Work Design Growth Model:

How Work Characteristics Promote Learning and Development

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Abstract

It has long been recognized that work design affects individual learning and development, and an emerging body of evidence supports this long-held idea. Nevertheless, there is much scope to develop this perspective further. In the mainstream work design literature, work design is mostly considered as a vehicle for motivation and health, rather than learning and development. In the learning and development literature, there is some attention to the role of work design in promoting informal learning, but this perspective is under-developed. In this chapter, I argue that the time is right to develop a better understanding of the role of work design in fostering learning in the short-term and over the longer-term. I propose the Work Design Growth Model (WDGM) in which I argue that work characteristics such as job autonomy, job complexity, and job demands can shape cognitive, self, and moral processes in the short term, and cognitive, identity, and moral development in the longer-term. There is reasonably strong evidence for the role of work design in promoting cognitive and skills change, as well as the growth of more agentic self-beliefs and behaviors (e.g., self-efficacy, proactivity), as well as some promising but still limited evidence for longer-term developmental effects of work design. Overall,

however, this research area is strikingly under-explored. The final part of this chapter

proposes key research directions.

Work Design Growth Model:

How Work Characteristics Promote Learning and Adult Development

As far back as 1957, the notion that work design affects individual learning and development was recognized. In the 1950s, Argyris (1957) described how bureaucratically-designed jobs can infantalize adults, with them becoming overly dependent on others, passive, and oriented only towards short-term interests. Since this early work, scholars have progressed these ideas, although most advances in this field have come from industrial sociology (e.g., Kohn & Schooler, 1978), or from European or UK based organizational psychology (e.g., Bond and Flaxman, 2006; Frese and Zapf, 1994; Karasek, 1976; Parker, 2008; Taris et al., 2003). Thus far, the role of work design in fostering learning and development has not been part of mainstream research in human resources management or organizational behavior.

From the perspective of training and learning literature, the role of work design in facilitating learning is certainly recognized. For example, in their integrative review on "Learning in the 21st Century", Noe, Clarke, & Klein (2014) described how various contextual factors, including work design (team work structure, task characteristics, and job crafting), can promote employee learning. However, as I discuss later, the research covered in this analysis is relatively thin, it is not integrated with work design theory, and there are many unanswered questions.

In this chapter, I argue that the time is ripe to leverage existing research and develop theory on work design as a vehicle for learning and development. Several forces make this a more critical outcome than ever before. It is increasingly understood that highly skilled employees with strong cognitive, interpersonal, and problem-solving abilities are needed to meet global challenges (Manyika et al., 2012). Work design might play a key role in accelerating the development of such human

capital. For example, in a strategic analysis of skill issues in the UK, Payne & Keep (2003) concluded there has been too much policy attention to improving the 'supply' of skills (such as by improving employees' formal training and education) with insufficient attention to the 'demand' side. These scholars advocated for national-level policies to encourage organizations to develop innovative work designs (such as autonomous work teams) that both require greater learning and skill utilization, and that facilitate greater learning and development. As a anecdotal example of the latter process, after a wire manufacturing company introduced a form of autonomous team work, one of the managers identified a key benefit of this redesign as the following: "we discovered we have stars on the shop-floor…we've been amazed by the talent we have uncovered" (Parker & Williams, 2001). In essence, good work design both demands - and fosters - the sort of learning needed in contemporary organizations.

Work design as a vehicle for promoting learning and development is also an important idea from an individual perspective. Kegan (1994) argued that the increased demands of modern life require a level of cognitive complexity in which individuals have a clear sense of identity, autonomy, and personal direction, whilst simultaneously being aware of the wider system within which one is operating. Yet, Kegan reported that fewer than 50% of adults are operating at this level of complexity. In a similar vein, scholars have argued for the importance of requisite complexity (Lord, Hannah, & Jennings, 2011; Uhl-Bien, et al., 2007), wherein individuals possess a sufficient degree of cognitive, self, social, and affective complexity for effective interaction within dynamically-changing environments. Moreover, jobs in which individuals continue to learn and develop better position them to survive in today's career contexts. Hall and Mirvis (1995) described how an individual's identity development is a key 'meta-competence' for today's protean and

flexible careers. All together, there is good reason to unpack how work design might shape employee learning and development at work.

In the forthcoming sections, I consider how work design might promote job incumbents' learning and development in regard to cognition, the self (e.g., self-concept, identity and personality), and morality. Before I develop these arguments, I briefly recap on the topic of 'work design', as well as how I have conceptualized for the purpose of this chapter.

About Work Design

Work design is about "the content and organization of one's work tasks, activities, relationships, and responsibilities" (Parker, 2014, p.662). Example work design questions include: Which tasks, activities, or responsibilities should be grouped together to form an individual role or a group of roles? How often do job incumbents have to follow standardized procedures in completing their activities? Who allocates tasks? How tightly linked should one role be with another? What work load is reasonable for health? Do individuals' craft or proactively shape their own work characteristics? Sometimes these questions are expressed in terms of 'job (or work) characteristics', which is a common way of describing work design, such as how much job autonomy an individual or a team has in their work.

Many reviews of work design research exist, so I provide just a short recap here. In a bibliographic review of more than 4000 articles on the topic, Parker, Morgeson, and Johns (in press) identified five key work design perspectives; each of which represents a departure from the traditional Taylorist approach to simplifying and deskilling work.

The first perspective, *sociotechnical systems thinking and autonomous work groups* (e.g., Trist & Bamforth, 1951) advocated that the design of work should jointly optimise technical and social aspects of the work situation rather than prioritise the former (as was done in Tayloristic approaches). Sociotechnical systems thinking resulted in the development of autonomous work groups, or self-managing teams with delegated decision authority and responsibility (Cohen & Bailey, 1997). *Job characteristics theory*, the second perspective, is dominated by Hackman & Oldham's (1976) Job Characteristics Model that identified five core motivational job characteristics (i.e., task variety, job autonomy, task significance, task identity, and job feedback). These core job characteristics are argued to promote 'critical psychological states', such as experienced meaningfulness, which then in turn yield positive outcomes such as motivation and high quality job performance.

Similar, but focused on health outcomes, is a perspective incorporating Karasek's (1979) popular *Job Demand-Control model*. This model proposes that job control balanced against one's job demands, such as time pressure, are important for health and wellbeing. . Strain-inducing jobs are those with combined high job demands and low job control, whereas jobs combining high demands and high control ('active jobs') stimulate motivation and skill development, thereby mitigating strain. The 'active learning hypothesis' emphasized in later versions of the model, focuses on how job control allows individuals to deal effectively with high demands. Individuals experience learning and feelings of mastery, which increase their capacity to cope with further demands in a positive spiral (Karasek & Theorell, 1990). Social support was also added to this model, with social work characteristics increasingly being

recognized in relational work design studies (Grant & Parker, 2009; Grant, 2007; Humphrey et al., 2007).

The next perspective, which is essentially an extension of the Job Demand Control Model, is the *Job Demands-Resources Model* (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). In this model, resources are extended beyond job control to include other supportive aspects of work. Job demands refer to physical, social, or organizational aspects of the job that require sustained physical or mental effort and therefore are associated with certain physiological or psychological costs (Demerouti et al., 2001). Both challenging and hindering job demands have been studied (Crawford, Lepine, & Rich, 201; Pine et al., 2004). While job resources are proposed to enhance engagement, job demands are suggested as the primary causes of burnout. The fifth perspective stems from *Kahn et al's. (1964) role theory*, which identified two key types of stress-incurring role dysfunction: role conflict and role ambiguity. These role variables are now often integrated into other work design perspectives, especially the Job Demands-Control/Resources ones.

Although these models differ, they all posit that high quality individual or team-level work design is characterized by the presence of positive work characteristics (or job resources) such as autonomy, variety and social support, as well as relatively low or moderate levels of job and role demands. There is abundant evidence that high quality work designs "matter". High quality work designs tend to result in better physical health and well-being; higher mental health and psychological well-being; more positive job attitudes; as well as higher performance and greater innovation (see Parker, Morgeson, & Johns, in

press). At the team level, teams with enriched work characteristics (e.g., self-managing teams) are more effective and innovative.

Nevertheless, existing work design theories and research focus mostly on motivation, performance, and health/well-being as outcomes. Although learning is theorized to be an outcome of active jobs in the Demand-Control model, and has been considered empirically to a degree, several scholars have lamented the overall dearth of attention to learning as an outcome (Parker & Sprigg, 1999); Taris et al., 2003; Westar, 2009). The current paper extends the perspective put forward in a review by Parker (2014, p. 685) that: "work design has "untapped potential" for fostering work place learning and adult development, "maybe even as extreme as reducing individuals' chance of dementia as they age or, at the aggregate level, helping nations to meet projected skill gaps".

About Learning and Development

It is common to distinguish between learning processes and learning outcomes (or consequences), and I do so here. Learning processes include cognitive processes (such as the construction or elaboration of a mental model), motivational processes (like the desire to learn), and behavioral processes (such as exploration). Learning outcomes are defined according to Weiss (1990) as "a relatively permanent change in knowledge or skills produced by experience". I include cognitive change and skills change as two key learning outcomes. However, beyond this traditional focus on cognitive/ skills change, consistent with Kraiger et al., (1993), I also include changes in attitude and motivation as learning outcomes, such as changes in one's self-concept or moral attitudes.

I further distinguish between shorter-term learning outcomes, like those defined above, and longer-term outcomes. In some literatures, these longer-term

outcomes are referred to as 'development' because they involve structural transformation, or moving to a qualitatively distinct and more progressive state (Moshman, 2003). To provide an analogy, whereas growing taller is an example of growth or change, reaching puberty is an example of development. In this context, acquiring new knowledge about a particular topic is a relatively short-term learning outcome (a change in cognition), whereas an increasingly complex way of structuring the knowledge is an example of a longer-term learning outcome (a change in cognitive complexity). Obviously a great deal of development occurs in childhood as a result of biological and maturational processes. But development also occurs in adulthood, primarily as a result of experience, including those shaped by work design.

Work Design Growth Model

The Work Design Growth Model (WDGM; see Figure 1) proposes that work design influences several important learning outcomes through cognitive, behavioral, and affective processes. Three key categories of short-term learning outcomes are considered: cognitive change (e.g., knowledge acquisition) and skills-change (Box 1a), change in self-views and related behaviors (Box 2a), and change in moral cognition and conation (Box 3a). Further, the model proposes that these effects can accumulate over time, resulting in longer-term outcomes, notably cognitive development (Box 1b), self development (Box 2b), and moral development (Box 2c), which constitute some of the most important types of adult development (Day, 2009). Below the key elements of the WDGM are discussed.

[INSERT FIGURE 1 ABOUT HERE]

Figure 1: The Work Design Growth Model (WDGM)

Work Design and Its Effect on Cognitive/ Skills Change (Box 1a)

Of the various elements proposed in this model, theory is most developed, and evidence is most compelling, in regard to the effect of work design on cognition and skills. Next I describe arguments, and evidence, suggesting that work design can shape cognitive processes, motivational processes, and behavioral processes that, in turn, lead to a change in cognition and skills.

Job control/ job autonomy: Drawing on German action theory, Frese and Zapf (1994) argued that job control allows incumbents to choose adequate strategies to deal with the situation, resulting in feedback and learning. When job control is lacking, the action sequence is incomplete, which impairs these cognitive processes, and hence learning. Wall and colleagues similarly argued that, when an individual has the autonomy to control variance at the source (such as by repairing a minor machine breakdown him/herself, instead of having to call out an engineer), s/he obtains direct and immediate feedback about the consequences of their actions, which in turn supports learning and expands one's mental models. In essence, the feedback that arises as a result of controlling variances when they occur means that workers can more clearly see 'cause and effect', which enables them to develop anticipatory knowledge that they can apply to prevent problems occurring in the first place. A novel set of studies support these ideas. For instance, Wall, Corbett, Martin, Clegg & Jackson (1990) showed that providing machine operators with the discretion to correct faults reduced downtime. Jackson and Wall (1991) later showed these performance effects were attributable to operators learning to anticipate and prevent faults, rather than reflecting a quick response mechanism in which operators respond more quickly than calling out specialists.(Wall, Jackson, & Davids, 1992 found similar results). Leach, Wall, & Jackson (2003) showed that an empowerment intervention resulted in increased job knowledge and self-efficacy, especially for less

experienced employees, yet there was no change in intrinsic motivation, suggesting cognitive rather than motivational processes accounted for the learning.

In a similar vein, but showing an effect for breadth of understanding rather than depth, amongst production employees, job autonomy predicted greater integrated understanding (i.e., self-reported understanding about other departments, customers, and the wider system), which was associated with employees being more able to adopt the perspective of their internal suppliers (Parker and Axtell, 2001). Research also shows that autonomy affects skill development including enhanced problem-solving skills (Daniels, Boocock, Glover, Hartley, Holland, 2009) and customer service skills. Regarding the latter, in the context of customer service, Bond and Flaxman (2006) found that job control predicted individuals' skill development (objectively assessed as improved use of some customer service software) as well as their job performance and mental health; effects that were even stronger for individuals high in psychological flexibility.

As well as through cognitive processes, job autonomy can also result in cognitive/ skills change via motivational and behavioral processes. In a laboratory study in which autonomy was manipulated, Wielenga-Meijer, Taris, Kompier & Wigboldus (2010) showed that moderate or full autonomy, compared to no autonomy, was associated with learning (performance on a transfer task), and this effect was mediated by both increased motivation to learn and engagement in exploration behavior. Weststar (2009) also reported positive effects of job autonomy on behavioral processes. Specifically, having control over decisions in one's job was positively associated with individuals' reports of engagement in informal learning. This author also showed that a broader measure of influence (influence over organizational decisions, for example) predicted informal learning, as well seeking

advice from others. They suggested that this occurred because, through influence opportunities, individuals: "are exposed to a larger problem domain or scope-of-work and have more opportunity to interact with and model the positive behaviors of others, and learn from their increased responsibility" (p. 541).

Job complexity and challenge. Frese & Zapf (1994) argued that job complexity promotes learning because it increases task challenge. Initially, challenging tasks must be cognitively regulated at the highest intellectual level, but with practice the actions become more automatized and can be regulated at lower levels (Volpert, 1974; cited in Frese & Zapf, 1994) such that skills become routinized. At this point, the individual then has greater cognitive resources available for learning further skills. For example, if an individual's tasks involve rapid decision-making, over time, the meta-cognitive heuristics involved will become more automatic, freeing up the individual's capacity to handle further complexity.

Job demands. Research shows that whether particular demands are appraised as challenges or hindrances influences whether they result in negative outcomes such as strain or positive outcomes such as satisfaction (Webster et al., 2011). Distinct learning outcomes are also plausible, that is, job demands that are challenging likely prompt learning, whereas job demands that are hindrances or stressors likely inhibit learning because one's resources are deleted. Because the notion of 'job demands' covers those that function as challenges as well as those that function as hindrances, it is perhaps not at all surprising that studies show mixed effects of demands on work learning (Taris & Kompier, 2005).

Nevertheless, even when just one type of demand is considered, the evidence remains mixed. For instance, in relation to work load, some studies show positive effects of work load on learning outcomes (e.g., De Witte, et al., 2007), some studies

show no effects (e.g., Morrison et al., 2005), and some studies show negative effects (e.g., Taris et al., 2003). Scholars have suggested that the relationship between job demands and learning might be non-linear such that only moderate levels of demands prompt learning (e.g., Wielenga-Meigjer et al., 2010). From a conservation of resources theory perspective (Hobfoll, 2002), very high levels of demands require considerable effort to address them, which consumes cognitive and emotional resources, and hence can lead to negative outcomes such as burnout. Experimental studies suggest that negative affective states like depression or anxiety can impair information processing and hence inhibit learning (Eysinck & Calvo, 1992; Warr & Downing, 2000). Taris, Kompier & Wielenga-Meijer (2006) drew on action theory to suggest that high demands might interfere with task regulation, resulting in employees resorting to automated behavior. Excess demands also means there is less time for reflection, exploration, and experimentation, all of which are important behavioral processes that support learning. Thus, although moderate levels of demands might prompt learning, very high demands likely interfere with learning.

A further explanation for the mixed effects of demands on learning includes the possibility that the effects of demands depend on the level of job autonomy. The demand-control model (e.g., Karasek & Theorell, 1990 proposed that, while work demands can stimulate the search for more effective strategies, one needs autonomy to implement these strategies and then learn from them. In fact, evidence for this idea of an interaction is quite mixed (see Taris et al., 2003, for a review). Some cross-sectional studies show that separately, or in combination, high demand and high autonomy jobs affect motivational learning processes, such as feelings of accomplishment (Demerouti et al., 2001; Dollard et al., 2000; Taris et al., 2003), self-efficacy (Holman & Wall, 2002; Parker & Sprigg, 1999), and perceived mastery

(Parker & Sprigg, 1999). But when more rigorous designs are used, there is relatively little support for interactive effects of job autonomy and job demands on learning, as well as evidence that demands in fact impair learning (see Taris et al.'s 2003, longitudinal study of teachers; and Taris & Feij's 2004, study of newcomer learning and work design). Both of these studies show that the experience of strain inhibits learning, and learning is fostered more by autonomy than by demands. Based on evidence that work load can be positive at moderate levels, but negative at high levels, and that autonomy moderates the effect of demands, van Ruysseveldt & van Dijke (2011) proposed and found support for a nuanced relationship. Specifically, in a cross-sectional study, they showed that only moderate levels of work load were positively associated with learning, and only when job autonomy is high. The worst-case learning scenario was the combination of high work load and low autonomy.

Other characteristics including task identity, task variety, job feedback, and social and relational work characteristics. Expanded task identity (doing a whole job) and task variety might foster learning by exposing individuals' to broader perspectives and new knowledge domains. For example, Campion, Cheraskin, and Stevens (1994) reported that engaging in job rotation was associated with individuals' perceptions of increased business knowledge and technical skill. Feedback from the job is also a core work design characteristic that promotes knowledge acquisition and skill development (Frese & Zapf, 1994); likely via both cognitive processes (e.g., the provision of information about the adequacy of one's mental model) and motivational processes (e.g., the 'gap' between required and expected performance can motivate a desire to learn).

Social and relational aspects of work design are also likely to be important conduits to learning. In their review, Noe et al. (2014) summarized research and

theory suggesting how interactions with others' promote learning through knowledge sharing and knowledge creation. Although studies have not yet investigated this possibility, relational work design in which employees establish connections with beneficiaries of the work (Grant, 2007; Grant & Parker, 2009) potentially shapes not only individuals' motivations, but also their knowledge through exposure to the beneficiaries' perspective. Indeed, this is a core thrust of the notion of design thinking, which involves learning from the end-user to create innovative services and products. Social support, from one's peers or one's leader, also helps individuals to cope with challenge, and thereby likely enhances their motivation to learn. For example, supportive leaders raise employees' confidence and generate high expectations for performance, promoting the exploration of new skill domains (Eden, 1988).

Work Design and Longer-Term Cognitive Outcomes (Box 1b)

As well as changing individuals' knowledge and their level of skill, work design might also, in the longer term, promote changes in the structure and organization of knowledge, or cognitive development. I propose that such effects occur through the accumulation over time of short-term learning outcomes on work design.

There is some evidence for this proposition. Building on earlier longitudinal studies (e.g., Kohn and Schooler, 1978, 1982), Schooler, Mulatu, & Oates (2004) showed that occupational self-direction (assessed as the degree of substantive work complexity, closeness of supervision, and routinization) predicted employees' later intellectual flexibility, such as their ability to deal with complex cognitive problems, as well as their self-directed orientation, controlling for levels of these variables assessed twenty years prior. Although a limitation of

these findings is that they do not separate out contemporaneous and lagged effects, this study supports the premise that enriched work design affects adult cognitive development. The authors made the intriguing conclusion that national levels of intellectual functioning may differ based on the extent to which work is designed with high autonomy.

The work design – cognitive development relationship is also supported by studies showing that complex occupations with high intellectual demands are associated better cognitive functioning in later life as well as reduced risk of dementia (e.g., Karp et al., 2009). For example, a study of over 10,000 twins concluded that, independent of age, gender, and education, "greater complexity of work, and particularly complex work with people, may reduce the risk of Alzheimer's disease" (Andel et al., 2005). The tantalizing possibility that job complexity prevents cognitive decline needs further investigation, including teasing out the effects of job complexity and job control, which tend to be quite confounded in these large-scale epidemiological studies.

Moshman (2003) argued that one critical cognitive aspect that can develop during adulthood is epistemic cognition (or metacognitive ability, Brown, 1987), or how one thinks about knowledge and knowing. Development of epistemic cognition involves moving from a dualist, objectivist view of knowledge to a more subjective, relativist, and contextualised/ constructed view of knowing (Hofer & Pintrich, 1999), such as taking broader perspectives into account, moving away from over-simplified views, and engaging in reasoned critical thinking that recognizes context. As discussed above, jobs in which individuals are exposed to broader perspectives can shape their tendency to understand multiple view points (Parker & Axtell, 2001), which is one pathway through

which job design might affect the longer-term development of epistemic

cognition. It is also possible that job autonomy boosts epistemic motivation, or

the desire to develop and hold well-informed conclusions about the world

(DeDrue, Beersman, Stroebe, & Euwema, 2006), which in turn affects epistemic

cognition. In a review, Kruglanski and Webster (1996) concluded that time

pressure, noise, and fatigue reduce epistemic motivation, whereas accountability

can increase it. Regarding the latter, Lerner and Tetlock (1999) showed that

increases in epistemic motivation can result from providing individuals with

process accountability -in which the processes of their decision making are

observed and evaluated. Autonomy promotes accountability and ownership

(Parker et al., 1997) and therefore might stimulate epistemic motivation, which in

turn develops epistemic cognition.

In a similar vein, scholars have argued that leaders can promote

metacognitive ability amongst their direct reports by, for example, encouraging

guided reflection and after-action reviews (Hannah & Lester, 2009). It is likely

that work designs that involve autonomy and challenge, which do not incur

excess time pressure and fatigue, augmented by coaching-oriented leaders, might

be a powerful combination for enhancing individuals' cognitive development.

Work Design, Change in Self-Views and Self-Expressive Behaviors (Box 2a) and

Development of Self (Box 2b)

The WDGM proposes that work design creates experiences and a social

environment that shapes how own sees one's self as well as how one expresses that

self (Box 1a). A core notion here is that of self-concept, or how one perceives oneself

in relation to the environment. Shorter-term changes in self-concept (and the

associated behavioral change) can then, accumulated over the longer term, result in

various types of self development, such as changes in locus of control, increased identity complexity, and the development of secure self-esteem (Box 2b).

The idea from this perspective that has gained most traction is the notion that enriched work design promotes a more agentic self-concept, and hence results in self-initated and proactive behaviors. Parker (1988) provides one example of the role of work design in developing an active self-concept. Parker (1998) theorized that job enrichment provides important opportunities for enactive mastery, which in turn promotes role breadth self-efficacy. The results of a longitudinal study showed that job autonomy, as well as improved communication quality, predicted role breadth self-efficacy such that employees perceived themselves to be more capable over time of carrying out a range of proactive, interpersonal and integrative tasks beyond prescribed technical requirements. The study also showed how complex, autonomous work promotes the development of broader and more active conceptions of one's work role. Thus, individuals' with traditional deskilled jobs had narrow role orientations, feeling responsible for work produced only until "its put on the floor" (Parker, 1996, p. 290), whereas in an intervention study, Parker et al., (1997) showed that when job autonomy was increased, employees moved away from this 'that's not my job' mentality to a more flexible role orientation in which they felt responsible for broader problems and recognized the importance of being proactive.

Changes in self-efficacy and role orientations, and in related self-concept variables, tend to prompt more agentic behavior (e.g., Parker et al., 1996). Frese and colleagues have shown that enhanced job complexity is related to the display of more personal initiative (Frese et al., 1996) which can be partly attributed to the development of greater work-related self-efficacy (Speier & Frese, 1997). In a rigorous four-wave study of employees in an East German city, Frese, Garst, and Fay

(2007) found that initial levels of job autonomy and complexity predicted a stronger

control orientation (a higher-order factor comprising self-efficacy, control aspirations,

and perceived opportunity for control) which in turn predicted personal initiative.

Exercising personal initiative then predicted increased perceptions of autonomy and

complexity over time, suggesting a virtuous spiral between job design and agentic

concepts like self-efficacy and proactivity.

One can further imagine how, aggregated over long periods, the positive effect

on work design on self-efficacy, proactive work behavior, and related 'active'

variables translates into changing aspects of the self typically considered rather stable

(Box 2b), such as locus of control, aspiration, openness to learning, or even proactive

personality (Parker, 2014). Some preliminary evidence supports the idea that work

design can facilitate change in such attributes. Although true longitudinal designs

were not used, Brousseau (1978) found that task significance predicted higher scores

seven years later in what they referred to as a broad personality trait of action

orientation (e.g., being willing to taking initiative and risks). Further, Brousseau and

Prince (1981) reported that task identity and task significance positively predicted

changes over seven years in traits such as emotional stability. Wageman (1995)

showed individual differences in preference for autonomy come into congruence over

time based on the tasks and rewards faced by employees in work groups; and Wall &

Clegg (1981) found that increased job autonomy increased individual's desire for

information and promotion. More recently, Wu Parker, and Griffin (2015) found that

that enriched jobs resulted in increased locus of control over several years, which in

turn promoted more enriched jobs; and Li et al., (2014) showed that job demands and

job control both led to positive increases over three years in proactivity personality,

which then in turn further shaped these and other work characteristics. Changes in

these sorts of attributes can be considered to be a form of 'identity development': Berzonsky (2011) argued that successful identity formation arises when one's self-concept helps effective functioning. Agentic attributes have functional value: for example, considerable research highlights the importance of an internal locus of control in promoting individual's health and well-being (e.g., Wu et al., 2015).

The effect of work design on the development of greater agency is also shown by research on how work affects non-work orientations. For example, Karasek (1976) showed that poor quality work spills over to create passivity outside of work; Crouter (1984) showed that participation at work increased women's desire for participation in decision-making within the home; and Goiten & Seashore (1980) showed that employees in challenging jobs are most active in their leisure and other non-work activities.

Another way that work design might shape one's sense of self is through activating, on a repeated basis, a range of work identities. Scholars have argued that identity is not static or unitary, but dynamic and multidimensional. One's working self-concept is the portion of one's general identity that is activated within a situation. Markus & Wurf (1987) consider the self-concept as an amalgamation of selves, with some of these selves being activated at particular times and across particular situations. Individuals can have different schemes of themselves, so called "possible selves" (Cross & Markus, 1991). Parker (2014) argued that enriched work designs might enable individuals to try out new possible selves, or provisional selves, and thereby develop expanded identities (Parker, 2014; see also Hall and Laras, 2010). For example, in self-managing teams, management tasks are distributed amongst the team, allowing members to share these responsibilities and, in essence, 'try on' a leadership identity. When this identity is developed, they are then likely to want to

behave in identity-congruent ways by taking on further management activities, thereby creating a virtuous development cycle. In general, identity theories assume that the exploration of multiple identities is important for a coherent and meaningful sense of identity in the longer term (e.g., Erikson, 1959; Leary & Tangney, 2003); and that optimal development involves more complex identities in which individuals' sub-identities have been expanded, differentiated, and then integrated through experience, reflection, and discourse (Kegan 1982).

Work design also likely facilitates a particular form of identity development, a shift in focus from an individual (me) to relational (you and me) to collective (all of us) identity (Lord and Hall, 2005), argued to be important for effective leadership (Day, et al., 2009). For example, in self-managing teams, members are interdependent and have a collective responsibility for team-level outcomes, which supports the development of a relational identity (Brickson, 2000) and invokes intra-team perspective taking (Parker et al., (2008). Perspective-taking then fosters learning, and the development of system-level understanding (Parker et al., 2008), which in turn is likely to further reinforce identity development.

In a related vein, Hall and Heras (2010) speculated that job design could have longitudinal effects on an individual's work orientation, and hence their self development. They noted "a job design that allows for interaction with the beneficiary of one's undertakings is likely to foster a calling orientation; however a job design that emphasizes hierarchical advancement and performance feedback might foster a career orientation". This proposition resonates with much earlier sociological studies suggesting that individuals in simplified and deskilled jobs adapt to a lack of opportunity by developing extrinsic orientations to their work (Argyris, 1973).

Work design is also highlighted as a facilitator of self development from the perspective of self-determination theory. Autonomy-supporting and need-satisfying environments, such as those present in enriched work designs, satisfy one's basic needs of autonomy, relatedness and achievement, and thereby promote development (Grolnick, Deci, and Ryan, 1997). These environments contrast to controlling overly bureaucratic structures that likely thwart development because they inhibit the process of internalization in which identity-relevant commitments align with the self (Soenens &Vansteenkiste, 2011). Kernis (2000) argued that thwarted basic needs result in a fragile self-esteem, whereas meeting these needs fosters a secure self-esteem (e.g. Kernis, Grannemann, & Barclay, 1992). Secure self-esteem reflects positive feelings of self worth that are well anchored and secure, feelings that likely contibute to an openness to learning, and willingness to explore, which in turn should foster even greater identity exploration and self-development.

Work Design, Moral Cognition/Conation (Box 3a) and Moral Development (Box 3b)

Work design scholars have speculated that work design might affect moral outcomes such as ethical behavior or corruption (e.g., Parker, et al., 1997; Johns, 2010), yet there has been little articulation of underpinning mechanisms. Rest et al., (1999) proposed a sequential model of moral processes involving recognizing a moral issue (moral sensitivity), engaging in moral reasoning to identify the ideal moral behavior (moral judgment), establishing the intent to put moral concerns ahead of other concerns (moral motivation), and then carrying out the chosen moral decision (moral behavior). Hannah et al., (2011) collapsed the first two of these processes (moral sensitivity and moral judgment) into a category labeled 'moral cognition' and these processes are, in turn, argued to be shaped by maturation/ developmental capacities

such as moral complexity. Moral motivation and behavior are collectively labeled 'moral conation' processes, and are proposed to be shaped by moral identity, moral ownership, moral efficacy, and moral courage. As shown in Figure 1, I propose that work design affects moral cognition and moral conation, as well as – in the longer-term – the development of the capacities of moral complexity, meta-cognitive ability, and moral identity.

Considering moral cognition, individuals in narrow jobs might not identify an issue as a moral concern because they are unable to adopt the perspectives of others and/or lack an understanding of the 'bigger picture'. Their deskilled job might mean they have little understanding of the consequences of their actions; not even realizing there are ethical implications (Hannah et al., 2011).

Work design might even be a more powerful influence on the moral conation processes of motivation and action. Since deskilled and low autonomy work designs result in narrow role orientations with low ownership of broader problems (Parker, et al., 1997), reduced perspective taking (Parker & Axtell, 2001), and lowered self-efficacy for broader actions beyond technical ones (Parker, 1998), these factor should reduce ownership of, and self-efficacy for, moral issues. In this vein, Jones and Ryan (1998) argued that when jobs and work units are highly compartmentalized and jobs highly specialized, individuals feel divorced from the consequences of their decision. In the "Aircraft Brake Scandal" one of the employees noted in regard to some curves that he knew had been falsified: "after all, we're just drawing some curves and what happens to them after they leave here – well we're not responsible for that" (Vandivier, 1972, p. 49). Thus the individual might recognize a moral issue, be able to intellectually reason what a moral response would be, yet ultimately decide not to act because they feel it is "not my job". Jones and Ryan (1998: 438) speculated that:

"isolation from the 'big picture' is exacerbated by the tendency of some organizations to structure work relationships so that group members have little contact with members of other work groups. Any attempt to verify information or 'compare notes' on moral problems is impeded by this type of structure". These authors suggest that creating cross functional work teams allows individuals access to information from multiple parties, reducing feelings of isolation, and thereby increasing the probability that an individual agent will feel that he or she has enough information to make a moral judgment with certainty, and thereby intend to take action.

Implementation of moral action is also likely to be constrained in low autonomy situations because individuals lack the opportunity to act. In addition, scholars have adopted a self-regulatory perspective on morality, showing how unethical behaviors are increased when individuals' self-regulatory resources are depleted after mentally taxing activities (e.g., Gino et al., 2011). Excessive levels of taxing demands might also deplete the self-regulation required to act ethically.

Over the longer term, the WDGM proposes that high quality work design can foster moral development in the form of more complex moral reasoning. In the most well-established theory, Kohlberg's (1969, 1976) proposed that moral reasoning develops sequentially, moving from a a self-interested perspective ('pre-conventional') an emphasis on social rules and expectations ('conventional') to an emphasis on broader moral principles and shared ideals ('post-conventional'). A similar, but less universalistic variant of this model, is Rest, Narvaes, Bebeau, and Thoma's (1999) neo-Kohlbergian approach that proposes individuals develop increasingly complex and flexible cognitive schemas. From both perspectives, it is assumed that individuals develop morally over one's life span, with any progression from conventional to post-conventional reasoning (if it occurs) most likely occurring

in adulthood. What prompts the development of moral reasoning is exposure to new situations, especially social experiences involving role taking, that cannot be understood using existing schemas, thereby necessitating the development of new schemas. For example, "faced with the 'unique' other, the individual is constantly challenged to rise to a more general perspective that preserves the unique perspectives of both self and other" (p. 32 Wilson, Rest et al., 1992). For example, Trevino (1986) proposed that jobs in which individuals are required to engage in complex role taking, such as democratic leadership roles in which the leader needs to be sensitive to others' attitudes, are more likely to develop advanced moral reasoning. Self-managing teams in which leadership functions are distributed amongst team members likely increase opportunities for complex role taking. As an illustration, the self-managing tomato plant operators described in Hamel (2011) make purchasing decisions, manage the poor performance of colleagues, and engage in other self-directed activities; all of which involve employees consulting extensively with peers, and navigating multiple dynamic hierarchies of influence. This complex role taking should, according to cognitive-developmental theorists, expand moral reasoning complexity.

To date, there is little or no empirical work linking job design to moral reasoning development, although Wilson, Rest et al., (1992) reported that, over and above occupational attainment and educational attainment, individuals' accounts of how personally fulfilling they found their career predicted the development of moral reasoning in a ten year longitudinal study. The two occupational variables, career fulfilment and occupational attainment, were the most important predictors of moral reasoning development for individuals with low levels of education (indeed, for this sub-group, education was not a predictor). Career fulfillment was operationalized very broadly in this study, making it difficult to link explicitly to work design per se.

Nevertheless, the role of work--design in promoting moral reasoning development needs is an important area for future research.

Summary and Implications

In this chapter, we have theorized via the WDGM various ways in which work design might foster learning outcomes in the short-term and in the longer-term. Evidence is most compelling in relation to the effect of work design on the short-term learning outcomes of cognitive change and skills change (such as individuals' capacity to anticipate and prevent problems), as well as the effect of work design on agentic self beliefs (such as self-efficacy, flexible role orientations) and behavior (e.g., personal initiative, proactivity, crafting). These is even some evidence, although it must still be regarded as preliminary, that work design can over the longer term shape cognitive and self attributes typically considered quite stable, such as intellectual flexibility, locus of control, and proactive personality.

An important implication of this chapter is that it shows that our existing models of work design are inadequate. Their theoretical focus is on how work design either motivation (e.g., the job characteristics tradition), performance (e.g., the sociotechnical systems perspective) or health (e.g., the job demands/control/resources perspectives), with only limited attention to the role of work design in fostering or inhibiting learning. Similarly, for scholars who focus on learning and development in the workplace (rather than work design per se), whilst work design is acknowledged as a vehicle for knowledge acquisition and related cognitive change (e.g., see Noe, Clarke, & Klein's 2014 integrative review), there is little recognition in this literature as to how work design might promote the other types of learning focused on this chapter, or its potential value in promoting longer-term learning outcomes.

Practically, this article highlights that, for HR practitioners, managers, and other key stakeholders wanting to build a more skilled and capable workforce, good work design might be a relatively untapped opportunity. Indeed, I suggest that work design is likely to be an especially powerful source of learning and development because the aspects that promote learning (autonomy, challenge, support, feedback, etc) are *embedded* into the structure of one's daily work, yielding continuous rather than single development opportunities. In contrast, for example, development in leadership programs is often fostered via engagement in temporary challenge projects. The importance of sustained development through work design is supported by theories of learned industriousness (Eisenberger, 1992) and adaptation-level theory (Helson, 1964), which propose that individuals adapt to high demands, and in so doing, enhance their capacity for self-regulation. For instance, in an experimental study, being exposed to two demanding tasks can lead to adaption effects, whereas exposure to just one demanding task results in depletion (Converse and DeShon, 2009). Work design and its opportunity for sustained development likely facilitates such adaptation, and thereby promotes the development of self-regulatory resources to a greater extent that single development opportunities.

A further advantage of work design as a vehicle for promoting learning is that work design is recommended to be incremental such that autonomy and complexity expand at the same time as the capability of the individual or team expand (Parker & Wall 1998). Parker & Sprigg (1999) concluded in a study of production operators that individuals with a passive personality are unlikely to 'seize' enhanced job control, and instead will likely benefit from gradual increases in autonomy accompanied by coaching and support. Similarly, scholars have argued that learning is accelerated when challenge occurs within an individual's 'zone of proximal development' rather

than being sink or swim (Day et al, 2009, p. 29). Thus good work design should

dovetail with one's zone of proximal development, which then supports greater

learning. Further features that increase an individual's zone of proximal development,

and hence learning, are social support and developmental readiness (Day et al., 2009).

Social support is a core work design characteristic; and we have already presented

arguments that enriched work designs can stimulate aspiration and related agentic

motivations and behaviors that are likely to dovetail with developmental readiness.

All together, therefore, well-designed work should create a positive dynamic for

gradual and continual learning.

Future Research

Although there is reasonably compelling evidence for the effect of work

design on cognitive change, skills change, and the development of some aspects of

self, this is still a relatively neglected topic. There are many unanswered questions.

For example, only recently have studies begun to look at how combinations of

autonomy and demands might affect learning: the current evidence base is promising

but thin. A further issue is that is the effect on learning of work characteristics beyond

autonomy, complexity/variety and demands have barely had any attention; nor has the

interaction between relevant individual difference attributes (e.g. developmental

readiness) and work design been considered. The research area is also limited by a

tendency to use self-reported measures of learning (e.g., self-reported perceptions of

increased knowledge, or self-reports of engagement in learning), rather than more

objective assessments of actual change in knowledge or skill, such an increase in

procedural or declarative knowledge or the development of a more complex mental

models (see also Taris et al., 2003).

The longer-term learning effects of work design on cognitive development and self development have also received almost no attention, even though there is sufficient theory and some initial evidence to implicate the role of work design. Likewise, almost no empirical attention has been given to the effect of work design on moral processes or moral development. Clearly, there is much more research to be done to fully understand and leverage the power of work design for short-term and longer-term learning outcomes related to cognition, skills, and the self. Importantly, such future research will benefit from a longitudinal research approach. Existing research designs on work design → learning tend to be cross-sectional (Taris et al., 2003), yet learning occurs over time. Indeed, to capture any developmental consequences or longer-term outcomes of work design, time frames over years rather than weeks will likely be required, which means either capitalizing on very long-term longitudinal cohort studies that already exist or creating such studies.

A further area for development is to consider how multiple learning outcomes are facilitated by work design. Although in this chapter cognitive, self, and moral variables have been considered as separate and unique outcomes, Day et al., 2009 noted that co-development amongst these outcomes is likely to occur, for example, that "both moral development and identity development may co-vary with the development of more advanced critical thinking skills, the capacity for reflective thinking and other forms of postformal thinking" (p. 80-81). In addition, while development has sometimes been seen as sequential, linear, and unidirectional, scholars agree this can be an overly prescriptive perspective, and that rather than thinking about development as a ladder, it might be more usefully thought of as a web, with development taking many forms; being non-linear, dynamic and adaptive;

and involving many components (e.g., Fischer & Pruyne, 2002). Such more complex inter-linkages amongst learning outcomes are a key avenue for further research.

A further research question concerns the potential reciprocal processes by which work design and learning shape each other. As indicated by the reverse arrows from development to work design and learning, the WDGM proposes that longer-term development outcomes might result in virtuous circles of positive work design change and learning. For example, if individuals' develop greater cognitive complexity, this enhances their capacity for taking on challenging tasks, which will promote learning. If individuals' become more proactive over time, or develop greater locus of control, they are more likely to engage in behaviors such as crafting and job-role negotiation, which could result in them creating more challenging work, then in turn shapes learning. As argued by Noe et al., (2014) job crafting, and related forms of proactivity, can promote learning directly (e.g., if individuals craft their work by participating in training programs), as well as through changing work characteristics that then support learning (e.g., enhanced challenge, reduced demands that then frees up time for learning). Longitudinal multi-wave studies (see above) are necessary to capture such reciprocal processes, such as those advocated in the area of leadership development (e.g., Day, 2009).

One further direction for research concerns going beyond the individual level of analysis, which was the primary focus of the WDGM. How team-level work characteristics shape individual-level affect individual learning and development via cross level processes is an important avenue for further research. Social interactions will be particularly shaped by team-level work design characteristics such as team interdependence and team autonomy. For example, there is some evidence that moderate levels of cross-team linking (Fang et al.,

2010); team member face-to-face collaboration instead of technology-mediated collaboration (Andres, 2013); team-level empowerment (Kukenberger et al., 2012); and low levels of team hindrance stressors and high levels of team challenge demands (Pearsall et al., 2009) affect learning-related processes and outcomes. Team work also offers the opportunity for greater social support from colleagues, which can foster learning through motivational processes such as encouraging individuals to take on challenging tasks and to respond constructively to setbacks.

Conclusion

Work design scholars (e.g., Parker, 2014) and learning scholars (e.g., Noe et al., 2014) converge in the belief that we need a better understanding of the relationship between work design and learning and development. We hope that the WDGM provides an initial framework to progress this important yet currently neglected perspective.

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