

GETTING WHAT THE OCCUPATION GIVES: EXPLORING MULTILEVEL LINKS BETWEEN WORK DESIGN AND OCCUPATIONAL VALUES

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The history of work design research is voluminous and compelling. Thousands of studies have demonstrated the wide-reaching and powerful impact the design of work can have on a host of meaningful outcomes. Yet, absent in much of this research is an explicit consideration of the context within which work is performed and how this context might impact work design. Drawing from the theory of work adjustment, we describe the different ways in which occupations are linked to work design. In a sample of 805 individuals from 230 occupations, our multi-level examinations show the occupational-level values of achievement, independence, altruism, status, and comfort are related to a variety of work characteristics. In addition, we found that work characteristics are key mechanisms through which these occupational values affect individual-level job satisfaction. Implications of these results for work design theory and practice are discussed.

Research into the design of work has a long and storied history. From classic time-and-motion studies to more contemporary motivational approaches, work design has demonstrated meaningful relationships to an array of attitudinal, behavioral, cognitive, well-being, and organizational outcomes (Humphrey, Nahrgang, & Morgeson, 2007; Morgeson & Humphrey, 2008; Parker & Wall, 1998). Yet, despite the voluminous body of work design research, the role context may play in shaping work designs and individual reactions to different work design features has been largely ignored (Morgeson & Campion, 2003; Morgeson, Dierdorff, & Hmurovic, 2010; Oldham & Hackman, 2010).

The absence of context in work design research is unfortunate, as various scholars have suggested context can have profound effects on

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organizational behavior in general (Cappelli & Sherer, 1991; Johns, 2006; Rousseau & Fried, 2001). Work design theory has also asserted the importance of attending to both attributes of jobs and the links between jobs and the broader work environment (Grant, Fried, Parker, & Frese, 2010; Humphrey et al., 2007; Morgeson & Humphrey, 2006; Parker & Wall, 1998). This is especially true of the environment delineated by an individual's occupation (Morgeson et al., 2010). For instance, jobs are subsumed by occupations (Dierdorff, Rubin, & Morgeson, 2009), and the primary focus of work design is the "study, creation, and modification of the composition, content, structure, and environment within which jobs and roles are enacted" (Morgeson & Humphrey, 2008, p. 47). Roles and work designs are thus intimately tied to the occupation within which work is performed (Dierdorff & Morgeson, 2007), suggesting that occupations will constrain or enable the emergence of different work design features. Occupations also reflect distinctly different contexts within which roles are enacted and have their own features that are equally as potent as the effects attributed to organizational contexts (Morgeson & Dierdorff, 2011; Trice, 1993). Finally, occupations can be explicitly described in terms of their reinforcement properties, with different occupations reinforcing different individual needs (Dawis & Lofquist, 1984; Lofquist & Dawis, 1969). Work design is a potential key way in which individuals satisfy their needs within their particular occupations. Taken collectively, this suggests that work design is an important mechanism through which workers "get" what the occupation has to "give."

The purpose of our study is to apply occupational theory to work design to explicitly link occupational features to work design research and theory. In so doing, we seek to describe the cross-level effects occupations can have on individual-level work characteristics and job satisfaction. To accomplish this, we first must gain a better understanding of why occupations matter for work design and which aspects of occupations are important for work design.

Occupations, Theory of Work Adjustment (TWA), and Work Design

Occupations have been defined as "collections of work roles with similar goals that require the performance of distinctive activities as well as the application of specialized skills or knowledge to accomplish these goals" (Dierdorff et al., 2009, p. 974). Occupations span multiple organizations and can have profound influences on individual behavior and attitudes (Dierdorff & Morgeson, 2007). In terms of conceptual anchoring and influence, occupations are situated at a higher level than the individual job level and thus exert "top-down" influences resulting in cross-level effects

(Cappelli & Sherer, 1991). These top-down effects will also vary from occupation to occupation even in similar occupational clusters. For example, financial analysts and bill and account collectors are both finance-related occupations, but comprise distinct collections of jobs (e.g., real estate or investment or equity analysts vs. debt collectors or patient account specialists or collections managers), and reflect different occupation-level characteristics (e.g., analytical and independent vs. administrative and contingent on contact with others). Empirical work has also supported the systematic top-down effects of different occupations on a host of individual-level variables including emotional exhaustion (Grandey, Kern, & Frone, 2007), role requirements (Dierdorff et al., 2009), work–family conflict (Dierdorff & Ellington, 2008), and job strain (Liu, Spector, & Jex, 2005).

In relation to work design, Morgeson et al. (2010) recently noted that the value of occupation-focused theories is that they “posit systematic differences attributable to occupational context, describe the influences occupational context exerts on individuals’ behavior and attitudes, and suggest that congruence between individuals and their environments can explain various outcomes such as job satisfaction” (p. 353). By applying occupational theory to work design, one can then explain the linkages between occupations and the characteristics and outcomes of work designs. For example, occupations could exert direct effects on work design, such as promoting more positive work design features (e.g., high task significance), as well as indirect effects whereby particular work designs convey or mediate relationships between occupations and individual outcomes such as job satisfaction. Previous work design research also suggests the possibility of occupational effects. For instance, occupations with high levels of cognitive demands (e.g., surgeons, anesthesiologists, nuclear engineers) may be more likely to foster work characteristics associated with these demands, such as information processing and problem solving (Morgeson & Humphrey, 2006).

Morgeson et al. (2010) further argue that TWA is an example of an occupation-focused theory of particular relevance to work design because it provides an overarching explanation of how occupations influence work behavior as well as identifies several essential elements of occupations. According to TWA, occupations are influential because they promote different “occupational reinforcer patterns” (ORPs) concerning specific individual needs that are satisfied via the relative presence or absence of reinforcers within a given occupation (Dawis & Lofquist, 1984). These ORPs are parsimoniously operationalized as six “occupational values” describing the extent to which occupations are capable of reinforcing various work-related needs (Dawis, 1994; Hesketh & Dawis, 1991). The occupational value of *achievement* reflects occupations that reinforce

accomplishment and utilization of one's abilities. *Independence* reflects occupations that reinforce and stimulate initiative and creativity. *Altruism* reflects occupations that foster harmony and service to others. *Status* reflects occupations that reinforce and provide advancement, recognition, and prestige. *Comfort* reflects occupations that are supportive and free from stress. Finally, *safety* reflects occupations that are predictable and stable.¹

A primary implication of these occupational values is that they represent the inherent reinforcer patterns with which individuals interact when performing their work roles in a given occupation. As Dawis and Lofquist (1984) note, "the six-value system provides a feasible and meaningful basis for differentiating among occupational groups in terms of their distinctive reinforcer characteristics" (p. 88). Occupational values are thus indicative of the preexisting conditions under which an individual's work occurs. In a very real sense then, occupational values reflect what an occupation "gives" to workers and therefore can be expected to affect work designs. We next describe how occupational values are likely to influence the emergence of work characteristics as well as the mechanisms by which occupation values and work characteristics impact individuals' satisfaction with work.

Multilevel Influences of Occupational Values in Work Design

A central feature of TWA is the interplay between individuals and occupations. This multilevel relationship is described in terms of "correspondence," which represents the extent to which individual and occupational factors are aligned or "mutually responsive" (Lofquist & Dawis, 1969, p. 45). Integrating the concepts of correspondence and ORPs from TWA suggests that the effects of occupational values on work design are likely to manifest in two ways (Morgeson et al., 2010). First, cross-level effects can result from a *structural correspondence* where the higher-level occupational values are linked to individual experiences of work characteristics. Second, cross-level effects can result from an *individual correspondence* that connects higher-level occupational values with individual-level work characteristics and satisfaction. It is important to point out that conceptualizing the multilevel effects of occupational values in these two forms of correspondence is congruent with suggestions that occupations have

¹ Study data for occupational values come from the O*NET database, which uses different value labels than used in TWA. We use the original occupational values labels from TWA for five of the six occupational values. The lone exception is the TWA-referenced value of "Autonomy," where we use the O*NET label "Independence" to avoid confusion with the work characteristic of autonomy.

both omnibus influences on the occurrence of organizational phenomena (i.e., structural correspondence) as well as a more specific influence through the functional relationships among constructs (i.e., individual correspondence; Dierdorff et al., 2009). Moreover, the notion that values are higher-level antecedents to individual-level phenomena (e.g., jobs, behavior, performance) is common to other theoretical models that incorporate their influences. For example, Schwartz (1999) contends that the prevailing cultural values of a society affect the types of work goals that are ultimately pursued by individuals. Similarly, values that reflect organizational culture are thought to be antecedent to human resource practices and individual-level outcomes, such as satisfaction and motivation (Kopelman, Brief, & Guzzo, 1990). Finally, Burke and Signal (2010) characterized higher-level values as distal antecedents to individual differences. Thus, not only do these theories recognize the top-down antecedent influences of values, but they also describe the potential for such causal influences to be both direct and indirect on lower-level variables.

Structural correspondence essentially reflects the broader facilitators or constraints present in an occupation (*vis-à-vis* occupational values) that foster or limit the occurrence of particular work design features. Work designs can be thought of as evolving over time in response to the reinforcement opportunities present in an occupation. This process ultimately results in a connection between different work characteristics and the occupational values characterizing an occupation. Put another way, work characteristics arise and are adjusted, in part, to gain the reinforcers that are available in a given occupation.

Whereas structural correspondence is exemplified by the direct relationships between occupational values and work characteristics, individual correspondence is exemplified by indirect relationships among occupational values, work characteristics, and job satisfaction. As TWA suggests, all work (and by extension work characteristics) involves interplay between the individual and the occupation, with work adjustment reflecting a correspondence between needs and requirements (Lofquist & Dawis, 1969). In this view, "satisfaction is related to the extent to which the work environment is *capable of reinforcing* the needs and values of the employee" (Hesketh & Griffin, 2005, p. 247; italics added). Research on TWA supports this depiction, as occupational reinforcement of values is associated with individual satisfaction (Rounds, Dawis, & Lofquist, 1987). Thus, when an individual's work characteristics are aligned with what the occupation provides in terms of reinforcers, individual correspondence results and is reflected in job satisfaction. This implies that work characteristics are important mechanisms through which higher-level occupational values impact individual-level job satisfaction. In this way, work characteristics convey the top-down effects of occupations

because they are one way the reinforcement available in an occupation is obtained at the level of an individual's work role.

The preceding discussion of individual and structural correspondences implies that there are both direct and indirect relationships between work design and occupations. Yet, articulating these relationships necessitates a conceptual framework that integrates and organizes the variety of work characteristics that exist in work design and the different values characterizing occupations. One approach that has been useful in depicting the interplay of individuals and environments is to adopt a meso-level framework (House, Rousseau, & Thomas-Hunt, 1995). Here, emphasis is placed upon describing the associations between taxonomic models using process-based theory (Dierdorff et al., 2009; Hatrup & Jackson, 1996; Maguire, 1983). With regard to this study, such an approach means explicating the relationships between categorical conceptualizations that describe both occupational values and work characteristics.

Different occupational values reflect different patterns of reinforcement (i.e., ORPs) across occupations. From a learning theory perspective, these patterns can be conceptually grouped by the primary source from which reinforcement is ultimately derived. These sources include the self, other people, and the external (nonsocial) environment and are linked to distinct occupational values: Achievement and independence draw reinforcement from the self; status and altruism depend upon others for reinforcement; and safety and comfort are contingent on the external nonsocial environment for reinforcement (Hesketh & Griffin, 2005). Likewise, different work characteristics reflect conceptually distinct design features (Morgeson & Campion, 2003), such as when work characteristics emphasize the motivational, social, or physiological aspects of work (Humphrey et al., 2007). Morgeson and Humphrey (2008) comprehensively organized this multitude of work design features into three conceptual categories spanning task characteristics (e.g., autonomy), social characteristics (e.g., interdependence), and contextual characteristics (e.g., physical demands). Taken collectively then, work characteristics can be descriptively categorized into three conceptual domains (task, social, and contextual) and occupational values also can be grouped into three conceptual domains (self-reinforcement, other-reinforcement, and nonsocial environment-reinforcement).

When considering the potential effects of different categories of occupational values on the various categories of work characteristics, it is important to recognize that, although occupations can be delineated by discrete values, such facets are not theoretically orthogonal. Thus, all three occupational value categories may be interrelated and display collective effects. However, theory regarding environmental influences also purports that some facets are more influential or relevant for particular aspects of work behavior (Meyer, Dalal, & Bonaccio, 2009; Mischel, 1977;

TABLE 1
Meso-Level Conceptual Framework Linking Occupational Values and Work Characteristics

Occupational value domain	Occupational values	Work characteristic domain	Work characteristics
Reinforcement from the self	Achievement Independence	Task	Autonomy Task variety Task significance Task identity Feedback from the job Job complexity Information processing Problem solving Skill variety Specialization
Reinforcement from others	Altruism Status	Social	Social support Interdependence Interaction outside organization Feedback from others
Reinforcement from the nonsocial external environment	Safety Comfort	Contextual	Ergonomics Physical demands Work conditions Equipment use

Murray, 1938; Tett & Burnett, 2003). This suggests that certain categories of occupational values will display more influence (direct and indirect) on particular domains of work characteristics. Congruent with this notion, Table 1 depicts a theoretical framework that integrates the three conceptual categories of occupational values with the three conceptual domains of work characteristics and guides our subsequent hypothesis development. Consistent with a meso-level approach, we restrict predictions to categorical-level linkages that characterize structural and individual correspondence. Because our focus is on the top-down effects of occupations, our discussions below are organized by the three groupings of occupational values.

Achievement and Independence

Occupations characterized by high levels of achievement promote greater utilization of one's competence as well as offer a greater sense of accomplishment than occupations with lower levels of achievement. These occupations are more likely to offer patterns of reinforcers that foster feelings of success and attainment. Occupations characterized by

high levels of independence stimulate and reinforce personal initiative and creativity. Such occupations thus offer more opportunities for individual volition as well as fewer constraints on innovation.

With regard to structural correspondence, work characteristics that are aligned with the reinforcement properties associated with achievement and independence are more likely to emerge. This would include work characteristics that are associated with accomplishment from the work tasks themselves (achievement) as well as self-control and initiative in performing work tasks (independence). Work characteristics that fall within the task domain are those most closely aligned with these occupational values. Task characteristics are concerned with the nature and scope of the work itself. Task characteristics directly relate to how work is performed and the tasks composing a job and thus arise from the task environment (Morgeson & Humphrey, 2006, 2008). When present in one's work, task characteristics are related to an increased sense of responsibility for the work itself (Humphrey et al., 2007). This suggests the extent to which occupations provide reinforcement for ownership and accomplishment of work tasks will promote or constrain the emergence of task characteristics. That is, the occupational values of achievement and independence are most relevant to task characteristics because they indicate whether or not occupations offer more or less opportunities for these work characteristics to arise and be reinforced.

Hypothesis 1: The occupational values of achievement and independence are associated with task characteristics.

There is also likely to be individual correspondence between the occupational values of achievement and independence and task characteristics. The reinforcement potency of these occupational values is thought to primarily derive from the self (Hesketh & Griffin, 2005), as the ORPs present in these occupations are most likely to fulfill growth-related needs (Alderfer, 1972). Thus, occupations high in achievement or independence offer greater reinforcement opportunities for feelings of accomplishment, ability utilization, and innovation, which in turn promote satisfaction. Yet, the extent to which such reinforcement can be obtained (and satisfaction results) is likely to be a function of whether or not task characteristics are present within individuals' work roles.

For instance, by having freedom in the work role (autonomy), individuals are able to take the initiative and perform in a creative manner because they are less constrained in their role performance. Likewise, being able to perform a differentiated range of duties (task variety) increases the chances that individuals will bring to bear the full scope of their competencies. Solving complex problems (problem solving) and utilizing an array of skills (skill variety) are indicative of enriched work (Campion,

1989) and are likely to enhance one's sense of self-determination. Such design features, for example, enable individuals to better obtain the occupational reinforcement associated with independence and consequently experience greater levels of job satisfaction. Work roles that are designed to allow the completion of tasks in their entirety (task identity), impact the lives of others (task significance), or provide performance feedback (feedback from the job) all relate to seeing and understanding the broader, holistic consequences of one's work. Being able to develop a depth of knowledge and skill required for performance (specialization) and manage complex information needed for performance (information processing) are likely to necessitate greater learning and development in the job (Campion, 1988; Morgeson & Humphrey, 2008). Individuals in work roles with these design features are thus better positioned for reinforcement inherent to occupations high in achievement, which would subsequently increase job satisfaction.

In sum, task characteristics are likely to enable or convey the effects of achievement and independence on individual-level satisfaction because they pertain to how and what type of work is performed as part of one's work role. Such work characteristics thus allow individuals to obtain the reinforcement associated with these occupational values. Consistent with this reasoning, meta-analytic evidence shows task characteristics are positively related to both growth satisfaction and internal motivation (Humphrey et al., 2007). Therefore, we predict an individual correspondence between the values of achievement and independence and task characteristics.

Hypothesis 2: Task characteristics mediate the relationships of achievement and independence on individual-level satisfaction.

Altruism and Status

Occupations characterized by high levels of altruism promote service to others and more productive social interactions compared to occupations with lower levels of altruism. Thus, high-altruism occupations are represented by patterns of reinforcers that encourage building and maintaining interpersonal relationships and interactions. Occupations with high levels of status foster recognition and feelings of prestige and therefore provide reinforcement that acknowledges performance and reputation.

The ORPs indicative of both altruism and status centrally involve social information, whether this information flows from interpersonal interactions (altruism) or recognition from others (status). This suggests structural correspondence would be most likely for work characteristics that are affiliated with socially derived information or feedback.

Work characteristics from the social domain are those that most closely align with these occupational values because they emerge in response to elements of the broader social environment and are inextricably linked to working with others (Morgeson & Humphrey, 2008). Social characteristics are related to positive, socially oriented work behaviors (Grant, 2007), and the interpersonal ties reflected in social characteristics are associated with perceptions of prestige and social recognition (Lin, 2008; Zhou, 2005). This suggests that the extent to which occupations provide reinforcement opportunities for social relationships (altruism) and acknowledgement by others (status) will facilitate or constrain the emergence of social characteristics.

Hypothesis 3: The occupational values of altruism and status are associated with social characteristics.

In addition to the direct effects of structural correspondence between the occupational values of altruism and status and social characteristics, there are also likely to be indirect effects from these values that reflect individual correspondence. The reinforcement potency of these two occupational values is thought to primarily derive from other people in the work environment (Hesketh & Griffin, 2005). The ORPs present in occupations characterized by high altruism or status are most likely to fulfill relatedness or social needs (Alderfer, 1972) that in turn promote job satisfaction. However, the degree to which the social reinforcement reflected by altruism and status leads to individual-level satisfaction is likely to be dependent on whether or not social characteristics are present in the work role to enable the obtainment of this reinforcement.

For example, work roles with higher levels of assistance and advice from others (social support) and greater connectedness with others as part of performance (interdependence) are associated with more socially oriented behaviors, such as citizenship (Dierdorff, Rubin, & Bachrach, 2012), which are in line with the ORPs associated with altruism. Similar to these social characteristics, receiving performance-relevant information from individuals both within and outside one's organization (feedback from others and interaction outside the organization, respectively) is likely to increase the social exchanges that are a part of one's work role and the implicit obligations for prosocial reciprocation that go along with these exchanges (Blau, 1964). As such, these social characteristics would facilitate the reinforcement available in occupations high in altruism. Social recognition is by definition predicated on the feedback provided by others (Bandura, 1986; Luthans & Stajkovic, 2000). In addition, increased interaction with external stakeholders is likely to convey a certain importance to the organization itself, as an "agent" of the organization, and makes one's performance visible to a wider range of constituents. These social

characteristics create more opportunities for individuals to be recognized and acknowledged in their work roles and thus, represent opportunities to engage in the kinds of role behaviors reinforced by the occupational value of status, which would subsequently increase job satisfaction. We therefore predict an individual correspondence between altruism and status and social characteristics.

Hypothesis 4: Social characteristics mediate the relationships of altruism and status on individual-level satisfaction.

Safety and Comfort

Occupations high in safety are characterized by stability and predictability. As such, these occupations are less likely to present uncertain conditions and more likely to promote regularity and routinization. Occupations high in comfort are relatively free from stress and are more likely to promote good working conditions and steady employment. Thus, work characteristics that are most likely to show structural correspondence with these occupational values are those associated with the general environmental conditions under which individuals work. Such work characteristics are those from the contextual domain, which arise from the physical and organizational environment and relate to the physiological, perceptual-motor, and biological features of work design (Campion & Thayer, 1995; Morgeson & Humphrey, 2008). Although contextual characteristics have received limited treatment in the broader work design literature, there is some evidence that these characteristics are associated with work-related stress and physical well-being (Edwards, Scully, & Brtek, 2000; Humphrey et al., 2007). This suggests that the extent to which occupations provide reinforcement that promotes certainty or stress-free working conditions is likely to facilitate or constrain the emergence of contextual characteristics.

Hypothesis 5: The occupational values of safety and comfort are associated with contextual characteristics.

ORPs associated with comfortable or predictable working conditions are likely to impact individual-level satisfaction if work roles possess particular work characteristics that facilitate acquisition of this reinforcement. Similar to altruism and status, the effects of the reinforcement associated with comfort and safety derive from external sources. However, for comfort and safety, the reinforcement depends upon the nonsocial external environment (Hesketh & Griffin, 2005) and thus is most likely to fulfill existence-related needs (Alderfer, 1972). Because contextual characteristics relate to how individuals interact with the broader nonsocial (physical)

environment, there should be an individual correspondence between these work characteristics and the occupational values of comfort and safety.

The extent to which a work role permits correct posture and movement (ergonomics), as well as limits the amount of physical overexertion (physical demands) and exposure to hazardous or extreme job environments (work conditions), is associated with lower work-related stress, fewer workplace injuries, and more desirable workplace features (Springer, 1992; Sundstrom & Sundstrom, 1986). In addition, work design research shows contextual characteristics are related to increased comfort (e.g., less fatigue, aches, and pain) and increased reliability in role performance (Campion & Thayer, 1995; Edwards et al., 2000). These findings suggest that contextual characteristics are associated with the types of reinforcement derived from the physical environment and represented by the occupational values of comfort and safety. Contextual characteristics should thus generate more opportunities for individuals to obtain the reinforcement congruent with comfort and safety and thereby convey the effects of these values on job satisfaction. Therefore, we predict an individual correspondence between safety and comfort and contextual characteristics.

Hypothesis 6: Contextual characteristics mediate the relationships of comfort and safety on individual-level satisfaction.

Method

Data and Procedure

Data for this study came from two sources. The work characteristics and job satisfaction measures were obtained from two different samples. The first sample consists of an original data collection of 502 participants. As part of a course assignment, junior- and senior-level business students gave the Work Design Questionnaire (WDQ) to a family member or acquaintance (job incumbent) that had worked full time for at least 10 years. The job incumbent completed the WDQ and the student returned it to us. Participation was voluntary and participants could withdraw at any time. This particular sampling strategy was employed so that data could be collected on a wide range of different jobs. None of these data have been previously published. The second sample consisted of 439 participants from Morgeson and Humphrey (2006). Although these data have been published, none of the relationships examined in the current study have been previously examined (i.e., the links to occupational values). These two data sets were collected using an identical research protocol and the exact same survey measures. The only difference was that they were collected at different points in time (about 4 months apart). Because data

for these two samples were collected in a similar manner and contain the same set of variables, we combined them to maximize the number of different occupations and statistical power. When combined, the data set included 941 individuals working in 258 different occupations. On average, participants had 13 years of experience working in their current job ($M = 12.70$, $SD = 9.89$). This high level of job experience suggests that participants are very familiar with the work characteristics present in their occupations.

Occupational value data were obtained from the U.S. Department of Labor's Occupational Information Network (O*NET) database. These data were derived from ratings by occupational analysts and therefore represent a different data source than the work characteristics and job satisfaction measures. The work design dataset was integrated with the occupational values data by matching occupational codes contained in each. The result of this process produced a final usable dataset of 805 individuals working in 230 different occupations. There were no significant mean differences ($p > .05$) for the work design variables between the source dataset and the final dataset that included complete occupational values information.

Measures

Occupational values. Six occupational values of achievement, independence, altruism, status, comfort, and safety were taken from the O*NET database. O*NET is an online system developed to replace the *Dictionary of Occupational Titles* (Peterson et al., 2001) and describes a variety of work domains. For our purposes, we used data from the occupational values domain of O*NET (Sager, 1999). Development of this O*NET domain was based on the extensive prior research used to create the Minnesota Job Description Questionnaire (Borgen, Weiss, Tinsley, Dawis, & Lofquist, 1968; Dawis, 1991; Dawis & Lofquist, 1984), which is the operational measure used in TWA. O*NET occupational values are assessed by asking professional occupational analysts to rate 21 items, each capturing need reinforcers central to a particular occupation. These 21 items are organized into the six occupational values. Example items of need reinforcers for each occupational value include the following: "Workers on this job get a feeling of accomplishment" (achievement; $\alpha = .92$); "Workers on this job get to try out their own ideas" (independence; $\alpha = .94$); "Workers on this job have co-workers who are easy to get along with" (altruism; $\alpha = .69$), "Workers on this job receive recognition for the work they do" (status; $\alpha = .75$), "Workers on this job have good working conditions" (comfort; $\alpha = .73$), and "Workers on this job have steady

employment" (safety; $\alpha = .81$). Previous research has demonstrated acceptable levels of reliability for these occupational values measures (intra-class correlations; ICC[1,30] = .82; Childs, Peterson, & Mumford, 1999).

We conducted principal component analysis (PCA) in conjunction with parallel analysis (Horn, 1965) to examine the consistency of grouping occupational values according to the three conceptual categories noted earlier (see Table 1). The 21 need reinforcers that comprise the six occupational values were used as input. We first conducted parallel analysis because it informs the number of components to retain in PCA (Hayton, Allen, & Scarpello, 2004). In short, parallel analysis entails randomly generating and analyzing n datasets with equal dimensions to the actual data (we generated 1,000 datasets). Eigenvalues from the actual data are then compared to those from the randomly generated datasets to ascertain the number of components to retain, which is indicated when the eigenvalues for components from the real data fail to be greater than the corresponding eigenvalues from the random data. We implemented parallel analysis using the SAS program described by O'Connor (2000). Results indicated a three-component solution was most appropriate, as the simulated mean and 95th percentile eigenvalues were less than the eigenvalues for the actual data for the four-component solution (actual eigenvalue = 1.09; mean simulated eigenvalue = 1.35; 95th percentile simulated eigenvalue = 1.41). A three-component PCA showed the 21 need reinforcers corresponding to the six occupational values loaded on the appropriate value categories: mean absolute loading = .89 for the reinforcement from the self category; mean absolute loading = .75 for the reinforcement from others category; and mean absolute loading = .71 for the reinforcement from the nonsocial external environment category.

Work characteristics. Work characteristics were assessed using the WDQ, an instrument developed by Morgeson and Humphrey (2006). The WDQ measures 21 work characteristics. In this study, we used 18 work characteristics by combining the three types of autonomy (scheduling, decision making, and work methods) into a single variable ($\alpha = .92$) and the two types of interdependence (received and initiated) into a single variable ($\alpha = .82$). Job incumbents' responses were reported on a 5-point scale (1 = *strongly disagree*, 3 = *neither agree nor disagree*, 5 = *strongly agree*). Example items of task characteristics include, "The job allows me to decide on my own how to go about doing my work" (autonomy; $\alpha = .92$), "The job requires the performance of a wide range of tasks" (task variety; $\alpha = .93$), "The results of my work are likely to significantly affect the lives of other people" (task significance; $\alpha = .86$), "The job itself provides feedback on my performance" (feedback from the job; $\alpha = .89$), "The job is arranged so that I can do an entire piece of work from beginning to end"

(task identity; $\alpha = .86$), “The job involves performing relatively simple tasks” (job complexity, reverse-coded; $\alpha = .88$), “The job requires me to monitor a great deal of information” (information processing; $\alpha = .85$), “This job requires a variety of skills” (skill variety; $\alpha = .84$), “The job involves solving problems that have no obvious correct answer” (problem solving; $\alpha = .82$), and “The job requires very specialized knowledge and skills” (specialization; $\alpha = .82$).

Example items for social characteristics include, “I have the opportunity to develop close friendships in my job” (social support; $\alpha = .81$), “Other jobs depend directly on my job” (interdependence; $\alpha = .82$), “The job involves interaction with people who are not members of my organization” (interaction outside the organization; $\alpha = .91$), and “I receive a great deal of information from my manager and coworkers about my job performance” (feedback from others; $\alpha = .88$). Finally, example items for contextual characteristics include, “The job involves the use of a variety of different equipment” (equipment use; $\alpha = .67$), “The seating arrangements on the job are adequate (e.g., ample opportunities to sit, comfortable chairs, good postural support)” (ergonomics; $\alpha = .62$), “The work place is free from excessive noise” (work conditions; $\alpha = .85$), and “The job requires a great deal of muscular strength” (physical demands; $\alpha = .95$).

We also used parallel analysis and PCA to examine the three-category conceptualization of work characteristics noted earlier (see Table 1). Parallel analysis indicated a three-component solution was most appropriate (four-component solution actual eigenvalue = 1.17; mean simulated eigenvalue = 1.18; 95th percentile simulated eigenvalue = 1.18). A three-component PCA showed the 18 work characteristics loaded on the appropriate domains: mean absolute loading = .57 for task characteristics; mean absolute loading = .46 for social characteristics; and mean absolute loading = .72 for contextual characteristics.

Job satisfaction. Job incumbents rated their level of job satisfaction with five items from Campion (1988). Items were “I like the kind of work I do,” “I like my job better than the average worker does,” “considering everything, I am satisfied with my job,” “I find real enjoyment in my work,” and “I feel a great sense of personal satisfaction when I do my job well.” Internal consistency reliability was .85.

Analysis Strategy

Both our theory and measurements were multilevel in nature. All of our hypotheses involved top-down effects of occupational values. The integrated dataset was also hierarchical, with individual-level data (work characteristics and job satisfaction) nested within occupational-level data

(occupational values). To appropriately address this multilevel structure, we used procedures for multilevel mediation modeling outlined by Preacher, Zyphur, and Zhang (2010). All models were conducted using *Mplus 6*, which allowed for the simultaneous modeling of direct and indirect effects between occupational values, work characteristics, and job satisfaction. The form of multilevel mediation we examined is frequently labeled a “2-1-1 model,” where there is lower level mediation of an upper-level effect (Bauer, Preacher, & Gil, 2006).

We conducted three separate models to test our six hypotheses (i.e., one model for each category of occupational values). As an example, to test Hypotheses 1 and 2 regarding the structural and individual correspondence between achievement and independence and the 10 task characteristics, we posited a model with two correlated Level-2 variables (achievement and independence) predicting the 10 Level-1 task characteristics and Level-1 job satisfaction. Because the indirect effects, which represent individual correspondence in our study, are not normally distributed and make normal theory tests less appropriate, we adapted the utility created by Selig and Preacher (2008) to compute Monte Carlo method 90% confidence intervals (CIs) for the cumulative (total) indirect effects for each occupational value (20,000 repetitions). Research has shown the Monte Carlo approach to outperform the Sobel test (MacKinnon, Lockwood, & Williams, 2004). The same multilevel multiple mediation procedure was applied to the model testing for Hypotheses 3 and 4, and the model testing for Hypotheses 5 and 6.

Results

Table 2 shows the zero-order correlations between work characteristics and job satisfaction (Level-1 variables). All but two work characteristics (physical demands and equipment use) were significantly related to job satisfaction ($p < .05$). Table 3 provides the zero-order correlations between the six occupational values (Level-2 variables). Table 4 displays ICC(1) (Bartko, 1976), which denote the percentage of the total variance residing between occupations for Level-1 variables. These ICC estimates indicate that significant between-occupation variance existed for all 18 work characteristics ($p < .05$). Overall, roughly 16% of the variance in work characteristics (average ICC(1) = .16) was due to occupation ($SD = .098$). The average percentage of variance due to occupation was 13% for task characteristics, 12% for social characteristics, and 26% for contextual characteristics. In addition to work characteristics, significant between-occupation variance existed for job satisfaction (ICC(1) = .15, $p < .01$) indicating that 15% of the total variance in satisfaction was attributable to the occupations in which individuals worked.

TABLE 2
Correlations Among Work Characteristics

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<i>Task characteristics</i>																				
1. Autonomy	4.15	.71	-																	
2. Task variety	4.28	.61	.24**	-																
3. Task significance	3.96	.83	.07	.20**	-															
4. Task identity	3.50	.92	.08*	-.06	.03	-														
5. Feedback from the job	3.97	.73	.17**	.07	.22**	.18**	-													
6. Job complexity	4.03	.79	.12**	.29**	.13**	-.23**	-.06	-												
7. Information processing	4.51	.53	.24**	.41**	.30**	-.03	.07*	.41**	-											
8. Problem solving	3.99	.76	.30**	.39**	.15**	-.16**	.01	.28**	.33**	-										
9. Skill variety	4.35	.58	.24**	.42**	.26**	-.02	.10**	.34**	.42**	.37**	-									
10. Specialization	3.96	.75	.09*	.21**	.41**	.13**	.16**	.21**	.34**	.15**	.36**	-								
<i>Social characteristics</i>																				
11. Social support	4.21	.55	.15**	.21**	.19**	.07*	.21**	.07*	.21**	.13**	.19**	.21**	-							
12. Interdependence	3.74	.75	.01	.15**	.08*	.07	.12**	.09**	.20**	.15**	.18**	.12**	.16**	-						
13. Interaction outside org.	3.88	.98	.20**	.11**	.26**	-.01	.17**	.06	.13**	.14**	.13**	.09*	.22**	.08*	-					
14. Feedback from others	3.58	.86	-.05	.07*	.18**	.13**	.35**	-.06	.09*	.07	.05	.10**	.36**	.24**	.14**	-				
<i>Contextual characteristics</i>																				
15. Ergonomics	3.89	.73	.21**	.10**	.06	.03	.06	.22**	.24**	.09**	.14**	.08*	.22**	-.02	.15**	.04	-			
16. Physical demands	1.98	.98	-.13**	.00	.06	.12**	.08*	-.29**	-.22**	-.07*	-.06	.02	-.07*	.07*	-.11**	.10**	-.50**	-		
17. Work conditions	4.00	.85	.18**	.01	.03	.02	.04	.10**	.20**	.08*	.10**	.02	.20**	-.04	.15**	.03	.54**	-.47**	-	
18. Equipment use	3.12	.95	-.06	.12**	.13**	.10**	.11**	-.03	.03	.01	.12**	.28**	-.01	.13**	-.12**	.07*	-.23**	.37**	-.27**	-
19. Job satisfaction	4.36	.55	.32**	.23**	.27**	.12**	.16**	.13**	.25**	.19**	.34**	.27**	.36**	.08*	.11**	.11**	.19**	-.02	.15**	.04

Note. N = 805.
*p < .05. **p < .01.

TABLE 3
Correlations Among Occupational Values

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Achievement	3.59	.70	—				
2. Independence	3.38	.76	.74**	—			
3. Altruism	3.25	.39	.35**	.10	—		
4. Status	3.09	.54	.73**	.65**	.44**	—	
5. Comfort	3.34	.31	.47**	.72**	-.01	.53**	—
6. Safety	3.07	.76	-.41**	-.40**	-.25**	-.18**	-.24**

Note. *N* = 230 occupations.

***p* < .01.

TABLE 4
Between-Occupation Variance in Work Characteristics

Work characteristic	<i>T</i>	σ	ICC(1)
<i>Task characteristics</i>			
Autonomy	.136**	.407	.250
Task variety	.019*	.356	.051
Task significance	.152**	.575	.209
Task identity	.033**	.820	.039
Feedback from the job	.172*	.474	.266
Job complexity	.051**	.574	.082
Information processing	.052**	.239	.089
Problem solving	.053**	.538	.090
Skill variety	.018*	.314	.054
Specialization	.112**	.457	.197
<i>Social characteristics</i>			
Social support	.023**	.273	.078
Interdependence	.057**	.496	.103
Interaction outside organization	.211**	.776	.214
Feedback from others	.048*	.685	.065
<i>Contextual characteristics</i>			
Ergonomics	.100**	.439	.186
Physical demands	.328**	.687	.320
Work conditions	.268**	.483	.357
Equipment use	.162**	.774	.173

Note. ICC = intraclass correlation.

p* < .05. *p* < .01.

Hypothesis Testing

Results from models simultaneously testing main effects and indirect effects are found in Tables 5–7. Results under the heading “between-level” are the direct effects of occupational values on particular work characteristics, which are relevant to structural correspondence

TABLE 5
Direct and Indirect Effects of Independence and Achievement Values

Model	Predictor	Coefficient	SE	90% CI		
Within-level						
DV = Job satisfaction	Autonomy	.195**	.033	.140	.250	
	Task variety	.121**	.033	.033	.175	
	Task significance	.066*	.028	.019	.113	
	Task identity	.045*	.021	.011	.079	
	Feedback from the job	.018	.025	-.023	.060	
	Job complexity	.005	.028	-.041	.051	
	Information processing	.039*	.019	.045	.121	
	Problem solving	.031	.032	-.021	.083	
	Skill variety	.144**	.048	.066	.223	
Specialization	.069*	.030	.021	.118		
Between-level						
DV = Autonomy	Independence	.346**	.119	.151	.542	
	Achievement	.500**	.098	.339	.661	
DV = Task variety	Independence	.144*	.067	.034	.254	
	Achievement	.054	.055	-.037	.145	
DV = Task significance	Independence	.469**	.180	.173	.764	
	Achievement	-.274*	.144	-.511	-.037	
DV = Task identity	Independence	.028	.129	-.183	.240	
	Achievement	-.320**	.098	-.481	-.159	
DV = Feedback from the job	Independence	.044	.112	-.139	.228	
	Achievement	-.105*	.053	-.251	-.041	
DV = Job complexity	Independence	.158*	.077	.024	.340	
	Achievement	.194*	.100	.029	.359	
DV = Information processing	Independence	.084	.113	-.102	.270	
	Achievement	.107	.093	-.046	.260	
DV = Problem solving	Independence	.060	.077	-.066	.187	
	Achievement	.348**	.077	.222	.475	
DV = Skill variety	Independence	.352**	.058	.256	.448	
	Achievement	-.062	.051	-.146	.022	
DV = Specialization	Independence	.675**	.112	.490	.860	
	Achievement	-.315**	.090	-.463	-.167	
DV = Job satisfaction	Independence	.248	.613	-.760	1.257	
	Achievement	.320	.191	-.004	.624	
Cumulative indirect effects	Predictor	Coefficient	SE	MC 90% CI		
		Independence	.586*	.270	.195	.857
		Achievement	.429*	.215	.124	.735

Note. DV = dependent variable; CI = confidence interval; MC = Monte Carlo. 20,000 simulations used to compute indirect effect confidence intervals.

** $p < .01$. * $p < .05$.

hypotheses. Findings under “cumulative indirect effects” are the total indirect effects of occupational values, which are pertinent to individual correspondence hypotheses. All three models testing study hypotheses provided adequate fit to the data (Browne & Cudeck, 1992; Hu & Bentler, 1999; MacCallum, Browne, & Sugawara, 1996). The model for

TABLE 6
Direct and Indirect Effects of Altruism and Status Values

Model	Predictor	Coefficient	SE	90% CI	
Within-level					
DV = Job satisfaction	Interdependence	.071**	.028	.024	.117
	Social support	.298**	.044	.225	.371
	Interaction outside org.	.030	.025	-.011	.070
	Feedback from others	-.003	.025	-.045	.038
Between-level					
DV = Interdependence	Altruism	-.339*	.142	-.572	-.105
	Status	-.033	.100	-.198	.132
DV = Social support	Altruism	.166*	.083	.029	.303
	Status	-.199**	.076	-.223	.026
DV = Interaction outside org.	Altruism	-.325*	.195	-.645	-.004
	Status	.282*	.145	-.01	.466
DV = Feedback from others	Altruism	-.020	.108	-.198	.157
	Status	-.245**	.084	-.383	-.108
DV = Job satisfaction	Altruism	.127	.132	-.345	.213
	Status	.005	.102	-.163	.173
Cumulative indirect effects	Predictor	Coefficient	SE	MC 90% CI	
	Altruism	.300*	.013	.095	1.470
	Status	.004	.095	-.301	.488

Note. DV = dependent variable; CI = confidence interval; MC = Monte Carlo. 20,000 simulations used to compute indirect effect confidence intervals.

** $p < .01$. * $p < .05$.

Hypotheses 1 and 2 showed a within-level RMSEA of .10 and SRMR of .07, as well as a between-level SRMR of .10. The model for Hypotheses 3 and 4 had a within-level RMSEA of .08 and SRMR of .07, and the between-level SRMR was .09. Finally, the model for Hypotheses 5 and 6 showed a within-level RMSEA of .08 and SRMR of .05, and a between-level SRMR of .05.

Hypothesis 1 predicted main effects for the occupational values of independence and achievement on task characteristics. Table 5 presents the results testing this hypothesis. Of the 20 possible main effects, 13 (65%) were significant ($p < .05$), and 9 of the 10 task characteristics were significantly predicted by either independence or achievement. Information processing was the exception. Independence was positively related to autonomy, task variety, task significance, job complexity, skill variety, and specialization. Achievement was positively related to autonomy, job complexity, and problem solving, and negatively related to task significance, task identity, feedback from the job, and specialization.² Taken

²It is important to recognize that both positive and negative relationships are supportive evidence for the structural correspondence predictions (Hypotheses 1, 3, and 5) and are

TABLE 7
Direct and Indirect Effects of Comfort and Safety Values

Model	Predictor	Coefficient	SE	90% CI		
Within-level						
DV = Job satisfaction	Work conditions	.047	.039	-.017	.111	
	Ergonomics	.126**	.043	.056	.196	
	Physical demands	.025	.031	-.026	.076	
	Equipment use	.052*	.026	.004	.083	
Between-level						
DV = Work conditions	Comfort	1.117**	.219	.757	1.47	
	Safety	.215**	.091	.017	.414	
DV = Ergonomics	Comfort	.700**	.127	.490	.909	
	Safety	.089	.095	-.067	.245	
DV = Physical demands	Comfort	-1.492**	.264	-1.927	-1.058	
	Safety	-.465**	.129	-.677	-.253	
DV = Equipment use	Comfort	-.578**	.225	-.947	-.208	
	Safety	-.435*	.200	-.764	-.106	
DV = Job satisfaction	Comfort	-.236	.290	-.713	.242	
	Safety	-.047	.142	-.281	.187	
Cumulative indirect effects	Predictor	Coefficient	SE	MC 90% CI		
		Comfort	.128*	.060	.004	.329
		Safety	-.096	.357	-1.079	.549

Note. DV = dependent variable; CI = confidence interval; MC = Monte Carlo. 20,000 simulations used to compute indirect effect confidence intervals.

** $p < .01$. * $p < .05$.

collectively, these findings provide partial support for Hypothesis 1 and indicate a moderate structural correspondence between occupational values with primary reinforcement derived from the self and task characteristics.

Hypothesis 2 predicted indirect effects for independence and achievement on satisfaction through task characteristics. Model results indicated that 20.7% of the within-occupation variance in job satisfaction was accounted for by task characteristics, independence, and achievement. The bottom portion of Table 5 shows results pertinent to testing Hypothesis 2. The cumulative indirect effect for independence was statistically significant ($p < .05$) and the Monte Carlo 90% CI corroborated this finding (CI = .195–.857). The cumulative indirect effect for achievement was also statistically significant ($p < .05$) and corroborated by the Monte Carlo 90% CI (CI = .124–.735). These findings provide full support for Hypothesis 2,

consistent with our definition of structural correspondence, which draws from previous theory (e.g., Mowday & Sutton, 1993; Terborg, 1981) that posits either facilitative or constraining influences from higher-level situational factors that are “relevant” or “thematically connected” to individual-level variables (Tett & Burnett, 2003; Tett, Guterman, Bleier, & Murphy, 2000). In the present study this relates to higher-level occupational values and their effects on individual-level work characteristics.

showing an individual correspondence between task characteristics and the occupational values of achievement and independence.

Hypothesis 3 predicted main effects for altruism and status on social characteristics. Table 6 provides results relevant to this hypothesis, which show that six of the eight possible main effects (75%) were significant ($p < .05$), and all four social characteristics were predicted by either altruism or status. Altruism was positively related to social support and negatively related to interdependence and interaction outside the organization. Status was positively related to interaction outside the organization and negatively related to social support and feedback from others. These findings provide partial support for Hypothesis 3, indicating moderate to strong structural correspondence between occupational values with primary reinforcement derived from others and social characteristics.

Hypothesis 4 predicted indirect effects for altruism and status on satisfaction through social characteristics. Approximately 13.2% of within-occupation variance in job satisfaction was accounted for by social characteristics, altruism, and status. From the results shown in the bottom portion of Table 6, the cumulative indirect effect for altruism was statistically significant ($p < .05$) and corroborated by the Monte Carlo 90% CI (CI = .095–1.47). The cumulative indirect effect for status was not statistically significant ($p > .05$), and the Monte Carlo 90% CI contained zero (CI = -.301–.488). These results provide partial support for Hypothesis 4, indicating individual correspondence between social characteristics and altruism but not status.

Hypothesis 5 predicted main effects for comfort and safety on contextual characteristics. Results shown in Table 7 indicate significant main effects of comfort and safety ($p < .05$) for seven of the eight (87%) contextual characteristics. Each of the four contextual characteristics was predicted by either comfort or safety. Comfort was positively related to ergonomics and work conditions and negatively related to physical demands and equipment use. Safety was positively related to work conditions and negatively related to physical demands and equipment use. These results generally support Hypothesis 5 and suggest moderate to strong structural correspondence between occupational values with primary reinforcement derived from the nonsocial external environment and contextual characteristics.

Hypothesis 6 predicted that contextual characteristics would mediate the main effects of comfort and safety. Model results indicated that 9.4% of within-occupation variance in job satisfaction was accounted for by contextual characteristics, comfort, and safety. Results shown in the bottom portion of Table 7 indicate a significant cumulative indirect effect for comfort ($p < .05$). The Monte Carlo 90% CI corroborated this finding (CI = .004–.329). The cumulative indirect effect for safety was not statistically significant ($p > .05$), and the Monte Carlo 90% CI contained

zero (CI = -1.08 – $.549$). Overall, these results provide partial support for Hypothesis 6 suggesting individual correspondence between contextual characteristics and comfort but not safety.

Supplemental Analyses

At the core of our conceptual framework is the notion that certain categories of occupational values are associated with particular domains of work characteristics. This notion guided the models we used to test our hypotheses. To further investigate this framework, we conducted six “competing” models. Each of these models posited occupational value predictors from the unpredicted categories (e.g., mediation model with altruism and status predicting task characteristics). Four of these models were able to converge (two competing models for task characteristics could not). Of these four models, none provided adequate fit to the data: Within-level model RMSEA values were all greater than .14 (mean = .21), and SRMR values all greater than .11 (mean = .13), as well as between-level model SRMR values all greater than .19 (mean = .28). Moreover, of the 52 possible direct effects across the competing models, only 10 (19%) were significant ($p < .05$). No cumulative indirect effects for any of the occupational values were significant in the competing models ($p > .05$). These results provide additional supportive evidence for our theoretical expectations regarding the structural and individual correspondences between particular categories of occupational values and domains of work characteristics.

Discussion

It is well recognized that the context within which work is performed can have a profound influence on organizational behavior. Yet, despite this recognition, there have been relatively few empirical investigations into the specific ways that the context within which work design occurs has unique impact. We sought to address this limitation and add to the body of work design research and theory by placing work design “in context” with regard to occupations. In doing so, we examined connections between occupational values and a variety of work characteristics. Drawing from TWA, we articulated how occupational values impact work design in two distinct ways. In the first, termed structural correspondence, we posited direct cross-level relationships between occupational values and work characteristics. In the second, termed individual correspondence, we proposed cross-level effects where work characteristics convey the influences of occupational values on individual-level job satisfaction.

In a diverse sample of occupations, we found that occupational values were linked in theoretically meaningful ways to different individual-level

characteristics of work. We organized the top-down effects of occupational values in a meso-level framework whereby task characteristics were predicted to be influenced by occupational values that draw reinforcement from the self (independence and achievement); social characteristics were predicted to be shaped by occupational values that derive reinforcement from other individuals (altruism and status); and, contextual characteristics were predicted to be impacted by occupational values that are reinforced by the nonsocial external environment (comfort and safety). Overall, study findings are generally supportive of our organizing framework with significant direct and indirect effects along the hypothesized linkages as well as a lack of effects along unpredicted, competing linkages. In the paragraphs below we first discuss findings pertinent to structural correspondence, followed by results related to individual correspondence.

Our results are supportive of structural correspondence across each of the linkages in our conceptual framework. Yet, it is important to note the variation in the number of significant effects we found across the framework. The pattern of results indicates the most direct effects for contextual characteristics (87% of possible parameters), followed by social characteristics (75% of possible parameters) and task characteristics (65% of possible parameters). Although there was a majority of significant findings within each domain of work characteristics, such results do suggest stronger support for structural correspondence for some parts of our framework compared to others. The fact that we find increased structural correspondence for contextual characteristics could be due to the more discrete and physical nature of these work characteristics. Such a pattern is similar to other research that also finds the physical characteristics of work are more affected by occupational differences than task and social elements (e.g., Dierdorff et al., 2009).

With regard to task characteristics, we find structural correspondence to occupations that are more capable of reinforcing accomplishment and skill utilization (achievement) as well as initiative and creativity (independence). For example, the positive relationships between autonomy, task variety, task significance, job complexity, and skill variety and independence indicate that high-independence occupations (e.g., police detectives, fashion designers, civil engineers), where there is ample reinforcement of personal initiative, will facilitate the emergence of these task characteristics. Likewise, high-achievement occupations (e.g., financial analysts, talent agents, postsecondary business teachers), where a personal sense of accomplishment is regularly reinforced, appear to promote task characteristics such as autonomy, job complexity, and problem solving. Other task characteristics, however, appear to be constrained in particular occupations, such as task significance, task identity, and specialization in high-achievement occupations. These results suggest occupations that

heavily reinforce personal accomplishment lessen the likelihood that these task characteristics will emerge.

Evidence further supports structural correspondence between social characteristics and occupations that reinforce service to others (altruism) as well as advancement and recognition (status). For example, interaction outside the organization appears to be facilitated in high-status occupations (e.g., chief executives, lawyers), whereas the emergence of feedback from others appears constrained in such occupations. Interestingly, results show that social support is more likely to emerge in high-altruism occupations (e.g., nurses, dental hygienists, child care workers) where service to others is abundantly reinforced but less likely to emerge in high-status occupations where reinforcement acknowledges recognition and reputation. High-altruism occupations also seem to constrain interdependent work designs. This is perhaps due to the fact that altruism reflects the extent to which an occupation reinforces service to others, which is unidirectional in nature, whereas interdependence represents reciprocal interactions that are bidirectional in nature. Thus, interdependent work designs may fail to emerge in high-altruism occupations because such occupations do not reinforce reciprocal interactions but instead reinforce more singular or direct interactions.

Structural correspondence is also apparent between contextual characteristics and occupations that are more predictable (safety) and free from stress (comfort). For example, our findings indicate that the contextual characteristic of work conditions is facilitated in both high-comfort and high-safety occupations (e.g., software developers, actuaries, librarians). At the same time, such occupations appear to constrain the emergence of other contextual characteristics such as physical demands and equipment use. These results collectively suggest that when occupations are capable of reinforcing regularity in both work activities and employment, work designs that improve work conditions and lessen physical requirements are more likely to emerge.

In addition to structural correspondence, we find evidence to support individual correspondence where the effects of occupational values on job satisfaction are mediated by particular work characteristics. Here, our results revealed significant indirect effects for four particular occupational values spanning each of the conceptual categories in our framework (independence, achievement, altruism, and comfort). More specifically, task characteristics appear to convey the influences of high-achievement and high-independence occupations on individual-level job satisfaction. This suggests that task characteristics are key mechanisms through which individual satisfaction is affected by occupations providing ample reinforcement of personal accomplishment or personal initiative. Such a finding is consistent with prior work design scholarship that depicts task

characteristics as central to promoting individual motivation and satisfaction (Humphrey et al., 2007). It is interesting to note that whereas achievement both facilitates and constrains the emergence of task characteristics (i.e., structural correspondence), task characteristics collectively convey the positive effects of achievement on job satisfaction. Thus, even for task characteristics that are constrained in high-achievement occupations (e.g., task significance), their minimal presence still seems to significantly enable job satisfaction.

Individual correspondence also appears to exist between altruism and social characteristics. The positive cumulative indirect effect we find indicates that social characteristics enable individuals to obtain the social reinforcement that is available in high-altruism occupations. This suggests that socially focused work designs are a key way that occupations with ample opportunities for reinforcing service to others ultimately enhance individual job satisfaction. Given the benefits of “relational” work designs found in other individual-level research (e.g., Grant et al., 2010), our findings further highlight the positive role social characteristics play in facilitating higher-level occupational effects on job satisfaction.

Finally, our results indicate the mediating role that contextual characteristics play between the comfort and job satisfaction. The individual correspondence between comfort and contextual characteristics indicates that individuals working in occupations characterized by low stress and good working conditions experience job satisfaction when work designs emphasize improvement of the more positive physical characteristics of work. Although there is some evidence that contextual characteristics are associated with stress and well-being (Humphrey et al., 2007), these characteristics have received relatively limited attention in the broader work design literature. In this sense, our findings provide much needed data on these work designs as well as demonstrate their importance in promoting satisfaction in particular occupations.

Implications for Work Design Theory and Research

Our conceptual framework and associated empirical findings help to expand current work design theory. This meso-level framework uses a process-based approach to explicate relationships between conceptual categories of occupational values and work characteristics. Thus, although broader in descriptive specificity, our approach provides further integration of existing work design theory. For example, Morgeson and Humphrey (2008) recently articulated a theoretical framework that integrated work characteristics with worker attributes (knowledge, skills, abilities). Here, our framework could be viewed as an overlay to such conceptual work, as

both jobs and workers are not only embedded in occupations but, as our findings and those from other research (e.g., Dierdorff et al., 2009) show, are meaningfully shaped by occupations.

Our framework also outlines multilevel and meditational linkages, offering at least three implications for future work design theory. First, our findings begin to explicate new factors that could account for variability evidenced in previous work design research. For example, in their meta-analysis Humphrey et al. (2007) found that the average corrected correlation between work characteristics and job satisfaction was .40, with a range of .06–.56. Findings such as these indicate a considerable amount of unexplained variability in the generally positive effects of work design (about 84% on average). Past research has tended to focus on individual differences to account for such variability, and growth need strength has been the most commonly studied. Yet, the moderating role of growth need strength has been largely unsupported (see Tiegs, Tetrick, & Fried, 1992). Thus, compared to the extant literature, the multiple significant relationships we uncover for occupational values represent unique and influential factors that could account for the observed variability in the effects of work design.

Second, as others have argued (e.g., Morgeson et al., 2010), our study points to the value of considering higher-level contextual forces that can account for the emergence of particular work designs. In terms of higher-level moderators, we are aware of only one study that has explored how such factors can influence individual reactions to work design. Wright and Cordery (1999) found that elements of the technical context interact with the work characteristic of autonomy in predicting job satisfaction and intrinsic motivation. Our empirical results further suggest that future theory should perhaps move beyond the prevailing assumption that work design is primarily driven by managerial intervention or organizational action. Our study clearly shows that occupations, which cut across organizations (Morgeson & Dierdorff, 2011), exert “external” influences on the types of work designs that are relevant or likely to emerge.

Third, seminal work design theory (Hackman & Oldham, 1976) posits the centrality of mediating mechanisms through which work design impacts individual outcomes. Our study augments existing theory by introducing work characteristics as key meditational variables through which reinforcers available in occupations are obtained within individuals’ work roles, ultimately leading to job satisfaction. This cross-level mechanism is valuable to future work design theory, as prior work has focused exclusively on mediating factors at the individual level. For example, Morgeson and Humphrey (2008) noted that of the “critical psychological states” from job characteristics theory, research has shown the most influential mediator to be the experienced meaningfulness of the work. These authors

also proposed other potential individual-level mediating mechanisms including self-regulation, social facilitation, and affective and emotional states. Combined with the current framework, such theory suggests that future theoretical development of a multilevel nature is needed to integrate across these various factors. For instance, theory that articulates the linkages between occupations and other supra-individual units (e.g., organizational or team), work characteristics, individual-level mediating variables, and work design outcomes would help deepen our understanding of these influences. Our approach clearly emphasized contextual influences on job satisfaction. Considering the empirical evidence that supports the effects of individual differences on job satisfaction, such as core evaluation, neuroticism, and extraversion (Judge & Bono, 2001; Judge, Heller, & Mount, 2002), a more comprehensive examination that accounts for both situational factors and person factors is needed to disentangle the effects of these various antecedents of job satisfaction.

Truly, work is embedded in broader occupational and organizational contexts. We investigated a particular feature of occupations (occupational values), but there are clearly other aspects of occupational, organizational, and environmental contexts that deserve research attention. Empirical examinations of these types of higher-level factors are so scarce in work design research that some scholars have concluded such research “represents an open playing field” and “almost any research that systematically explores context and work design is likely to represent a contribution to the literature” (Morgeson et al., 2010, p. 357). With regard to organizational context in particular, factors such as organizational climate, technical systems, and organizational structure are likely to impact work design. For example, the shared perceptions that comprise organizational climate could influence the meaning of work characteristics, such as expectations for certain social characteristics within strong teamwork climates (e.g., social support, interdependence) or within strong customer service climates (e.g., interaction outside the organization). Technical systems, for their part, represent the techniques or processes by which an organization transforms inputs into outputs and thus can impact work designs by making certain work characteristics more probable, such as interdependence in “long-linked” systems (Thompson, 1967) requiring serial and reciprocal connections or feedback from others in “mediating” systems (Thompson, 1967) requiring links with customers and clients. Finally, work characteristics are likely to be affected by particular organizational structures, such as autonomy, problem solving, or task variety in more decentralized structures.

Researching the linkages between occupational and organizational factors entails dealing with the inherent complexity of these higher-level forces, and explicating their forms and functions is contingent on study

design. For instance, organizational context could likely act as a moderating influence on the relationships among occupations, work characteristics, and work design outcomes (i.e., moderated-mediation). Take, for example, our findings of effects among achievement, autonomy, and job satisfaction. Such direct and/or indirect effects are likely to be amplified in more decentralized organizational structures. Yet, to examine these effects, future studies must consist of multiple organizations and one or more occupations. In another approach, organizational context could act as an important antecedent to work characteristics, with features of occupations serving as a moderating influence. For example, mechanistic organizations are likely to promote increased specialization, and our findings suggest that the extent to which occupations vary along the independence value could moderate these effects. Addressing this particular form of interplay between organizations and occupations would require a study design with multiple occupations nested in one or more organizations.

Research has demonstrated that work design influences a host of individual outcomes, including role ambiguity, performance, turnover intentions, anxiety or stress, job involvement, and organizational commitment (Humphrey et al., 2007). Considering our empirical findings, research that examines occupational effects on other work design outcomes seems warranted. Occupations likely impact outcomes beyond job satisfaction, and thus work characteristics could again serve as mediating mechanisms. For example, high-independence occupations reinforce volition and creativity, suggesting an association with role ambiguity and possible mediation by work characteristics such as autonomy. Likewise, high-achievement occupations reinforce skill utilization and accomplishment that could be associated with job involvement, and work characteristics such as task variety and task significance could serve key mediating roles. We also found that interdependent work designs were less likely to emerge in high-altruism occupations. Considering the prevalence of team-based structures in the workplace and the body of research that indicates the generally positive effects of interdependence, such as promoting job performance and citizenship as well as reducing turnover (e.g., Bachrach, Powell, Collins, & Richey, 2006; Dierdorff et al., 2012; Humphrey et al., 2007), future research that teases apart these multilevel influences would be particularly compelling.

Implications for Work Design Practice

In addition to implications for theory and research, our results suggest implications for practice. An awareness of the specific occupation in which work roles to be designed or redesigned reside could provide

valuable information for improving the efficacy of such efforts. If one views work design as a key vehicle for obtaining occupational reinforcers, then work can be designed to take maximal advantage of the structural correspondence that may exist in an occupation. For example, the strong relationship between independence, task variety, and skill variety suggest that high-independence occupations might benefit most from “lateral loading” approaches to work design (e.g., job enlargement), in part because such designs are likely to be better able to gain the occupational reinforcers that characterize independence.

Our examination of cross-level mediation and individual correspondence has practical work design implications as well. In particular, the mediating influence of work characteristics offers insight into how work design efforts focused on enhancing satisfaction could be best implemented. For example, work designs that feature task characteristics are likely to enhance job satisfaction in occupations that reinforce achievement and independence. In high-altruism occupations, work designs that shape social characteristics are more likely to result in job satisfaction. Such information from our cross-level mediation results could be used to inform choices as to which specific work characteristics should be the focus of work design efforts.

Limitations

Despite the strengths of this research, there are also several limitations. First, this study was cross-sectional in its design. As such, it is difficult to make strong causal statements regarding the nature of the relationships among occupational values, work characteristics, and job satisfaction. This concern particularly applies to relationships between work characteristics and job satisfaction because these variables were measured at the same time. An optimal study design would be to first measure work characteristics and then subsequently measure job satisfaction. Some of this concern is allayed by prior work redesign research that provides evidence of the causal effects from work characteristics on a variety of individual outcomes, including job satisfaction (e.g., Champion & McClelland, 1991, 1993; Ford, 1969; Graen, Scandura, & Graen, 1986; Hackman, Oldham, Janson, & Purdy, 1975; Morgeson & Champion, 2002). With regard to occupational values, temporal separation is less of a concern because jobs are by definition nested in occupations, which means that an individual’s experience of work characteristics in his or her job occurs within a given occupation that entails certain preexisting conditions (i.e., what an occupation is capable of reinforcing). Second, there is a potential for common method bias in that some of the data were

collected on the same instrument (i.e., job satisfaction and work characteristics). Fortunately, occupational values and work characteristics were independently measured, and thus common method bias is not a problem for these hypothesis tests. For our other analyses, common method bias is not likely to be a major problem because the response tendencies presumed to underlie common method bias (e.g., priming, consistency, self-generated validity) are unlikely to manifest themselves in complex cross-level designs. Model-fit indices also suggest adequate measurement properties of the study data. Finally, we focused solely on the outcome of job satisfaction. We chose this focus, in part, because satisfaction is identified as a key outcome in both TWA and the work design literature. As we noted earlier, there are many other work design outcomes, including other attitudes as well as important behavioral outcomes. Future research should explore these other outcomes to determine if occupations exert a similar moderating effect.

Conclusion

Scholars have called for the incorporation of contextual elements into organizational research. We answer these calls by describing how occupations can influence work design in two ways: (a) through a structural correspondence linking occupational values to work characteristics and (b) through an individual correspondence in which work characteristics mediate the relationship between occupational values and job satisfaction. Our results show there is utility in considering how occupations might influence work characteristics and job satisfaction. In addition, this research offers insight into cross-level mechanisms that shape both work design and the outcomes of work design. Considering the robust positive findings for work design shown in recent meta-analytic work and the long history of work design research, we hope that our results point to potentially new and fruitful avenues for future work design research.

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