

Extending the Reach of Job Design Theory:
Going Beyond the Job Characteristics Model

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I get fed up sometimes, you know, but you just have to put with that, and I just carry on, me, just plod on...You get into work, you get that feeling that you just keep coming everyday, and you think, 'Oh, clock in, do my job, clock out, and that's it like,' ... that's what I'm paid to do anyway (Production operator; Parker, 1994).

Because you know you work hard for a piece of work, to plan for the work, to carry out the work, and at the end you feel this great sense of achievement that it has been down to you (*Portfolio worker cited in Clinton, Wood, Totterdell, in press, p. 187*)

These quotes show two very different reactions to work. The first employee expressed meaninglessness and lack of intrinsic motivation, whereas the second reported a high level of ownership and a strong sense of achievement. Further analysis shows these feelings largely reflect the quality of work design. For the production operator, employed in a traditionally-organized engineering company, the job allowed little opportunity for using discretion, was highly repetitive, and had no apparent impact on important outcomes (Parker, 1994). In contrast, as a portfolio worker, the second employees' job had considerable autonomy, challenge, and variety, resulting in a strong sense of engagement. These brief scenarios highlight that the way that jobs are structured and organized, or their work design, can have a profound impact on employees' motivation and behavior. Indeed, the way jobs are designed can also affect organizational success, as shown by the proliferation of popular practices with that have work design issues at their core (lean production, empowerment, high performance systems, team work, cellular teams, re-engineering, to name but a few).

Our goal in this chapter is to review where we are at with work design research. To begin, we provide a brief overview of classic work design theories and research, followed by an outline of some alternative theoretical perspectives. We then return to the dominant concern of mainstream work design research - the relationship between work characteristics and outcomes - and we identify several ways this approach has been developed to better meet the needs of the contemporary work place. Finally, we suggest further methodological and theoretical developments to extend the reach of work design.

Classic theory and studies

Derived from Taylorism and scientific management principles (Taylor, 1911), jobs in the early 20th century were broken down into their most simplified elements to reduce training times, with managers closely controlling the work. Not surprisingly, the early work design theories that arose in response to these boring and alienating jobs mainly focused on work characteristics that lead to motivation and favorable job attitudes. Herzberg et al., (Herzberg, Mausner, & Snyderman, 1959) proposed that ‘motivator’ factors such as level of recognition lead to job satisfaction, while an absence of extrinsic ‘hygiene’ factors, such as salary, lead to job dissatisfaction. Although research has failed to support this model (e.g. Hulin & Smith, 1967), it inspired the practice of job enrichment, or the creation of challenging and responsible jobs to promote motivation and performance (Paul, Robertson, & Herzberg, 1969).

The principle of job enrichment was further supported by the job characteristics model (JCM) by Hackman and Oldham (Hackman & Oldham, 1980), which proposed that five job characteristics (task variety, autonomy, feedback, significance and identity) promote individual motivation, job satisfaction, and performance through critical psychological states such as experienced meaningfulness. The beneficial effects of jobs with these characteristics are expected to be greater for individuals high on growth need strength who have a preference for growth and learning at work. Some studies have demonstrated the proposed moderating role of growth need strength (e.g., Johns, Xie, & Fang, 1992); others have not (Tiegs, Tetrick, & Fried, 1992).

Two early meta-analytic studies supported the core proposition of the JCM, showing the five job characteristics collectively relate to attitudinal outcomes such as job satisfaction and motivation, as well as, to a weaker extent, ratings of work effectiveness and absenteeism (Fried & Ferris, 1987; Loher, Noe, Moeller, & Fitzgerald, 1985). An expanded meta-analysis supported the importance of work characteristics affecting these outcomes, as well as other

outcomes (organizational commitment, role perceptions, turnover intentions), and identified experienced meaning as the most important state mediating the relationship between job characteristics and outcomes (Humphrey, Nahrgang, & Morgeson, in press).

These meta-analytic studies collated findings across multiple studies, but many studies with cross-sectional designs were included. Longitudinal studies are thus an important complement to the above evidence. One classic study is that by Griffin (1991). The jobs of bank tellers were enriched to include a wider range of activities, greater autonomy, enhanced feedback, and increased responsibility for meeting customer needs. The intervention led to a durable change in job characteristics, a short-term increase of job satisfaction and commitment, and a performance increase in the long run. In a study with the opposite intervention, Parker (2003) showed that the job deskilling associated with lean production, particularly the installation of a moving assembly line, reduced employees' commitment, lowered their self-efficacy, and increased their depression. In yet a third example of a longitudinal study, but in this case conducted across multiple organizations, Birdi and colleagues (in press) investigated the productivity of 308 companies over 22 years. Empowerment, defined as passing considerable operational management responsibility to individuals or teams, was associated with performance benefits. Interestingly, there were no performance benefits associated with total quality management, just-in-time, advanced manufacturing technology, or supply-chain partnering. All together, these and other longitudinal studies provide reasonably consistent and strong evidence for the effects of job enrichment on attitudes and affective reactions like job satisfaction, although there is somewhat more mixed evidence for performance (Parker & Wall, 1998) and relatively small associations for absence (Rentsch & Steel, 1998).

While JCM and job enrichment are mainly concerned with individual jobs, the sociotechnical systems approach to work design emphasizes group work (Trist & Bamforth, 1951). An early study showed that a new mechanistic method of coal mining destroyed the

social support system that coal miners relied on and fragmented the work, with consequent high absence rates and poor work motivation (Trist & Bamforth, 1951). In a second coal mine, the destructive effects of the new mechanistic method were alleviated because miners found a way to realize a form of group work (Cherns, 1995). This early research led to the idea of autonomous work teams that enable employees to work on complete tasks and that grant employees substantive collective autonomy.

Subsequent research typically shows positive attitudinal effects of autonomous work groups (see Sonnentag, 1996, for a review), with evidence somewhat less consistent for performance. For example, one study showed benefits of autonomous work groups for employee satisfaction, but not for productivity (Wall, Kemp, Jackson, & Clegg, 1986), whereas another showed increased productivity and a decrease in customer complaints (Antoni, 1997). Nevertheless, the idea that autonomous work groups are always beneficial for employees has also been challenged by studies adopting a more critical approach. In particular, Barker (1993) showed that employees in autonomous teams exercised a high level of control over each other's behavior. The long term effects of such 'concertive control' on team members' well-being and motivation needs further inquiry.

Additional theoretical perspectives on work design

The JCM approach rests on the assumption that individuals have needs that are fulfilled by the characteristics of their jobs, and thus lead to satisfaction, work motivation and performance. However, the social information processing perspective emphasizes the role of the social context as an influence on how individuals' interpret events and job characteristics (Salancik & Pfeffer, 1978). For example, an employee who perceives low autonomy in their job might do so because the level compares unfavorably with others who have more complex jobs (Oldham et al., 1982). There is indeed evidence to suggest that social cues do affect perceptions of work characteristics, but overall these studies suggest the effects are weaker than those of objective job features (Taber & Taylor, 1990). Likewise, studies show that

social factors have less influence on attitudinal and performance outcomes than objective work design features (Griffin, 1983; Pierce, Dunham, & Blackburn, 1979). Thus social cues are important, but they do not usurp the motivating value of work characteristics per se.

An attempt to integrate work design and work stress research is the model by (Karasek, 1979; Karasek & Theorell, 1990). Karasek proposed that high job demands will negatively affect well-being when job control is low, and high demands will promote an active approach to work when job control is high. Empirical support for this interaction between demands and control is mixed (de Lange, Taris, Kompier, Houtman, & Bongers, 2003; Taris & Kompier, 2005), with studies pointing to the importance of additional conditions such as social support (Van Yperen & Hagedoorn, 2003) or proactive personality (Parker & Sprigg, 1999). Nevertheless, Karasek's model has been particularly associated with the idea that high job demands are not necessarily detrimental for performance outcomes.

Psychological empowerment is also relevant to any discussion of work design. Psychological empowerment refers to the motivational state of experiencing meaning, impact, competence (or self-efficacy), and a sense of choice (or self-determination) (Conger & Kanungo, 1988; Spreitzer, 1995; Thomas & Velthouse, 1990). Although often posited as a new area of inquiry, there is a large conceptual overlap between empowerment and the critical psychological states in the JCM, and there is evidence that psychological empowerment mediates the relationship between work characteristics and outcomes (for a review see Parker & Ohly, 2007). Nevertheless, the literature on psychological empowerment differs from the JCM in that it recognizes that the feelings of empowerment can arise from influences other than the traditional job characteristics, for example, from social support (Corsun & Enz, 1999) or access to information (Spreitzer, 1996). Models of psychological engagement, defined as feeling responsible for job performance and caring about the outcomes of performance (e.g., Britt, Dickinson, Moore, Castro, & Adler, 2007), similarly have strong parallels with job characteristics theory. For example, they identify antecedents of engagement such as control

over performance (autonomy) and importance of job (task significance), and focus on job performance and well-being as key outcomes.

A quite different perspective on work design is an interdisciplinary one. In this perspective, the JCM and Herzberg's model, are classified as representing a motivational approach to work design (Campion & McClelland, 1991). Three other approaches with different recommendations for the design of jobs are identified: first, the mechanistic approach of designing simplified jobs to reduce training costs and chance for error; second, the biological approach which aims at improving the ergonomic design of work to alleviate physical stress; and third, the perceptual-motor approach which is concerned with ensuring that job demands do not exceed cognitive abilities, to reduce overload, errors and accidents. The classification reminds us that various outcomes of job design are valued in different disciplines. However, it is important to note that the job characteristics typically considered in the motivational approach are also positively associated with outcomes that would be classified under the three other approaches, such as quicker response times (Wall & Jackson, 1995) and efficiency (Campion & McClelland, 1991).

Finally, it is significant to note that most of the work design research and theory described thus far can be considered as coming from a functionalist paradigm. Holman, Clegg & Waterson (2002; see also Torraco, 2005) review how alternative epistemological perspectives can be helpful in understanding work design.

Extensions to the work characteristics approach

In this section, we return to the work characteristics approach, which seeks to understand the relationship between job characteristics and outcomes. Recent models (Morgeson & Campion, 2003; Parker, Wall, & Cordery, 2001) include expansions over and above the JCM in regard to work characteristics, outcomes, mechanisms, contingencies, and antecedents of work design. We consider each of these extensions next.

Extended work characteristics

Frequently, the five work characteristics identified in the JCM have been categorized into one indicator, referred to as job scope, job enrichment, and job complexity (e.g., Stone & Gueutal, 1984). Nevertheless, there are important characteristics of work over and above the big five of the JCM (Edwards, Scully, & Brtek, 1999; Roberts & Glick, 1981). In their Work Design Questionnaire, Morgensen and Humphrey (2006) distinguished 21 work features within four broad categories of work characteristics: Task motivation (e.g., autonomy, job feedback), knowledge motivation (e.g., problem solving demands), social (e.g., interdependence, feedback from others), and contextual (e.g., work conditions). Social work characteristics have long been of interest (e.g., Karasek & Theorell's [1990] demands-control-support model), and their importance is confirmed by meta-analytic evidence showing that social characteristics explain substantive amounts of variance in job behaviors and job attitudes beyond traditional job characteristics (Humphrey, et al., in press).

Changes occurring in the modern work place also highlight new work characteristics that deserve attention (Parker, et al., 2001). For example, emotion work (or emotional labor) refers to the requirement to show adequate emotions at work (Zapf, 2002). Evidence suggests that having to display emotions that are not experienced (emotional dissonance) can cause distress (Tschan, Rochat, & Zapf, 2005), although this pressure appears to be alleviated by job control (Grandey, Dickter, & Sin, 2004). Likewise, electronic performance monitoring, the use of systems to collect, store, analyze and report the actions of individuals or groups (Nebeker & Tatum, 1993), is an attribute of work that is rapidly becoming more prevalent. It too can be associated with negative outcomes, including emotional exhaustion (Holman, Chissick, & Totterdell, 2002) and lower performance on complex tasks (Douthitt & Aiello, 2001). As with emotion work, these negative effects can be buffered by giving employees control over the timing of monitoring and handling of the information (Alge, Ballinger, Tangirala, & Oakley, 2006).

An important issue concerns how to identify the key work characteristics to include in a particular study. Parker et al., (2001) advocated careful consideration of the context. Consider, for example, the issue of portfolio workers, or those self employed workers who work for a number of organizations or clients for fees (Totterdell, Wood, & Wall, 2006). Portfolio workers typically report high levels of autonomy and variety (Cohen & Mallon, 1999), but, at the same time, they also often experience inconsistent work flow, social isolation and high levels of uncertainty. In any examination of portfolio workers, therefore, it would certainly be important to extend beyond the five traditional work characteristics.

Finally, it is important to note the debate about the assessment of work characteristics. Using job incumbent's perceptions is most common, but has been criticized because perceptions not only reflect objective characteristics but also the incumbent's mood, personality, meaning, and social cues (e.g., Salancik & Pfeffer, 1978). Nevertheless, despite such concerns, evidence suggests that employee self-ratings can closely match objective job features as shown by, for example, high convergence between self-ratings and ratings from external observers (Fried & Ferris, 1987). Ideally, one should aim to complement the use of job incumbent's perceptions with other approaches, such as using managers' ratings of work characteristics, using data bases of occupations such as O*NET, or aggregating measures of individual job perceptions to the group or job level. Most important, the measurement strategy should match the type assessment one wants to make. For example, where global perceptions of jobs are needed, self or other reports might be best, whereas if it is emergent job characteristics that one wants to assess, self-reports within specific time frames, such as daily diary methods, might be preferable (see Daniels, 2006).

Expanded outcomes

What are the consequences of work design? Influenced by the JCM, a strong focus has been on the effect of work design on employees' job attitudes and affective reactions, particularly motivation and job satisfaction (see Wall, Kemp, Jackson, & Clegg, 1986). From

a behavioral perspective, most attention has been given to absence, turnover, and performance. Over and above these outcomes, health has been an increasingly important focus. In terms of mental health, work characteristics have been linked to burnout (Bakker, Demerouti, & Euwema, 2005), depression, anxiety, and psychological distress (Karasek, 1979; Parker, 2003; Stansfeld, Fuhrer, Head, Ferrie, & et al., 1997). Overall, there is consistent evidence of the negative effects of excess demands on mental health (e.g., Frese, 1985), although more mixed evidence for the positive mental health effect of job control (e.g. Dwyer & Fox, 2000). In terms of physical health, although this research is relatively under-developed, work characteristics affect a diverse array of outcomes, such as cardiovascular disease (van der Doef & Maes, 1998), injury and work safety (Barling, Kelloway, & Iverson, 2003), fatigue (Van Yperen & Hagedoorn, 2003), and musculoskeletal pain (Sprigg, Stride, Wall, Holman, & Smith, in press). An interesting development concerns the effects of work design beyond the job. Individuals who have high levels of control in their job, and lower demands, feel less need for recovery in the evening (Sonnentag & Zijlstra, 2006) which, in turn, positively affects their well-being.

One recommendation has been to expand investigation of performance outcomes beyond productivity-oriented indicators to include, for example, customer satisfaction, creativity and innovation, and proactive behavior. In the few studies considering the effect of work design on customers, job control appears to be a key factor. For example, task control was consistently related to various facets of customer satisfaction with kindergarten teachers (Dormann & Kaiser, 2002). Job control and job complexity also show consistent positive relationships with employee creativity (Harrison, Neff, Schwall, & Zhao, 2006) and with employee proactivity (Ohly, Sonnentag, & Pluntke, 2006; Parker, Williams, & Turner, 2006). The relationship of time pressure and creativity/innovation is more complex, with evidence for positive (Andrews & Farris, 1972; Ohly & Fritz, in prep.), negative (Amabile, Conti, Coon, Lazenby, & Herron, 1996) and inverted U-shape relationships (Baer & Oldham, 2006;

Ohly, Sonnentag, & Pluntke, 2006). How time pressure affects creativity is likely to depend on if it is appraised as challenging or hindering (Amabile, et al., 1996), but more work is needed to understand what influences such appraisals.

As well as an expanded set of outcomes, the developments in multi-level techniques have led to more sophisticated explorations of outcomes at different levels. One example concerns research that examines within-person variations in outcomes, such as affect, and how these are affected by work design (Fisher, 2002). For example, within-person research suggests that individuals with high job control are more successful in calming down after a stressful event (Elfering et al., 2005). Another development is to examine how work characteristics at one level (e.g., team work design) affect motivational processes at multiple levels, including team and individual motivation (e.g., Chen & Kanfer, 2006).

Extended mechanisms

As discussed already, experienced meaningfulness is one of the most important mechanisms established in work design research. Thus, enriched job characteristics result in a stronger sense of meaning, which leads to job satisfaction and motivation. Nevertheless, there are other motivational mechanisms. For example, Grant (in press) showed that lifeguards whose task significance was increased reported a stronger sense of social worth and social impact, which in turn increased their job dedication and helping. As a result of interest in proactive behavior, more proactive forms of motivation have also been linked to work characteristics, such as role-breadth self-efficacy, flexible role orientation, and control orientation (for a review see Parker & Ohly, in press). Nevertheless, as Parker & Ohly (in press) have argued, work design theory has yet to fully incorporate advances in motivation theory, for example, with regard to goal generation and goal striving

As well as motivational pathways, there is also good evidence for a learning mechanism, that is, employees' working 'smarter'. From the perspective of German action regulation theory (Frese & Zapf, 1994), job characteristics like autonomy allow employees to

develop, and apply, greater knowledge, more appropriate task strategies and meta-cognitive strategies. The role of such knowledge-based mechanisms is supported in empirical studies. A work design initiative to give machine operators greater opportunity for fault correction, coupled with access to information and technical support, led to an increase in fault-management knowledge (Leach, Wall, & Jackson, 2003). Likewise, autonomous work group members learn from each other (Pearce & Ravlin, 1987) and, because they assume more responsibility for external coordination with others in other organizations, gain an understanding of the broader work process (Batt, 1999).

As the number of work design outcomes expand, so too do the potential explanatory mechanisms. For example, in regard to safety, job variety might alleviate boredom and increase attentiveness, thereby reducing risks, whereas excess job demands might cause short cuts to be taken, thereby increasing the chance of injury. In the case of health, job enrichment might promote more active coping; and high work load might cause musculoskeletal damage via the mechanism of biomechanical strain. Research on these types of processes is in its infancy (for a review, see Parker, Turner, & Griffin, 2003).

Contingencies over and above growth need strength

Contingencies refer to the factors that affect whether and to what extent work design leads to the predicted outcomes. The traditional idea is that individuals with high growth need strength will feel more motivated by enriched work characteristics because this type of work better fits their needs. A wide array of other potential individual differences have been considered as moderators, by and large with inconsistent findings (e.g., see Morgeson & Campion, 2003).

Interestingly, despite its obvious relevance, the person-environment fit literature has not been well integrated into work design research. Three forms of fit can be distinguished (Cable & DeRue, 2002). Person-organization fit describes the perceived match of individual and organizational values, and is linked to organizational identification and low turnover. The

research on growth need strength fits within this perspective. Need-supplies fit refers to the perception of rewards a job supplies in return for performance, and is related to job and career satisfaction. Demands-abilities fit, the perceived congruence between demands of a job and a person's abilities, moderates the relationship between job scope and strain such that strain only results when perceived fit is low (Xie & Johns, 1995). Neither the moderating role of rewards, nor abilities, has had much consideration in work design research.

Once again, as with mechanisms, the relevance of contingencies will depend on both the work characteristics and the outcome being considered. Whereas growth need strength is an appropriate focus when considering enriched jobs as a motivational force, other variables are likely to be important if one is considering different motivational processes, or indeed, non-motivational processes. For example, a study of service workers showed that emotional demands were only negative for employee well-being when individuals lacked emotional competence (Giardini & Frese, 2006). Likewise, focusing on strain outcomes rather than motivation, Parker and Sprigg's (1999) study suggested that when employees are faced jobs with high autonomy as well as high demands, those with a proactive personality take advantage of the autonomy to reduce demands and avoid strain, whereas less proactive employees felt higher degrees of strain, presumably because they did not act on the greater autonomy afforded them. These studies illustrate that there is little point in seeking global moderators of work characteristics-outcome relationships. Instead, one should look closely at the particular relationship in question.

Although understanding individual contingencies can help to identify whom work redesign will most benefit, practical implications are limited because jobs are most often redesigned for many employees, and it might not be sensible to design jobs separately for each individual. In contrast, if contextual contingencies are ignored, inappropriate work design choices will be made or appropriate choices will be ineffective. Two contextual factors that have had particular attention are interdependence and uncertainty (Cummings &

Blumberg, 1987). Evidence is somewhat mixed for interdependence (e.g., Sprigg, Jackson, & Parker, 2000; Batt, 1999). However, for uncertainty, there is quite consistent evidence from production contexts that job enrichment, especially job autonomy, is most powerful in enhancing performance when uncertainty is high (e.g., Wall, Corbett, Martin, Clegg, & et al., 1990; Wright & Cordery, 1999), probably because autonomy enables the quick responses and the learning needed to be successful in such contexts. Such thinking has parallels with more general organizational theory that proposes mechanistic structures for stable conditions and organic structures for uncertain environments (Burns & Stalker, 1961).

In a similar vein, but applied to customer service contexts, Batt (1999) suggested that where organizations aim to build long term relationships with customers by providing quality service, employees need high levels of autonomy and skill to meet a wide range of demands at any one time. Consistent with this idea, there are reports of job enrichment and other such work practices being introduced in some call centres, especially those where quality relationships with customers are required (Frenkel, Korczynski, Shire, & Tam, 1999).

Beyond uncertainty and interdependence, many other contextual factors are likely to affect whether job redesign leads to the predicted outcomes, such as how well the change process is introduced, the organization's 'readiness' for work redesign, and the level of employee job security (Pearson, 1992). There has been some research considering national cultural influences, but more is needed. Robert and colleagues (Robert, Probst, Martocchio, Drasgow, & Lawler, 2000) found that empowerment was associated with lower job satisfaction in India, which they attributed the conflict of this form of work with cultural deference to hierarchy and status. Yet such a conclusion contrasts with early studies of successful autonomous work groups in Indian textile companies (Rice, 1958).

Drawing on sociotechnical systems theory, it has often been proposed that broader work organization and human resource systems (e.g. reward, training, information systems) need to align with the work design in order for it to be effective (e.g., Parker & Cordery,

2007). Contrary to this idea of alignment, however, Morgeson et al., (2006) found that work redesign into autonomous work groups only had a positive effect on self-reported performance when reward, feedback, and information systems were poor, suggesting a substituting rather than a synergistic effect.

Influences on, and causes of, work characteristics

Work design does not exist in a vacuum. Job characteristics derive from, and are embedded within, a larger organizational system. The greater the level of organizational formalization and centralization, for example, the lower the autonomy, variety, and task identity (Pierce & Dunham, 1978; Rousseau, 1978a). At the same time, work characteristics are not only perceived differently by job incumbents, but differentially crafted by them. A final extension, therefore, has been to consider factors that shape, influence, or constrain work characteristics.

An array of contextual factors influence and constrain the choice of work design, including factors internal to the organization (e.g., management style, technology, or nature of the tasks) and factors external to the organization (e.g., the uncertainty of the environment, customer demands, the nature of the labor market). One implication of these broader influences on work design is that it means work can be ‘redesigned’ in ways over and above direct manipulation of job characteristics, such as by removing demarcation barriers or leaders to delegate greater authority.

In particular, organizational structure influences work design. Indeed, there is evidence that job characteristics mediate the relationship between technological and structural context of the organization and outcomes such as satisfaction (Oldham & Hackman, 1981; Rousseau, 1978). This mediating idea has been applied to understanding the effects of new organizational practices. Intermediate roles of work design have been reported for lean production (Jackson & Mullarkey, 2000; Parker, 2003), temporary employment contracts (Parker, Griffin, Sprigg, & Wall, 2002), just-in-time (Jackson & Martin, 1996), performance

monitoring (Carayon, 1994), teleworking (Feldman & Gainey, 1997), and team working (Kirkman & Rosen, 1999). From this perspective the effects on outcomes of these practices depends, at least to some degree, on how the practice impinges on work design. An implication, therefore, is that work design can be deliberately changed to bring about better outcomes.

Such positive work design choices, however, might be relatively rare. Dean and Snell (1991) showed that, although integrated manufacturing is likely to be most successful when work designs are also enriched, several sources of organizational inertia (size, performance, etc) mitigate the effect of integrated manufacturing on work design. Other research suggests that work design is typically neglected when new technologies and practices are introduced, and this is usually to the detriment of their effectiveness (e.g. Waterson et al., 1999). In other words, structures and practices that 'should' result in more enriched work designs will not necessarily do so. The role of organizational inertia, and other such forces, in moderating how new practices affect work design is clearly an important area for further enquiry.

A further important consideration is the role of the job incumbent in influencing his/her work design (Vough & Parker, in press; Wrzesniewski and Dutton, 2001). The idea that individuals mould their work characteristics to fit their individual abilities or personalities is a long standing one (role making, Graen, 1976; task revision, Staw & Boettger, 1990). Recent research has examined how self-efficacy and proactive behavior affect work design and vice versa. Frese and colleagues (Frese, Garst, & Fay, in press) showed that job control and job complexity were associated with greater personal initiative, which led, in the longer term, to even higher levels of job control and job complexity. This more dynamic perspective on how work design is affected by individuals holds much promise, especially within the knowledge worker context, as we elaborate shortly.

Further directions

The above extensions better align work characteristics theory to the emerging work context. Over and above these extensions, additional calls for developing include, for example: a more detailed look at the relational architecture of jobs and their consequences (see Grant, 2007); how work design principles might apply to customers who are expected to co-produce the service (Cordery, 2006, May); how the blurring of boundaries between work and home brought about by technology necessitates more attention to the home-work interface, as well as consideration of outcomes such as life satisfaction (Rousseau, 1997); how the changing nature of careers suggests it might be fruitful to think about work design over broader time spans than an individual job; how other work systems relate to, and augment or constrain, work design (Cordery & Parker, 2006); how to best redesign work and support its implementation (Parker & Wall, 1998); and the relevance of work design theory to other national cultures (e.g., Kirkman & Shapiro, 1997).

Here, we focus on two important avenues for theoretical development that have been relatively neglected in reviews thus far.

Work design and organizing.

Several theorists have proposed that the meaning of organization is changing, and with it, the need to re-orient theories in our field (Heath & Sitkin, 2001; Rousseau, 1997). In particular, rather than thinking of ‘organization’ as an entity, the recommended emphasis is on organization as a dynamic process, or ‘organizing’. Understanding organizing is particularly important in light of the increasingly fluid, flexible, complex and rapidly changing firms and work roles that characterize today’s organizations (Rousseau, 1997). Such contexts, it is argued, require much more attention to “how people solve the dynamic problems of aligning goals and co-ordinating action” (Heath & Sitkin, 2001, p. 54).

We propose two implications of an organizing emphasis for work design theory. First, work design might affect processes important for organizing, such as trust, communication,

collaboration, group mental models, and group norms. There is some evidence that this is so (e.g. Parker & Axtell, 2001; Grant, in press). Nevertheless, by far the bulk of work design research has focused on individual-level motivational or well-being mechanisms, with little attention on how work design affects collective processes, or even how it affects individual-level attitudes and behaviors that are especially important for collective action. The same observation is true in the group-level research. Whilst there are exceptions (e.g., Tesluk & Mathieu, 1999), overall, there are few studies linking group work design and organizing outcomes. We see great potential in addressing questions such as how the level of self-management of a group affects the level of implicit task co-ordination (Rico, Sánchez-Manzanares, & Gibson, 2008), the use and effectiveness of team processes (Marks et al., 2001), the development of 'swift trust', and other such collective attitudes, cognitions, and behaviors.

A second implication of thinking about work design in relation to organizing is that work design *is* a way of organizing. Work design choices are inherently choices about how to organize. For example, a self-managing work group represents a different way of achieving a collective goal than a supervisor-led team. One consequence of thinking about work design in this way is that it suggests a more holistic approach to the study of work design. Rather than looking at individual work characteristics and their relationship with outcomes, which has been the dominant focus of late, one might describe how the tasks, jobs, roles, and projects are organized, focusing on the whole set of work characteristics, along with the consequences of those organizing choices. Such an approach implies methods that enable a detailed and contextualized descriptions of the overall work design and its consequences (cf. Trist & Bamforth, 1951).

Work design for knowledge workers and professionals

Not surprisingly given its origins, work design research has primarily focused on the value of enriching simplified jobs, typically in contexts such as manufacturing and call

centres where jobs are relatively deskilled. This work has extended to nurses, teachers, and other such samples, where enrichment principles also have resonance. However, many professional and knowledge work jobs already possess relatively high levels of autonomy, variety, and challenge, and hence the reduction of work load pressure might be more important in this context. Elsbach & Hargadon (2006) proposed that, to avoid professional work becoming relentlessly mindful and stress inducing” (p. 471), each work day should be designed with scheduled bouts of mindless, cognitively undemanding work tasks inserted between more challenging and time pressured work tasks that make up most of the day. Dutton (2006) similarly suggested the making job demands more manageable by chunking tasks into do-able pieces that employees’ can do easily and thereby build up their confidence and momentum. Another angle is to change the way that work demands are perceived. Meta-analyses suggest that high job demands can positively relate to performance (LePine, Podsakoff, & LePine, 2005) and job attitudes (Podsakoff, LePine, & LePine, in press), possibly because they might be seen as challenging and give the opportunity to reach work-related goals. Because high job demands also lead to strain reactions, research is needed to determine the conditions that enable the perception of high demands as challenging. It is also important to identify how to protect employees against long-term health consequences of demands, such as by promoting recovery (e.g., Sonnentag & Zijlstra, 2006).

We also suggest much more attention to interdependence, which is likely to be high and complex within professional/ knowledge work settings. In particular, does the need to help meet others’ needs and goals constrain job autonomy? For example, Janz, Colquitt, and Noe (1997) found that, for knowledge workers, the positive main effect of team autonomy over planning and work processes on levels of team motivation was reduced as levels of task interdependence increased. The presence of regulations in particular professions (e.g., financial regulations, health care protocols) might similarly serve to reduce autonomy, or perhaps even augment it in some circumstances.

A further set of questions relates to the role of the individual in managing, shaping, and proactively influencing, their work design. We propose that professionals and knowledge workers will be particularly active in shaping their work characteristics, in part a consequence of greater latitude in their jobs to do so, but also a result of their high education levels and aspiration for career progression. For example, professional workers might deliberately schedule tasks that are low in cognitive demands for afternoons when they are tired; or do a minimum amount of client contact work per week to preserve their sense of job significance. They might bargain, via i-deals, greater autonomy or variety in their work (Rousseau, Ho, & Greenberg, 2006). Portfolio workers might manager their job quality over time and across multiple projects – seeking challenge in some projects, but deliberately counterbalancing these with some more routine projects that allow recuperation. All together, as one extends work design theory to better incorporate the context of higher-level professional and knowledge work, the role of individuals in actively shaping their work design is likely to assume even greater salience.

Finally, focusing on professional and knowledge work also gives rise to a question about outcomes. In particular, one might consider how work design can promote the development of capability necessary for effective performance in these challenging contexts. For example, job enrichment under conditions of managed work load might promote the creativity that is often essential for this type of work (Elsbach & Hargadon, 2006). Likewise, certain combinations of autonomy and feedback might promote the development of more effective self-regulation skills, which are argued to be especially important for performance in novel and complex settings. A further example is that interventions such as job rotation could increase managers' understanding of the bigger picture, as well as to broaden social networks; both of which are important for successful managerial performance. One might also recognize that for this group, as well as for others such as portfolio workers or contract workers working

for multiple organizations, outcomes such as organizational commitment are less relevant than occupational commitment.

A final comment: From theory to practice to theory

Whilst there has undoubtedly been a swing towards the rhetoric of enriched work designs, as reflected by the constant references to empowerment, high performance, and the like, good quality work design is not as widespread as one might expect. National level surveys suggest high demands and low control in many jobs (e.g., the Bristol Stress and Health Survey; Smith, Johal, Wadsworth, Peters, & Davey Smith, 2000) and, as suggested earlier, organizations often do not make good work design choices when introducing new technologies and practices. For these reasons alone, work design deserves continued attention from researchers. We need to become better at translating research findings to practice, such as by developing evidence-based tools, processes, and guidance to analyze work design and facilitate its redesign. In many countries, there is a need for more systematic tracking of work characteristics at a national level; identifying the prevalence of key work characteristics as well as how they are influenced by new trends and policies. By actively aiming to influence practice and policy, academics can not only respond to changes in work design, but shape them.

As well as better applying what we know, work design research needs to keep pace with the profound changes that are occurring in the wider work context and amongst the workforce itself. Work design theory has already developed to encompass many of these changes, expanding the work characteristics and outcomes it considers, as well as mechanisms and contingencies. However, as we have suggested here, there are further important ways that theory can and should develop. We proposed two particularly important avenues - the need to further investigate how work design can promote organizing and how it can help support the effectiveness and well-being of knowledge workers. We believe that by

updating theory along these and related lines, work design research will flourish and thereby guide the effective design of contemporary and future jobs.

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