacting others' lives through their work (Turban & Greening, 1997).

In light of this argument, recent research (e.g., Grant, 2007, 2008a; Grant et al., 2007) has suggested that the moderate impact of task significance demonstrated in meta-analytic examinations (Humphrey et al., 2007) may be due to the dampening effect of certain other work characteristics (see our discussion of configurations of work characteristic in a later section).

Nonetheless, meta-analytic results (Humphrey et al., 2007) have demonstrated that task significance impacts numerous attitudinal outcomes such as job satisfaction ($\rho = .41$), organizational commitment ($\rho = .44$), and work motivation ($\rho = .45$). In addition, subjective performance ratings have been shown to be positively related ($\rho = .23$), whereas burnout ($\rho = -.29$) has been shown to be negatively related to task significance. Interestingly, although task significance generally has a positive or neutral effect on work outcomes, it has been linked fairly strongly to perceptions of overload ($\rho = .38$), suggesting that the "weight" of what workers are doing runs the risk of crushing them.

Feedback from the job is "the extent to which a job imparts information about an individuals' performance" (Humphrey et al., 2007, p. 1333). This work characteristic is reflected in a worker's ability to receive timely and accurate feedback directly from the job he or she is performing. Timely feedback is central to motivational theories such as goal setting (Locke & Latham, 1990), as workers need this information in order to mark their performance in relation to the goals they hold, and modify their behaviors as appropriate (Vancouver, 2005).

Not surprisingly, meta-analytic results (Humphrey et al., 2007) have demonstrated that feedback from the job has a strong positive relationship with numerous attitudinal work outcomes, including work motivation ($\rho = .42$) and job satisfaction ($\rho = .43$). It is also negatively related to role ambiguity ($\rho = -.43$) and role conflict ($\rho = -.32$), as well as various well-being outcomes such as anxiety ($\rho = -.32$).

Task variety is the extent to which employees are required to execute a large variety of tasks on the job (Morgeson & Humphrey, 2006; Sims et al., 1976). Essentially, task variety reflects the concept of task enlargement (Herzberg, 1968; Lawler, 1969), such that being able to perform numerous tasks on the job is expected to make a job more interesting and enjoyable (Sims et al., 1976). Meta-analytic findings (Humphrey et al., 2007) have demonstrated that task variety is positively related to job satisfaction ($\rho = .46$) subjective ratings of performance ($\rho = .23$), and perceptions of job overload ($\rho = .38$). Of the work characteristics discussed thus far, however, task variety has the least amount of empirical research examining its impact on work outcomes. Given its relationship with overload, it is likely that task variety will have a negative impact on well-being, in part because such horizontal loading can often overwhelm individuals.

Job complexity is "the extent to which a job is multifaceted and difficult to perform" (Humphrey et al., 2007, p. 1335). Complexity (or its inverse, job simplicity; Campion, 1988) has often been considered a mechanistic aspect of work, such that it is no different than any other principle of scientific management (Taylor, 1911). Following these principles, researchers argued and found that simplifying work led to efficiency gains (Edwards, Scully, & Brtek, 2000).

Yet recent research has demonstrated that job complexity is a meaningfully distinct construct (Morgeson & Humphrey, 2006) that has varied effects on work outcomes. The meta-analytic results of Humphrey et al. (2007) show that higher complexity is related to higher subjective performance ratings ($\rho = .37$), standing in contrast to the typical efficiency suggestions oriented around simplifying work. Complexity is also related to higher levels of job satisfaction ($\rho = .37$) and job involvement ($\rho = .24$), but is also strongly related to perceptions of overload ($\rho = .59$).

Information processing is "the extent to which a job necessitates an incumbent to focus on and manage information" (Humphrey et al., 2007, p. 1335). Wall and colleagues (Martin & Wall, 1989; Wall & Jackson, 1995; Wall, Jackson, & Mullarkey, 1995) suggested that information monitoring and processing differs across jobs, such that knowledge requirements increase in the context of jobs that have high information processing requirements. There is limited research on the impact of information processing demands, but research suggests that information processing increases perceptions of job satisfaction ($\rho = .38$), but also increasing compensation ($r = .37$) and training requirements ($r = .33$) on the job. Given its natural relationship to the ability requirements of work, information processing is likely to lead to greater learning and development in the job, but also to increase the skill requirements needed.

Specialization is the degree to which specialized tasks are performed, or specialized knowledge and skill is needed for job performance (Campion, 1988; Edwards et al., 2000; Morgeson & Humphrey, 2006). Specialization is fundamentally different than skill or task variety, in that those constructs reflect the breadth of activities and skills involved in a job, whereas specialization reflects the depth of knowledge and skill required in job completion. Although there is only limited research on the effects of specialization (e.g., Campion, 1988; Edwards et al., 2000; Morgeson & Humphrey, 2006), there is reason to believe that specialization may be positively related with both job satisfaction and efficiency (Morgeson &

Campion, 2002), potentially helping to resolve one of the central tradeoffs in work design.

Problem solving is the extent to which unique ideas or solutions are needed in a job (Jackson et al., 1993; Wall et al., 1995). Problem solving is similar to the idea of creativity, in that it reflects the notions of idea generation, dealing with nonroutine problems, and correcting errors (Jackson et al., 1993; Wall, Corbett, Clegg, Jackson, & Martin, 1990). Again, there is only limited research on this work characteristic. However, there is reason to suspect that it is both satisfying and demanding for the worker (Morgeson & Humphrey, 2006).

Worker Characteristics

The work design literature has typically ignored the characteristics workers must possess to perform the roles implied by the work characteristics discussed above. Yet, research in other domains would suggest that a range of knowledge, skills, abilities and other characteristics (KSAOs) are needed. For example, *job knowledge* and *technical skills* would appear to be essential for if one were to effectively work in a job or team with high levels of autonomy or considerable task variety. Job knowledge reflects the declarative and procedural knowledge of the job and role whereas technical skill reflects the capability to perform the work itself. Given their relationships to job performance (Borman, White, & Dorsey, 1995; Schmidt, Hunter, & Outerbridge, 1986), job knowledge and technical skill provides needed resources for job or role holders in carrying out their formal and informal responsibilities. In addition, technical skill is directly related to the performance of work tasks (Morgeson, Reider, & Campion, 2005), and thus reflects a capacity to perform the broader roles that might be implied by many of the task work characteristics.

Another skill that is likely important for many of the task characteristics is *self-management skill*. Self-management skills reflect competence in self-setting goals, monitoring progress toward goal accomplishment, and providing self-administered consequences for goal attainment or failure (Manz & Sims, 1980). Such skill would be particularly important in jobs or roles with high degrees of autonomy, as workers often lack direct day-to-day supervision. Although this is consistent with the socio-technical principle of controlling variance at its source, there are numerous risks associated with worker autonomy in the absence of self-management skills. Burr and Cordery (2001) offer some evidence for the importance of self-management skills. They found that self-management efficacy mediated the relationship between work method control (a form of autonomy) and task motivation. Because self-efficacy beliefs are anchored in an individual's actual skill level (Gist & Mitchell, 1992), such beliefs likely reflect past successful self-management experiences. This suggests that the positive influence of autonomy is due, in part, to the possession of self-management skills.

Cognitive ability reflects a person's general level of intelligence (Hunter & Hunter, 1984; Schmidt & Hunter, 1998). As such, it is a general resource that enables the effective performance of many of the work characteristics arising from the task environment (Morgeson et al., 2005). For example, job complexity, information processing, and problem solving all have an underlying cognitive ability component (Morgeson & Humphrey, 2006). In addition, workers with high levels of cognitive ability will likely perform better in jobs or roles with high levels of skill variety or when jobs or roles require high levels of specialization. Finally, team research has demonstrated that cognitive ability is positively related to team performance ($\rho = .27$; Bell, 2007).

As Tesluk and Jacobs (1998) noted, work experience is a multi-faceted construct. For the task characteristics, the most appropriate aspect of experience is *task experience*. Task experience reflects the amount of time spent performing a task and the number of times the task has been performed (Tesluk & Jacobs, 1998). Task experience confers job knowledge, and thus provides workers with the ability to effectively enact their task responsibilities. Therefore, it is likely that having higher task experience will help workers perform successfully in jobs that have high task variety (i.e., breadth of knowledge) or specialization (i.e., depth of knowledge).

Proactive personality reflects a disposition towards making anticipatory changes (Seibert, Crant, & Kraimer, 1999a). Proactive people identify opportunities for change and act on these opportunities (Bateman & Crant, 1993), use this proactivity to better clarify their role responsibilities (Griffin, Neal, & Parker, 2007), and ultimately are more satisfied (Seibert, Kraimer, & Crant, 1999b) and successful in their careers (Seibert et al., 1999a). Being proactive is likely most important in jobs with autonomy, as proactive people will be able to "initiate better ways of doing core tasks" (Griffin et al., 2007, p. 330). Consistent with this reasoning, Parker and Sprigg (1999) showed that employees with a proactive personality responded positively to jobs that were high in job demands and autonomy, whereas for more passive individuals, job demands were strongly associated with strain regardless of the degree of autonomy. Parker and Sprigg concluded that proactive employees make use of the autonomy afforded them to manage demands, whereas more passive individuals do not take advantage of this opportunity.

Finally, *need for achievement* represents an individual need to maintain high standards and accomplish difficult tasks (Jackson, 1974; McClelland, 1965). Workers with high levels of need for achievement set more challenging goals (Phillips & Gully, 1997), which can produce higher levels of performance (Locke & Latham, 1990). In jobs with more autonomy, skill variety, task identity, and feedback from the job, having a higher need for achievement can be beneficial for job performance (Steers & Spencer, 1977). In particular, having both high need for achievement and high autonomy (specifically decision-making autonomy) can produce higher levels of performance by providing both the individual motivation and work-provided flexibility to challenge oneself. However, need for achievement may also have negative implications for well-being outcomes. Continually striving for high achievement can produce stress and burnout, particularly if workers do not have autonomy or are performing simplistic, repetitive tasks.

Social Characteristics

Work Characteristics

Although early research on job design identified the social environment as an important factor in work behaviors and reactions to work (e.g., Hackman & Lawler, 1971; Trist & Bamforth, 1951; Turner & Lawrence, 1965), most work design research has neglected these factors[1] (Humphrey et al., 2007). Similarly, research on team design has generally focused on characteristics of workers (Bell, 2007), but neglected to study the tasks and roles team members perform (Ilgen & Hollenbeck, 1991). In this section, we first discuss several characteristics of work that emerge when working with others. We next discuss the unique worker characteristic constructs that arise in the social context.

Social support is the extent to which there are opportunities for assistance and advice from supervisors and coworkers (Karasek, 1979; Karasek et al., 1998; Morgeson & Humphrey, 2006; Sims et al., 1976). As noted earlier, ideas of social support and the opportunity to develop friendship opportunities at work was one of the key insights to emerge from the Hawthorne studies. One of the primary ways in which social support has been discussed is as a buffer against negative work outcomes (Johnson & Hall, 1988; Karasek et al., 1998). Not surprisingly, social support has been linked to several well being outcomes (Watson, 1988), with meta-analytic results demonstrating a small to moderate negative relationship to well-being outcomes (Humphrey et al., 2007).

Social support has been shown to impact a wide range of other worker outcomes. For example, meta-analytic results (Humphrey et al., 2007) have demonstrated that social support is strongly related to organizational commitment ($\rho = .82$) and job satisfaction ($\rho = .56$). Moreover, social support is one the most influential job characteristics in terms of turnover intentions ($\rho = -.34$). Social support also is related to role perception outcomes, including role ambiguity ($\rho = -.32$) and role conflict ($\rho = -.31$).

Although Hackman and Lawler (1971) did not find a significant relationship between aspects of social support (i.e., friendship opportunities at work) and work motivation, later research has shown a small positive relationship (Hamm & Adams, 1992; Okebukola & Ogunniyi, 1984; Slavin, 1992, 1995). These results suggest that social support may be uniquely suited to manage some of the tradeoffs in work outcomes that result from increases to the task-level characteristics (Morgeson & Humphrey, 2006). This is consistent with the notion that social support provides a buffer against job-related demands (Karasek & Theorell, 1990).

Feedback from others is the extent to which members of the organization provide information about job performance (Humphrey et al., 2007; Morgeson & Humphrey, 2006). Although research has often considered feedback from others and feedback from the job as subsets of the same construct, recent research has shown that they are only moderately related (Morgeson & Humphrey, 2006). This is likely due to the different sources of feedback (as feedback from others arises from the social context, rather than from the task itself). For example, one can imagine jobs where there is considerable information arising from the work, but relatively little from the social environment (i.e., coworkers or supervisors).

Accurate and timely feedback from supervisors and coworkers plays a central role in a number of organizational theories. For example, role theory suggests that supervisory feedback helps establish and clarify role expectations, resulting in reduced role ambiguity (Biddle, 1979; Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964). Similarly, Feedback Intervention Theory (Kluger & DeNisi, 1996) suggests that although feedback sometimes has a negative impact on performance, under many conditions it has a positive influence on performance.

Given the importance of feedback, it is not surprising that that well being, satisfaction, and work motivation are improved when it is provided (Humphrey et al., 2007). This is likely due to the satisfaction derived from knowing what is expected on oneself, rather than having to behave in a feedback-free environment. Not surprisingly, feedback from others is negatively related to turnover intentions (Humphrey et al., 2007).

Interdependence is a multi-faceted construct reflecting the extent to which workers are connected to others (Saavedra, Earley, & Van Dyne, 1993). It is composed of task interdependence (i.e., the extent to which a job requires others, and other jobs require the output of the focal job; Kiggundu, 1981), goal interdependence (i.e., extent to which an individual's goals overlap with another person's; Saavedra et al., 1993), and outcome interdependence (i.e., the extent to which a worker's feedback and rewards are linked to another person's; Campion et al., 1993; Guzzo & Shea, 1992). Essentially, interdependence creates a more complex and motivating job (Kiggundu, 1983) by requiring interaction between multiple organizational members.

There are multiple forms of interdependence. First, task interdependence can be received or initiated (Kiggundu, 1983). That is, the outputs of your job can serve as the input for another's job (initiated) or the outputs of another's job can serve as the input for your job (received). The pattern of received and initiated interdependence creates more complex forms of interdependence. For example, sequential interdependence (Thompson, 1967) represents a unidirectional flow of initiated and received interdependence, such that the output of person A's role serves as the input of person B's role, the output of which serves as the input for person C's role, and so on. In contrast, intensive interdependence reflects the flow of behaviors both to and from all members of a team (Van de Ven, Delbecq, & Koenig, 1976).

Second, interdependence may be between jobs or roles, teams, or even larger collectives (e.g., organizations). If interdependence exists solely between jobs or roles, the workers who share the interdependence are often thought of as a team. If interdependence resides between teams or any two collectives, a range of boundary spanning issues arise (Ancona & Caldwell, 1988), which introduces a host of complex coordination, information sharing, and resource exchange issues.

Interdependence has been shown to influence worker outcomes in a number of ways. Its primary impact is upon the attitudinal outcomes of satisfaction and organizational commitment (Campion et al., 1993; Humphrey et al., 2007). Moreover, because interdependence often implies competition with out-group members, motivation is generally increased in high interdependence situations (Tauer & Harackiewicz, 2004). Because task interdependence necessitates higher levels of implicit coordination (Rico, Sánchez-Manzanares, Gil, & Gibson, 2008), it is not surprising that workers often perceive higher levels of overload in high interdependence situations (Humphrey et al., 2007). Yet, because task interdependence results in more communication between workers, tacit job knowledge is often transferred (Berman, Down, & Hill, 2002), resulting in higher job performance (Humphrey et al., 2007; Saavedra et al., 1993).

Interaction outside the organization reflects the extent to which an individual must interact and communicate with people external to the organization (Morgeson & Humphrey, 2006; Sims et al., 1976; Stone & Gueutal, 1985). Whereas the other social characteristics primarily focus on information exchange and interaction within an organization, interaction outside the organization represents communication between an organizational member and a non-organizational member. As such, this work characteristic involves the broader social environment. For example, sales and service jobs often have a high level of interaction outside the organization because their jobs explicitly require them to interact with others.

In contrast to the other social characteristics, less is known about the impact of interaction outside the organization on worker outcomes. Some preliminary work has shown that it is related to higher job satisfaction (Humphrey et al., 2007), but is also related to increased compensation requirements (Morgeson & Humphrey, 2006). Cordery (2006) has conducted some innovative research exploring how organizations have begun to incorporate customers in the production process. Such "co-production" involves enlisting customers to perform part of the work, and then coordinating this work with individuals inside of the organization. Such co-production is likely to significantly affect roles that have considerable interaction outside the organization because these workers reside at the organization and customer boundary.

Worker Characteristics

As one moves to the social level, an additional set of worker characteristics become important. In general, these worker characteristics emerge because of the social demands placed on workers given the interdependencies and interpersonal aspects of these work characteristics.

A great deal of attention has been given to understanding how personality characteristics can impact outcomes in teams and jobs that have a major social component. This is not surprising, as personality is inherently a social phenomenon in that the personality constructs are derived from adjectives used to distinguish individuals (Allport & Odbert, 1936). Although there have been periods of excitement regarding the impact of personality on team performance (Moynihan & Peterson, 2001), the empirical results are much more modest. For example, Bell's (2007) recent meta-analysis demonstrated small relationships between conscientiousness ($\rho = .11$), agreeableness ($\rho = .12$), extraversion ($\rho = .09$) and team performance. In jobs involving

interpersonal interaction (at the individual level), however, slightly stronger relationships have been found between conscientiousness ($\rho = .23$), agreeableness ($\rho = .18$), extraversion ($\rho = .12$) and overall job performance (Mount, Barrick, & Stewart, 1998).

At the social level, *team experience* (i.e., the amount of time spent with the current team) reflects a unique dimension of experience. Team experience is particularly important for team performance (Berman et al., 2002), in that teams with higher team experience can develop complex information exchange systems (e.g., shared mental models and transactive memory; Mohammed & Dumville, 2001). Having a shared representation of a task can improve coordination and helping behaviors (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000), whereas knowing which team members possess unique knowledge and skills can directly influence performance by allowing the team to tap into relevant knowledge whenever necessary (Austin, 2003; Lewis, 2003). Finally, greater team experience can reduce role ambiguity and conflict, as team members will have had adequate time to communicate their expectations and responsibilities to others in the team (Seers et al., 1995).

Additionally, there are a range of knowledge, skills, and abilities (KSAs) that underlie effective teamwork. Stevens and Campion (1994) suggested that there is a set of interpersonal (including conflict resolution, collaborative problem solving, and communication) and self-management (including goal setting/performance management and planning/task coordination) KSAs essential for effective team performance. These teamwork capabilities become important in teamwork settings because of the increased social and interpersonal requirements (Stevens & Campion, 1994). Although research has linked overall teamwork-KSAs to individual performance (Morgeson et al., 2005; Stevens & Campion, 1999), there are some questions about the extent to which teamwork-KSAs are distinct from cognitive ability. In addition, past research has focused primarily on individual performance in team settings. Future research needs to be conducted with team-level outcomes.

Need for affiliation reflects a persons' desire for social contact and need to belong to a social group (McClelland, 1965). When assessing the potential value of the social characteristics of work, having individuals who both want and need to interact with others performing this work can be of great value. Workers high on need for affiliation may see interdependence with others as a prerequisite for job satisfaction, and may be disappointed if they do not have opportunities for formal or informal social interaction. Similarly, having high levels of need for affiliation can increase the identification of the worker with the organization, particularly when the job contains high levels of social support (Wiesenfeld, Raghuram, & Garud, 2001), as social support provides a strong social cue that one "belongs."

Finally, a person who has a *hardy personality* tends to be committed to daily activities, perceives control over events that occur in life, and views change as a challenge, rather than a threat (Kobasa, 1979). This disposition has long been theoretically and empirically linked to the ability of a person to buffer stress and ward off the consequences of negative life events (Gentry & Kobasa, 1984). At work, having a hardy personality is likely to amplify the positive effects of numerous social characteristics. For example, a person high on hardiness is more likely to take advantage of social support, and to provide social support to others (Maddi, 2006). Moreover, because an implicit component of the hardiness construct is that one finds meaning in stressful and challenging situations (Maddi, 2006), having high levels of hardiness should allow a worker to treat feedback from others, regardless of whether it is positive or negative, as developmental rather than critical (Javo, Alapack, Heyerdahl, & Rønning, 2003). Thus, a hardy worker should thrive in a work setting that involves a high level of social interaction.

Contextual Characteristics

Work Characteristics

The broader physical and organizational context within which work is performed gives rise to numerous work characteristics. In the work design literature, the most commonly studied work characteristics include *physical demands* (i.e., the physical activity and effort involved in a job; Edwards, Scully, & Brtek, 1999; Stone & Gueutal, 1985) and *work conditions* (i.e., components of the work context, including noise, health hazards, and temperature; Campion & McClelland, 1991; Edwards et al., 1999). Meta-analytic results show that both of these characteristics relate to job satisfaction, with higher physical demands having negative relationships to satisfaction ($\rho = -.17$), whereas work conditions positively relate to satisfaction ($\rho = .23$). Work conditions have also been shown to negatively relate to stress ($\rho = -.42$).

The biological approach to work design (Campion, 1988) highlighted the relevance of *ergonomics* (i.e., the extent to which work allows for correct posture and movement; Campion & Thayer, 1985) as a contextual factor. Some research has demonstrated a linkage between ergonomics and both

job satisfaction (Morgeson & Humphrey, 2006) and efficiency (Edwards et al., 2000). The perceptual/motor approach to work design (Campion, 1988) has advocated the importance of *equipment use* (i.e., "the variety and complexity of the technology and equipment used in a job"; Morgeson & Humphrey, 2006; p. 1324); however, research has not demonstrated a consistent impact of equipment use on work outcomes.

Researchers have noted that *boundary spanning* (i.e., interaction within an organization, but outside one's team or department; Ancona, 1990; Ancona, Bresman, & Kaeufer, 2002) is an important aspect of work for both individuals and teams. Boundary spanning reflects the connections to other individuals or collectives within an organization. It is important to be able to manage the flow of information and resources into and out of jobs and teams, as the information and resources are often critical for effective performance. For example, having knowledge of organizational resource constraints can lead to innovation, as individuals adapt their processes and outputs to fit these constraints (Ancona & Caldwell, 1992). Boundary spanning has alternately been found to relate to perceptions of role overload, team viability (Marrone, Tesluk, & Carson, 2007), satisfaction, and effectiveness (Gladstein, 1984).

Organizational support is another important aspect of the broader context within which work is performed. This includes the nature and quality of the reward systems, information systems that warehouse and distribute relevant knowledge, the formal training system used for developing and educating workers, the availability of resources necessary for performance, and the presence of managerial support (Campion et al., 1993; Hackman, 1987; Morgeson, Aiman-Smith, & Campion, 1997; Pearce & Ravlin, 1987). Only a handful of studies have explored how these aspects of organizational aspects influence outcomes. For example, Wageman (2001) found that well-designed organizational support systems were related to better performance and satisfaction of both individuals and teams. In two studies of teams, Campion et al. (1993) and Campion et al. (1996) found that training systems demonstrated small relationships to satisfaction and manager judgments of effectiveness whereas managerial support generally evidenced stronger relationships with these same outcomes. Although this limited research is supportive, additional research is needed exploring the full range of contextual elements.

Other research has suggested that the presence of a supportive organizational context is important to consider when redesigning jobs from traditional work group structures to semi-autonomous team structures (Morgeson et al., 2006). Morgeson et al. found that when organizational

reward and feedback and information systems were effective, redesigning work into a semi-autonomous team structure had no discernible effect on the performance behaviors of effort and problem solving, respectively. When these organizational support systems were poor, however, such a redesign produced large positive benefits. This suggested that work redesigns that enhance worker autonomy will be most effective in contexts where organizational support is poor. As such, these aspects of organizational support might also act as moderators between the work characteristics and outcomes.

The physical arrangement of work is another important contextual work characteristic. In particular, the *virtuality of work* (i.e., the degree to which individuals are collocated and/or utilize technology for mediating their communication; Kirkman & Mathieu, 2005; Martins, Gilson, & Maynard, 2004) has been shown to affect a range of worker outcomes (see Bailey & Kurland, 2002; Martins et al., 2004). Work that is highly virtual may span geographical, temporal, or organizational boundaries, which creates an abundance of unique implications for work.

Consider a team with high variance on temporal dispersion. A team that has several members located in Seattle, several members located in Amsterdam, and several members located in Singapore would have to manage the fact that the team spans nearly the entire globe. Essentially, this team would be serial processing between locations: as the Singapore team members were finishing their work day, the team members in Amsterdam would be starting theirs; when the team members in Amsterdam were finishing up, the team in Seattle would be starting. Such a design has positive aspects, in part because the team will always be active. Yet there are also negative aspects, in part because the team will likely be unable to be "fully operational" at any given time. For example, if a problem occurs at 11:00 am in Seattle, it may be difficult for team members in Amsterdam to respond (where it would be 8:00 pm) and team members in Singapore would be exceptionally challenged to respond (where it would be 3:00 am).

Another implication of virtuality is that the extensive use of mediated communication may impact both cognitive and well-being outcomes. For example, in highly virtual teams, individuals are not as aware of individual responsibilities (perhaps producing redundant outputs) due to a lack of constant interaction. This can create role ambiguity and role conflict. Moreover, mediated communication can lead to depersonalization, such that individuals display more hostility (i.e., with less "filter" in their words and actions) toward coworkers, destroying the morale of the team (Martins et al., 2004).

Gajendran and Harrison (2007) recently conducted a meta-analytic summary of 46 studies in the area of telecommuting ("an alternative work arrangement in which employees perform tasks elsewhere that are normally done in a primary or central workplace, for at least some portion of their work schedule, using electronic media to interact with others inside and outside the organization;" Gajendran & Harrison, 2007, p. 1525) that offers additional insight into how virtual working arrangements may affect a variety of individual-level outcomes. They found that telecommuting had small but largely beneficial effects on a range of outcomes, including enhanced perceived autonomy, job satisfaction, performance as well as reduced work–family conflict, turnover intentions, and role stress. Interestingly, they found that some of these outcomes were partially mediated through autonomy, which is not surprising given the considerable research demonstrating the positive benefits of enhanced autonomy. Finally, they found that "high-intensity" telecommuting had positive effects on work–family conflict but negatively impacted relationships with coworkers.

A potentially important contextual factor which has been infrequently examined in work design is the impact of *consequence of failure*. Consequence of failure (sometimes referred to as *error criticality*) concerns "the degree to which incorrect task performance results in negative consequences" (Brannick et al., 2007, p. 52). Martin and Wall (1989) identified a more specific form of this factor (termed "cost responsibility"), which reflected the cost of errors for production and machinery. From a work design perspective, consequence of failure is an important contextual factor because it shifts employees' focus to prevention of errors, rather than attaining positive outcomes. In a prevention focus, employees are concerned with protection, safety, and responsibility. Furthermore, they are sensitive to negative outcomes and thus are vigilant against making mistakes and the actions that produce them (Crowe & Higgins, 1997; Higgins, 1997).

When work has a high consequence of failure, individuals will be focused on preventing errors. This will manifest itself in terms of how individuals react to aspects of the work and work environment. As Thompson (1967, p. 120) notes, "the more serious the individual believes the consequences of error to be, the more he will seek to evade discretion." This evasion of discretion can be viewed as a move away from accountability or responsibility for work outcomes. When accountability is heightened, individuals become more defensive (Tetlock, Skitka, & Boettger, 1989), which reflects a basic strategy individuals have developed for coping with features of the work environment (Tetlock, 1985). Increased accountability also leads to risk avoidance (Tetlock & Boettger, 1994; Weigold & Schlenker, 1991), which has further implications for reactions to work design features. It appears that when the consequences of errors are great, individuals seek to reduce accountability and tend to respond negatively to any increase. As Tetlock (1985, p. 307) notes, "the fact that people are accountable for their decisions is an implicit or explicit constraint upon all consequential acts they undertake."

This suggests that consequence of failure will moderate the relationship between several work characteristics and outcomes. First, we would expect that high consequence of failure work would cause workers to be less interested in high levels of autonomy because increased freedom in work scheduling, decision-making, and work methods allows more possibility for error and results in individual accountability for errors when they occur. Second, they will be less interested in work where they use a wide variety of skills, engage in a wide variety of tasks, or have particularly demanding jobs (in terms of job complexity or problem solving), in part because these work characteristics increases the chances of making errors (Campion & McClelland, 1993), and when one has a prevention focus, individuals want to avoid making mistakes (Higgins, 1997). As Martin and Wall (1989) found, cost responsibility interacted with attentional demand to negatively impact several well-being outcomes. On the other hand, workers are likely to react positively to interdependent work because the connection to others is likely to provide greater access to help when it is needed, which reduces overload and complexity. Likewise, they will be interested in work with higher levels of social support. Research demonstrates that individuals in a prevention focus experience agitated emotions when goal attainment is not achieved (Higgins, Shah, & Friedman, 1997). Thus, support from coworkers will not only help to buffer the inherent stress in the job, but will also help to regulate emotions.

Worker Characteristics

Several characteristics appear particularly important for a worker's successful enactment of the context-level work characteristics. First, *physical ability* (i.e., "maximal gross muscular performance"; Hogan, 1991, p. 754) appears to be particularly relevant for jobs with high physical demands. As noted by Campion (1983), workers who do not have the physical abilities necessary for the jobs they perform have higher incidences of injuries, and thus it is important to accurately asses both the physical demands of a job and the physical abilities of the worker.

Another factor that may be important is *propensity to trust*. Propensity to trust is essentially the tendency (or lack thereof) to readily trust others. It is

important for performance in virtual teams (Jarvenpaa, Knoll, & Leidner, 1998), as the ability to build trust in a distributed team (where individuals will struggle to monitor other's behavior and effort) is critical for successful team performance (Snow, Snell, & Davison, 1996). In addition, propensity to trust has been linked to preference for working in a team, partially through its relationship with trust in co-workers (Kiffin-Petersen & Cordery, 2003).

Finally, specific *organizational experience* will be important for successfully dealing with many contextual work characteristics. Greater organizational experience will provide workers with the explicit and implicit knowledge that can enable effective performance. For example, if there is a great deal of boundary spanning present in the work, workers with greater organizational experience will have greater implicit and explicit knowledge of the range of connections among disparate stakeholders within the organization. In addition, workers with greater organizational experience will better understand the level of organizational support (or lack thereof) and how the presence or absence of organizational support may impact their particular work. This will enable them to take advantage the various support mechanisms or minimize the potentially disruptive impact a lack of organizational support may have on their work.

Considering Fit, Composition, and Configurations of Work

With the work and worker characteristics thus defined, three additional issues arise. The first concerns the fit between workers and the different work characteristics. The second concerns how to compose teams. The third concerns how configurations of certain work characteristics are related to outcomes. We consider each of these in turn.

Worker and Work Characteristics Fit

Although past work design research has recognized that not all individuals will respond to work in the same way (Hackman & Oldham, 1980; Kulik, Oldham, & Hackman, 1987), there are three key limitations to this research. First, only a narrow set of individual needs and satisfactions have been studied (Fried & Ferris, 1987). Thus, the broader set of work and worker characteristics discussed in the current chapter have been all but ignored. Second, the empirical results provided to date concerning the moderating effects of growth need strength and context satisfaction have been largely unsupported (see Tiegs, Tetrick, & Fried, 1992 for a summary and large-scale test). This suggests that the factors previously identified and studied are not particularly important. Third, the primary focus in this literature has been on whether people are over or under-qualified for their jobs (Kulik et al., 1987). Yet, the broader literature on fit has demonstrated that the fit between people and their job, team, and organization matter for a wide variety of outcomes (Kristof, 1996; Kristof-Brown, Zimmerman, & Johnson, 2005).

For the study of work design, the most important theoretical perspective on fit is the needs–supplies/demands–abilities duality (Kristof, 1996). Needs–supplies fit is said to exist if the context (i.e., the job, team, or organization) satisfies the needs or preferences of the worker (e.g., the job "challenges" the worker; Kulik et al., 1987). In contrast, demands–abilities fit is said to exist if the worker has the abilities necessary for fulfilling the context's demands (e.g., the worker has the physical ability necessary to perform the job).

As we have discussed in each of the sections of our work design model, each of the three levels of work design (task, social, and context) includes both work characteristics and worker characteristics. If one applies the fit perspective to the work and worker characteristics, it would be expected that the match between specific work characteristics and specific worker characteristics will produce positive work outcomes. For example, putting a worker with a proactive personality in a job with high levels of autonomy should lead to higher levels of performance (as the worker would take the initiative to innovate and adapt on the job; Griffin et al., 2007) and satisfaction (as the worker will continually feel challenged in his/her job; Parker & Sprigg, 1999; Seibert et al., 1999). In contrast, a bad fit between work and worker characteristics can be devastating for work outcomes. For example, if the same proactive person is in a low autonomy job, he/she would feel stifled and constrained, likely leading to low levels of satisfaction and high levels of turnover.

A second perspective on the fit question comes from work on the gravitational hypothesis (McCormick, DeNisi, & Shaw 1979; McCormick, Jeanneret, & Mecham, 1972; Wilk, Desmarais, & Sackett, 1995; Wilk & Sackett, 1996). This perspective argues that workers "gravitate" towards and stay in jobs that they are both capable of performing and fit with their individual differences. That is, rather than taking the perspective that organizational action initiates the matching between workers and work characteristics, the gravitational hypothesis suggests that workers initiate the matching behaviors themselves. Providing support for this perspective, researchers have found that individuals with higher cognitive ability moved

into more complex jobs that have higher cognitive ability demands (and vice-versa; Wilk et al., 1995; Wilk & Sackett, 1996). This suggests that workers move towards jobs that fit their ability levels. Although this research primarily focused on the relationship between ability and job complexity, it is reasonable to suspect that workers will gravitate to jobs based upon the match between other factors beyond ability and complexity.

As noted by Kulik et al. (1987), "the importance of matching individual abilities and skills to the job ... has not been systematically addressed" (p. 294). Yet, there is sufficient theory to suggest that this match is critical. The model developed in this paper provides a framework within which to investigate issues of fit between workers and work characteristics. This would seem to be a potentially fruitful area for research given the importance of work design and the relative lack of attention to issues of fit in the work design literature.

Composition Models

If one is trying to determine how to design a team, it is critical to understand how worker characteristics impact a team. Yet, for nearly as long as researchers have studied teams, there have been questions about how to conceptualize individual attributes in a team context (Rousseau, 1985). The traditional approach to conceptualizing individual attributes at the team level is to take an additive approach (Chan, 1998) wherein the mean level of the individual attributes in a team is taken to represent the team. For example, the cognitive ability of a team would be thought of as the mean of the cognitive ability of all team members.

Although this is the dominant approach to conceptualizing individual attributes in a team, it fails to consider how variance on these characteristics might affect outcomes. For example, a team composed of three individuals with high levels of cognitive ability and three individuals with low levels of cognitive ability (and thus have a moderate level of team ability if a simple average was used) would be viewed as identical to a team composed of six individuals with moderate levels of cognitive ability. Thus, researchers have attempted to compliment the additive approach with dispersion models (Chan, 1998) that account for the differences (or similarities) between team members.

Harrison and Klein (2007) argue that within-team diversity can be conceptualized as one of three types: separation, variety, and disparity. Separation diversity can be thought of as the (horizontal) spread between members on a specified dimension. Going back to our previous example, if all team members had moderate ability, there would be low separation

diversity, whereas the team composed of three individuals with high ability and three people with low ability would have high levels of separation diversity. Separation diversity is often conceptualized as the standard deviation on a trait within a team. Variety, in turn, is thought of as the distinctiveness of individual traits within a team. For example, a team composed of four accountants would have low variety diversity, whereas a team composed of one accountant, one engineer, one marketing manager, and one supply chain manager would have high levels of variety diversity. Variety is often operationalized using Blau's index (Simpson, 1949). Finally, disparity can be thought of as the (vertical) difference between members of a group. For example, a team composed of six first-line workers would be thought of as low disparity diversity, whereas a team composed of five first-line workers and the CEO would be thought of as having maximal disparity diversity. Disparity is often operationalized using the coefficient of variation (Harrison & Klein, 2007).

One concern about current operationalizations of dispersion models is that many practitioners and researchers alike create (at best) moderate levels of diversity when theoretical models are based upon maximal diversity (Humphrey, Hollenbeck, Meyer, & Ilgen, 2007). For example, when considering the role of personality in team performance, although theory may argue for maximal diversity, teams are often designed with only moderate levels of diversity. Humphrey, Hollenbeck, Meyer, & Ilgen et al. (2007) argue that this can be corrected by using the population of workers available to "seed" teams based on specific worker characteristics that are important for team success.

Use of the additive and dispersion models is expected to be derived from theoretical expectations of the relationship between individual attributes and team constructs. A different approach to composition is derived from matching the task being performed to the composition of the team. Steiner (1972) argued that tasks could classified as additive (i.e., task performance is the sum of individual effort), conjunctive (i.e., task performance is a function of the minimum level of performance by any team member), or disjunctive (i.e., team performance is the result of the best performance of any team member). Given the task type, LePine, Hollenbeck, Ilgen, and Hedlund (1997) and Barrick, Stewart, Neubert, and Mount (1998) argued that one can conceptualize the contribution of team members to task performance and thus one can apply specific rules for the aggregation of individual level characteristics. For example, if a task is conjunctive (e.g., work on a fixed assembly line), the overall performance of the team is determined by the speed of the slowest member. Thus, according to LePine et al. (1997) and Barrick et al. (1998), the team level analogue to individual

level personality traits in this task should be thought of as the minimum level of a personality trait in the team (keeping in mind the assumption that higher levels of a personality trait is assumed to be related to higher levels of performance).

Another option available for conceptualizing individual attributes is to take a role composition approach to team composition (Humphrey, Morgeson, & Mannor, in press). Role composition considers how role holder characteristics impact performance, rather than putting the focus solely on individuals. Because multiple team members typically fill a given role, roles exist at a level lower than the team, but higher than the individual. The role composition approach takes many compositional cues from the additive and dispersion models, in that individual attributes can be conceptualized at the role level as the average or diversity of the role holders' characteristics. Yet, it adds a level of complexity, in that different roles may exhibit different levels of influence on team performance (Humphrey et al., in press; Pearsall & Ellis, 2006). Thus, the challenge when designing team work is to understand the different roles in teams, what roles are most important for team success, and what worker characteristics are important for success in those roles.

Configurations of Work Characteristics

To date, almost all of the research on work design has focused on the main effects of characteristics on work outcomes.[2] However, some recent research has begun to examine how specific configurations of characteristics produce unique outcomes. For example, Morgeson and Campion (2002) examined whether changes to both mechanistic and motivational work design (Campion, 1988) produced unique outcomes. They found that changing both of these work domains resulted in increased job satisfaction, without simultaneously changing training requirements or job complexity. In contrast, changes to only motivational or mechanistic designs resulted in gains on one criterion, with concomitant losses on another criterion. They therefore concluded that the combination of changes to several work characteristics was more effective.

As another example, Grant (Grant, 2007; Grant et al., 2007) has explored how a specific task characteristic (i.e., task significance) interacts with a social characteristic (i.e., interaction outside the organization) to influence various work outcomes. In a theoretical article, Grant (2007) discussed how "job impact on beneficiaries" (i.e., task significance) interacts with "contact with beneficiaries" (i.e., interaction outside the organization) to increase effort, persistence, and helping behaviors. In an empirical test of this model, it was found that this interaction impacted persistence, performance, and productivity (Grant et al., 2007). These findings are particularly interesting, as interactions were explored across levels (i.e., task and social), rather than within a level (c.f., Morgeson & Campion, 2002).

As these two examples suggest, there are potentially synergistic configurations of work characteristics. Given the expanded set of work characteristics outlined in this chapter, there are many possible configurations. Although there are few theoretical models that describe how different work characteristics complement each other, this seems like a potentially fruitful area for future theorizing and research. Thus, future research should begin to explore more configurations, particularly configurations that span the task, social, and contextual domains.

Mechanisms through Which Work Design Affects Outcomes

A key question in work design theory concerns the mechanisms through which work design affects attitudinal, behavioral, cognitive, well-being, and organizational outcomes. Typically, most research has focused on a narrow set of motivationally oriented mediational mechanisms. Recent research has helped clarify these motivational pathways. In addition, several other motivational and non-motivational mechanisms have been identified, offering some new possibilities for better understanding how work design impacts outcomes.

Hackman and Oldham (1976) suggested that task-level work characteristics impact work outcomes through three critical psychological states: experienced meaningfulness (i.e., the extent to which a worker perceives that a job has value), experienced responsibility (i.e., the extent to which a worker feels accountable for job outputs), and knowledge of results (i.e., the extent to which a worker knows how he or she performed). Although they proposed that these three critical states were independent mediators, recent research has suggested that experienced meaningfulness captures most of the mediation effects (Johns, Xie, & Fang, 1992). Humphrey et al. (2007) confirmed this by conducting the first meta-analytic test of the job characteristics–critical psychological states–outcomes mediation model. Consistent with Johns et al., Humphrey et al. found support for a model in which experienced meaningfulness was the primary mediator of the task characteristics–work outcome relationship.

Perhaps not surprisingly, subsequent research has focused specifically on the importance of experienced meaningfulness as a mediator. For example,

Grant (2007) suggested that task significance influences effort, persistence, and helping though a worker's motivation to make a prosocial difference. In empirical research, Grant (2008a) found that task significance influences job performance through perceived social impact and perceived social worth, which can be thought of as two specific forms of experienced meaningfulness.

In addition to these motivational explanations, several other mediating mechanisms have been offered. One involves the speed with which a worker can respond to problems (i.e., "quick response"; Parker & Wall, 1998, 2001; Parker, Wall, & Cordery, 2001; Wall & Martin, 1987). A key principle of socio-technical systems theory is to control variance at its source. This would suggest that if workers were given decision-making autonomy, they will be best positioned to respond to problems in an efficient and effective manner. This logistical advantage suggests that workers will be able to respond to problems faster (Wall, Jackson, & Davids, 1992).

Another potential mechanism concerns the extent to which workers acquire new knowledge and skill and otherwise develop as a result of their work activities (i.e., "learning and development; Parker & Wall, 1998, 2001; Parker et al., 1997; Wall & Jackson, 1995). If workers learn more about their work or broader organizational system, they are better able to anticipate and avoid future problems (Wall et al., 1992) as well as experience increased self-efficacy. There are a variety of ways in which workers can learn and develop on the job. For example, autonomy gives workers the chance to explore and experiment; task and skill variety provides an opportunity to be exposed more aspects of the work and develop a broader portfolio of skills; feedback from the job and others can offer developmental insight; interdependencies can enable social learning; managerial and coworker support creates a psychologically safe environment within which workers can communicate about and learn from mistakes; and specialization enables one to develop particularly deep knowledge about the work.

Empirical research has supported the potential learning that can occur at work. For example, Leach, Wall, and Jackson (2003) found that enhancing employee decision-making autonomy among photographic paper-finishing workers resulted in increases in fault-management knowledge (i.e., how to respond to technical problems that occurred). Campion and McClelland (1993) explored how enhancing the knowledge aspects of work for clerical workers at a financial services company positively impacted learning. They found that adding job requirements involving understanding procedures or rules relating to different products resulted in increased satisfaction, less mental overload, and better customer service. This research thus offers initial evidence that knowledge-based explanations may be able to extend our understanding of the mechanisms that mediate between work design and outcomes.

But if work enables learning, it is also important to let workers actually use the knowledge and skill they have acquired. Thus, another potential mechanism concerns the extent to which individual and team skills are effectively utilized (i.e., "skill utilization"). If work is designed in such a way as to tap into the existing knowledge and skill base of workers (either through enhanced autonomy or the use of team-based work designs), then one will be able to tap into both formal knowledge as well as tacit and local knowledge and skills (Morgeson et al., 2006; Parker et al., 2001; Wall & Jackson, 1995). Consistent with this, Parker (2003) found that when autonomy was reduced through lean production practices, employee-reported skill utilization also declined. This suggests that increased autonomy should lead to increased utilization of employee skills, with a corresponding positive impact on outcomes.

Many of the preceding mechanisms could be integrated within a broader self-regulation perspective. Holman, Clegg, and Waterson (2002, p. 203) have suggested that self-regulation theories potentially offer "a useful and alternative way of explaining the mechanism underpinning the motivational aspects of job design theory." We would go further to suggest that self-regulation theories may offer a way to integrate across many of the mediational mechanisms discussed earlier. Parker and Ohly (in press) provide an extended discussion of how motivational processes such as goal generation and goal striving act as a key mediational mechanism between work characteristics, motivational states, and non-motivational factors. Empirical research in this area is likely to significantly enhance our understanding of the ways in which work design impacts outcomes.

The preceding mediational mechanisms largely concern intra-individual processes. Given our expanded focus on social and contextual work characteristics, however, one might wonder if there are any explicitly social mediational mechanisms. The concept of social facilitation offers one potential explanation for how working with others might impact outcomes. The presence of others during task performance has been thought to increase level of drive (Zajonc, 1965), heighten an individual's self-awareness, motivating him or her to reduce any discrepancies between actual and ideal performance (Duval & Wicklund, 1972), increase motivation to project an image of competence to others (Bond, 1982), and influence beliefs about expectancies and consequences of efforts (Ferris, Beehr, & Gilmore, 1978).

It is thought that social facilitation processes enhances dominant response tendencies. Thus, for individuals and groups, the presence of others is likely to have a positive effect on habitual or routinized behavior. Research on co-acting individuals (where individuals work independently in the presence of others) has been supportive of this notion, where social presence of others enhances performance on simple tasks but impairs performance on complex tasks (Bond & Titus, 1983). Yet research that has focused on collective work (where individuals work together) has found just the opposite. Working collectively tends to enhance performance on complex tasks and impair performance on simple tasks (Jackson & Williams, 1985).

One way to reconcile these seemingly disparate findings is to consider how several social processes can influence individual and team behavior. When working with others, there are many opportunities to give and receive assistance and support, which can have a positive effect on a range of outcomes. Workload sharing among workers is also likely to occur, which can help avoid downtime and enable effective performance. Such workload sharing is particularly likely to occur when the work is complex and the workload is high. When work is simple and the workload is low, the performance costs associated with social loafing and free riding are lower because others can compensate for team members that are not fully contributing. When work is complex and workload is high, however, the efforts of all team members are needed for a team to perform successfully. As such, it is clearer to team members that their contributions are unique and needed, making social loafing and free riding less likely to occur. Teams can also develop norms that have a strong influence on work behavior. These norms can either constrain or enable different forms of performance. Working with others can also have a general motivational impact on behavior. As noted by Ferris et al. (1978, p. 345), "The presence of others...serves as a motivating force to perform."

Finally, affective processes are likely to be operating in the context of teams. Due to common experiences, behavioral entrainment, or emotional contagion processes (Hatfield, Cacioppo, & Rapson, 1994; Kelly & Barsade, 2001), affective and emotional states are likely to converge (Barsade, 2002; Ilies, Wagner, & Morgeson, 2007; Totterdell, 2000; Totterdell, Kellett, Teuchmann, & Briner, 1998). Convergence can occur for both positive and negative affective states, which suggest a potential positive or negative effect on effort and performance. For example, if a worker encounters a particularly difficult and frustrating problem, this may cause them to be in a negative affective state that is then transferred to fellow workers or team members, with a potentially negative influence on work outcomes.

As another example, however, if a worker has a particularly positive interaction with a customer, the resulting positive affective state is also likely to be transferred, with more positive implications for work outcomes. Although many of these potential social facilitation mechanisms have not been explored in the context of work design research, they hold potential promise for expanding our understanding of how social and contextual work characteristics influence outcomes.

Informal Work Redesigns

Implicit in the discussion thus far is that knowledge about work characteristics can be used to redesign work to achieve specific organizational goals. Traditionally, the focus has been on efforts on the part of management to implement work design changes (Campion et al., 2005). Although such top-down approaches are commonly employed (see Birdi et al., in press; Leach et al., 2003; Morgeson & Campion, 2002; Morgeson et al., 2006), the workers themselves often play a central role in redesigning their own work. In other words, workers often take the initiative to actively "craft" or "sculpt" their jobs (Bell & Staw, 1989; Frese, Garst, & Fay, 2007; Staw & Boettger, 1990; Wrzesniewski & Dutton, 2001). Although different labels have been used to describe this process, they can all be viewed as a form of informal work redesigns that emerge as workers gain experience with the task, social, and contextual elements of the work.

The notion of informal work redesigns is consistent with the role perspective outlined earlier, where individuals holding the same job will enact their roles in slightly different ways (Biddle, 1979; Davis, 1979; Graen, 1976; Ilgen & Hollenbeck, 1991; Katz & Kahn, 1978). The challenge for work design research thus revolves around understanding the nature of the changes workers make to their role and when they will take on broader or narrower roles.

This is a particularly critical issue to understand because effective organizational functioning is dependent on workers having a flexible role orientation (Parker et al., 1997) or engaging in behavior that goes beyond formal job requirements (Barnard, 1938; Katz, 1964; Katz & Kahn, 1978). Research has begun to articulate the factors and processes through which individuals adopt broader roles at work. These include attitudes such as job satisfaction, commitment, and fairness perceptions (LePine, Erez, & Johnson, 2002). Others have focused on the importance of leadership–follower relationships (Hofmann, Morgeson, & Gerras, 2003), role-breadth

self-efficacy (Parker et al., 2006), various personality characteristics (Bateman & Crant, 1993; LePine & VanDyne, 2001; Parker et al., 2006), and individual capabilities such as cognitive ability and job-related skill (Morgeson et al., 2005).

Worker autonomy appears to be a particularly critical factor leading to broader and more flexible role orientations, personal initiative, and proactive behavior (Frese et al., 2007; Morgeson et al., 2005; Ohly, Sonnentag, & Pluntke, 2006; Parker et al., 1997; Parker et al., 2006). Essentially, autonomy provides workers with greater flexibility in how they define their role, in part because they have greater discretion to make work-related decisions and decide on work methods and scheduling (Fried, Hollenbeck, Slowik, Tiegs, & Ben-David, 1999; Troyer, Mueller, & Osinsky, 2000). Autonomy tends to increase ownership of problems, enhances learning and development on the job (Leach et al., 2003), increases confidence in taking on broader roles (Parker, 1998), and causes workers to recognize a wider range of skills and knowledge as important for their roles (Parker et al., 1997), thus leading to broader role definitions and proactive forms of work behavior.

This research represents an excellent start toward understanding the nature of informal work redesigns by providing a more nuanced view of how workers informally redesign their jobs and roles. Future research should continue to explore the range of factors that lead to broader work roles. The framework provided in this chapter offers some suggestions for additional work and worker characteristics to consider.

CONCLUSION

As this chapter attests, the nature of work is critically important. As the existential philosopher Albert Camus noted, "Without work, all life goes rotten. But when work is soulless, life stifles and dies." As the study, creation, and modification of the composition, content, structure, and environment within which jobs and roles are enacted, the discipline of work design play a central role in understanding what makes work matter to individuals. By integrating research on job and team design, we offered an integrative model of work design that considers a variety of work and worker characteristics across task, social, and contextual domains. It is our hope that this model helps stimulate future research and practice so that more people experience all that engaging, rewarding work can offer.

NOTES

1. This is not to say there has not been considerable research into the role of social environment. Research into work-related stress and job burnout has also demonstrated the benefits of social support (Halbesleben, 2006), but much of this research has occurred outside the domain of work design.
2. One major exception to this is research into the demand-control model of strain, which has focused on the interaction of a number of different work characteristics.

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