Moderating Effect of Job Type on Job Characteristic—Worker Outcome Relationships

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There has been a great deal of research examining how characteristics of jobs impact employee work perceptions as well as worker outcomes and this question is typically viewed through the lens of the job characteristics model (JCM) (Oldham & Hackman, 1980). Despite the substantial literature on this model, questions are now being raised about the JCM's generalizability across job types. This study tested job type as a moderator for job characteristic-worker outcome relationships through the use of a multilevel design and data from 11,718 employees in 24 countries. Findings indicate a moderating effect of job type on relationships between the job characteristics of autonomy, skill variety, and task significance with the worker outcomes of job satisfaction, organizational commitment, turnover intentions, and perceptions of stress. This has implications for work design across jobs and findings indicate these relationships are complicated in that they are dependent upon job type, the specific job characteristic, and the worker outcome in question. Thus, given the cost and time involved in work redesign, such redesign attempts should be tailored to the outcomes a given organization intends to improve instead of implementing higher levels of numerous job characteristics across all job types and situations.

Keywords: job characteristics model, work design, job type, multilevel modeling, industrial-organizational psychology, cross-cultural studies

The job characteristics model (JCM) (Hackman & Oldham, 1976; Oldham & Hackman, 1980) is perhaps the most studied theory within work design research. Often the goal of this research is to examine which characteristics of a job are linked to attractive worker outcomes such as higher satisfaction, performance, organizational commitment (OC), and intent to stay within the company, with the end goal often being an attempt to redesign work to further enhance the likelihood of obtaining these outcomes. The model specifies five characteristics of enriched work: skill variety, task identity, task significance, autonomy, and feedback. There is much existing research in support of these findings, yet there is also a recent call to extend the theory to include moderators and additional outcomes through the use of large-scale studies with more diverse samples. This is the goal of the present study.

Although Hackman and Oldham (1976) suggested the manner in which these job characteristics are related

suggests for their combination into a single motivating potential score (MPS), both Hinton and Biderman (1995) and Fried and Ferris (1987) found the MPS is not appropriate and instead that an additive index best fits the relationships. Moreover, it is essential to study the effects of separate job characteristics when moving research forward in understanding the role of job type on each job characteristic-worker outcome relationship, so job characteristics are examined separately in the present study. Numerous studies include several job characteristics from the JCM as opposed to all five (e.g., DeVaro, Li, & Brookshire, 2007) as this study does. Specifically, this study includes the job characteristics of autonomy, skill variety, and task significance and worker outcomes of job satisfaction, OC, turnover intentions, and perceptions of the job as stressful.

Support for Autonomy—Worker Outcome Relationships

Autonomy, which has likely been the most studied job characteristic (Morgeson & Humphrey, 2006), is the degree of independence a job affords an employee regarding the processes used, how the work is conducted, and how they schedule their work. High autonomy allows employees to feel they "own" the outcomes of their work through a sense of responsibility, while low autonomy may create the tendency to attribute both failures and successes to others (Hackman & Oldham, 1976). There have been numerous meta-analyses depicting consistent positive relationships between the JCM model's five job characteristics and the outcomes of satisfaction, OC, and turnover intentions (Brown & Peterson, 1993; Fried & Ferris, 1987; Humphrey, Nahrgang, & Morgeson, 2007; Loher, Noe, Moeller, & Fitzgerald, 1985; Spector, 1985). Thus there is overwhelming support for these relationships, including multiple longitudinal studies (Griffin, 1991).

Although work design theories other than the JCM have focused on well-being outcomes, the JCM has not. For example, research on the Demand-Control-Support model (Karasek & Theorell, 1990) and the Job Demands-Resources model (Demerouti, Bakker, Nauchreiner, & Shaufeli, 2001) has alluded to the positive effects of autonomy on well-being, suggesting that as a job resource for employees, autonomy can buffer potential perceptions of stress because it minimizes negative effects of job demands. Therefore, there is initial evidence suggesting autonomy's buffering effect on negative well-being outcomes, yet, as an extension of the commonly used JCM, it is important to further examine how job characteristics from this model may specifically impact perceptions of stress. Thus this study includes tests of this outcome variable. Therefore, we hypothesize:

H1a-d: Employees who report their jobs to be higher on autonomy will have higher job satisfaction and OC but lower turnover intentions and perceptions of stress than those with jobs lower on autonomy.

Support for Task Significance—Worker Outcome Relationships

Task significance entails how much a job sufficiently impacts others either in (supervisors, subordinates, co-workers) or beyond the organization, including customers or even society as a whole (Hackman & Oldham, 1976). Higher levels of task significance are likely to be linked to higher job satisfaction and OC but lower turnover intentions for many workers because the sense of meaning it provides creates a clear connection between one's job and how it impacts others. Hackman and Oldham's (1976) work supported this relationship as do several meta-analyses (Brown & Peterson, 1993; Loher et al., 1985) and later individual studies (e.g., Li & Bagger, 2012; Thatcher, Stepina, & Boyle, 2003). Therefore, there is substantial research to support positive relationships between task significance with job satisfaction, OC, and turnover intentions.

Task significance-perceptions of stress relationships have been much less studied prior to our research. Potentially, higher meaning attributed to one's job through high levels of task significance could ameliorate

perceptions that one's job is stressful. Employees could be energized and their stress perceptions may be buffered by a clear link of how their job positively impacts others. The only current study including the examination of task significance and well-being is Liu, Shi, Zhang, Wang, Xie, and Zhang's (2014) with a sample of psychiatric clinical staff workers in China. They found all five of the JCM's job characteristics were positively related to higher subjective well-being and these relationships were mediated by work engagement. However, they did not report on individual job characteristics' relationships with well-being, so it cannot be known what the distinct relationships are for autonomy, skill variety, and task significance with stress perceptions. We hypothesize:

H2a-d: Employees who report their jobs to be higher on task significance will have higher job satisfaction and OC but lower turnover intentions and perceptions of stress than those with jobs lower on task significance.

Support for Skill Variety—Worker Outcome Relationships

The larger the assortment of procedures, operations, and behaviors needed to perform the job, the higher the job's level of skill variety (Dubinsky & Skinner, 1984). The beneficial impact of skill variety on worker outcomes is due to a sense of meaning derived from one's work by utilizing various skills in the job which also make the job more interesting and less monotonous (Oldham, Hackman, & Pearce, 1976). As with autonomy and task significance, there is also a large amount of research that indicates positive relationships between skill variety and job satisfaction as well as OC, and a negative relationship with turnover intentions including several meta-analyses (Griffin, 1991; Loher et al., 1985; Mathieu & Zajac, 1990) and more recent individual studies (Bos, Donders, Schouteten, & van der Gulden, 2013) as well as longitudinal studies (Taris, 1999).

However, there is less research regarding the outcome of stress. Many workers may find increased skill variety within their job to lead to lower perceptions of stress because the variety involved may create more interesting work or less routinized job functions which could be less stressful due to minimizing repetition, and there are initial findings to support this. For example, the aforementioned longitudinal study by Taris (1999) found higher levels of both variety and autonomy were related to higher levels of mental well-being. Through another longitudinal study, with a sample of Finnish workers, Hakanen, Bakker, and Jokisaari (2011) found skill variety was negatively related to burnout as measured 13 years later. This relationship existed even after controlling for pre-existing sources of stress and therefore is quite compelling. These studies provide initial evidence for higher skill variety being linked to lower stress levels. We hypothesize:

H3a-d: Employees who report their jobs to be higher on skill variety will have higher job satisfaction and OC but lower turnover intentions and perceptions of stress than those with jobs lower on skill variety.

Job Type

Recent research points to the importance of occupational context (Dierdorff & Morgeson, 2013; Tomislav, 2011) and its influence on employees' perceptions of their work. Dierdorff, Rubin, and Morgeson (2009) found that task context is predictive of role/job requirements. Furthermore, Morgeson, Dierdorff, and Hmurovic (2010) explain how occupational context can "influence the relationships between work design features and various outcomes" (p. 351), yet they argue despite its importance, this has been understudied in regards to the effects of job characteristics. Different jobs involve varying responsibilities and requirements (Dunnette, 1999) and thus job type seems to influence whether a given job characteristic can even emerge. Varying jobs involve different features and thus perhaps meaningful differences are likely to occur on job characteristics across jobs because

employees differ in their expectations of the features and tasks (Dierdorff & Morgeson, 2007; Morgeson & Humphrey, 2006). For example, some jobs do not require much autonomy, so increasing autonomy levels in these cases may not affect workers' perceptions of their job and if workers in certain jobs do not expect autonomy, even if they find themselves in a job that does have high levels, it may have little impact on worker outcomes. However, for employees who expect high levels of autonomy because their jobs typically include it, this can beneficially impact their worker outcomes but could certainly be quite detrimental to these outcomes if they do not receive high levels of it.

An occupation is a set of job roles across organizations that have common work requirements such as tasks, responsibilities, goals, or methods of achieving these responsibilities, as well as sharing employee requirements such as knowledge, skills, abilities (Morgeson, Dierdorff, & Hmurovic, 2010). A common past differentiation among types of jobs is the dichotomous distinction between those that are white-collar and those considered blue-collar. Blue-collar work typically involves manual work that is paid on an hourly basis, while white-collar jobs are usually salary-based in regards to pay and are typically well-educated in terms of formal schooling (Suttle, 2013). White-collar work also often involves highly skilled work and thus these workers are often considered professionals. Several examples of blue-collar job categories are craft and related trades workers, plant and machine operators and assemblers, as well as construction and manufacturing workers, while the categories of managers, healthcare practitioners, technicians, and associate professionals are deemed white-collar job categories (Root & Sebastian, 1981).

As the service industry is the largest industry in the U.S. American economy (Bureau of Labor Statistics, 2012) as is the case in many other countries, job type categorization must be broadened from the past conceptualization of only white- and blue-collar jobs. Pink-collar jobs (service workers, clerks, shop and market sales workers) are currently an important job type to consider in regards to experiences of work. Kuo and Ho (2010) found the five job characteristics from the JCM to have a positive impact on service quality, yet relationships between specific job characteristics and worker outcomes have been rarely studied for pink-collar jobs. One study that did use a sample of service workers in the context of job characteristic-job satisfaction relationships found autonomy, task significance, and skill variety were significantly positively linked to job satisfaction (Ford & Wooldridge, 2012). The three job types of white-, pink-, and blue- collar are independently defined but it should be noted, that due to the similar nature of white- and pink- collar jobs being less repetitive and structured compared to blue-collar work, white- and pink- collar jobs are expected to have similar job characteristic-worker outcome relationships and are thus grouped together for hypotheses and analyses (and compared to blue-collar jobs).
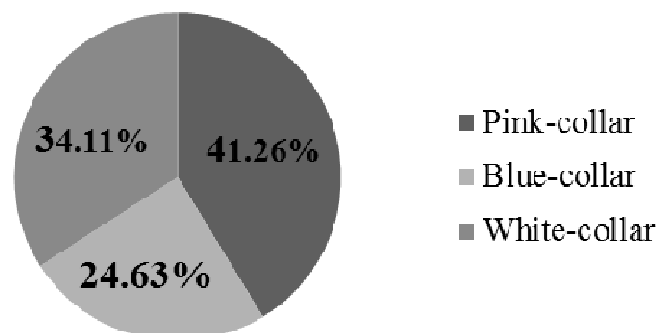

Figure 1. Percentage of the U.S.A.'s workforce in each job type. (*Note.* All data from major occupation categories from the Bureau of Labor Statistics (2012) are included.)

At the current stage of work design research, it would be useful to conduct a systematic study of autonomy, skill variety, and task significance in relation to worker outcomes. A major contribution of this study is that it tests for job type's moderation of the strength of job characteristic-worker outcome relationships, as opposed to many past studies that have focused only on mean differences across job types. Theoretical rationale and preliminary research suggest job type may play a moderating role in relationships between job characteristics and the outcome variables of job satisfaction, OC, turnover intentions, and perception of the job as stressful. Relevant research for each of these variables will be discussed in turn.

Job Type Moderating Autonomy—Worker Outcome Relationships

As employees across job types are likely to expect differing amounts of autonomy, it is likely that job type will moderate autonomy-worker outcome relationships because those who obtain high levels of autonomy in their job and did not expect to (blue-collar workers) are not likely to be as impacted by the existence of this job characteristic as employees in white- and pink- collar jobs who have clear expectations that they will have control in how their work is done.

Job Type and Autonomy—Job Satisfaction Relationship

There is some clear evidence for job satisfaction varying on job type. For example, Weaver's work (1980) shows the general tendency for white-collar workers to have higher job satisfaction than blue-collar workers. Furthermore, Stepina (1985) found a consistent positive relationship between position level and job satisfaction, and Liu (2008) found higher reported job satisfaction for executives and major professionals than administrative, sales, clerical workers, machine operators, minor professionals, technicians, or semiskilled workers. Additionally, Kawada and Otsuka (2011) reported that compared to clerical workers, blue-collar unskilled manual workers reported significantly higher levels of job dissatisfaction.

In a study incorporating a sample of 57 jobs from 37 organizations in Hong Kong, Birnbaum, Farh, and Wong (1986) found significant differences across jobs for ratings of skill variety, autonomy, task significance, and task identity. More importantly, they reported job satisfaction had significantly differential findings across jobs as well, supporting the importance of including job type as a factor in understanding job characteristics' effects on employee perceptions of their work. However, they examined this in an exploratory manner and do not report on specific patterns of job type's effect, stating simply that they found significant differences across jobs on satisfaction. In addition, several studies by Snibbe and Markus (2005) indicated employees with high school degrees and working in blue-collar jobs responded to autonomy being taken away from them differently in experimental tasks than college graduates, suggesting though some level of choice and autonomy would likely be appreciated by both groups, the college graduates sought after and responded more positively to autonomy when it was given and responded more negatively when it was taken away than the other group. The findings suggest education and job type may impact the level of autonomy one is used to and in turn how it is perceived. The same relationships are expected for white- and pink- collar jobs due to their similar tendencies to be less structured and to include a higher variation of responsibilities, which in turn creates higher expectations for autonomy in these jobs than for blue-collar workers. Therefore, we hypothesize:

H4a: There will be a stronger positive relationship between autonomy and job satisfaction for white- and pink- collar jobs than for blue-collar jobs.

Job Type and Autonomy—OC Relationship

Cohen's meta-analysis (1992) found autonomy affected OC more strongly for white-collar professionals than other job types and after this meta-analysis, several studies have more explicitly taken job type into consideration. Morrison and Savery (1996) found blue-collar workers to have lower OC and lower satisfaction compared to workers holding technical staff and supervisor positions. Also, Suman and Srivastava (2010) specifically focused on antecedents of OC across two different types of jobs; technical and service. They found that personal factors seem to affect OC for service workers more than those in technical jobs, yet further research is needed because this study did not include the job characteristics of skill variety or task significance. Suman and Srivastava (2010) suggest the reason for job type's moderating effect on autonomy-OC relationships may be due to those in white- and pink- collar jobs having expectations for autonomy making it an antecedent of OC, while personal characteristics may play a larger role in OC levels for blue-collar workers.

Later, Suman and Srivastava (2012) broke job type down further into three levels within an Indian steel plant; executives, supervisors, and blue-collar workers. They found the personal variable of locus of control to be the only significant predictor of OC for the blue-collar group while organizational structure and job characteristics were the most significant predictors of OC for the supervisor and executive groups, further indicating the potential that job characteristics more strongly impact white- than blue- collar workers, though again, they only included autonomy but not skill variety or task significance. We hypothesize:

H4b: There will be a stronger positive relationship between autonomy and organizational commitment for white- and pink-collar jobs than for blue-collar jobs.

Job Type and Autonomy—Turnover Intentions Relationship

There is minimal research regarding job type's moderating effect on job characteristic-turnover intentions relationships and most that exists alludes to the impact of job type without directly testing job characteristics (Chelte & Tausky, 1986). However, job type is expected to affect the impact of autonomy on turnover intentions based on the rationale that the typical JCM relationships may be weaker for blue-collar jobs than white- or pink- collar jobs due to the suppressed expectations for autonomy in blue-collar work (Cox, 1985). Campbell and Campbell (2003) found perceptions of their work (job characteristics), opportunity for advancement, and feelings of stress and overload to significantly predict turnover intentions among male managers, while organizational support and job characteristics were the only significant predictors for male non-managers. However, they did not test for job characteristics separately and thus conclusions cannot yet be drawn regarding if these hold varying predictive power for turnover intentions between different job types. We hypothesize:

H4c: There will be a stronger negative relationship between autonomy and turnover intentions for white- and pink-collar jobs than for blue-collar jobs.

Job Type and Autonomy—Perceptions of Stress Relationship

There seems to be minimal research in regards to blue-collar workers and well-being outcomes including perceptions of stress (Donald & Siu, 2001). However, one study found prison supervisors to have lower levels of job stress than other prison jobs (Lambert & Paoline, 2008), indicating lower ranking positions had more negative perceptions of stress in their jobs. In line with this finding, Parkes and Von Rabenau (1993) found higher job levels were linked to lower prevalence levels of health problems, indicating better well-being for pink- and white- collar than blue-collar workers. The researchers stated the variance accounted for across

various job types was "independent of that associated with perceived demand" (p. 251), meaning the demands involved in lower level positions were not the source of more health issues. Therefore, we hypothesize:

H4d: There will be a stronger negative relationship between autonomy and perceptions of the job as stressful for white- and pink- collar jobs than for blue-collar jobs.

Job Type Moderating Skill Variety—Worker Outcome Relationships

As mentioned earlier, Morgeson et al. (2010) explain how job type can moderate relationships between job characteristics and various outcomes and this includes the job characteristic of skill variety. For example, Hakanen, Bakker, and Jokisaari (2011) found employees with higher levels of education reported higher levels of skill variety in their jobs. They explained that those with higher formal degrees in education have jobs that involve the possibility of using a wider range of skills but those with less education have jobs with more repetitive tasks and limited skill variety. Liu's (2008) dissertation involving Taiwanese expatriate workers in China found employees in jobs categorized as higher executives and major professionals reported higher levels of skill variety and autonomy than minor professionals, administrative personnel, sales or clerical employees, technicians, machine operators, or semiskilled workers. Liu (2008) also found higher reported job satisfaction as well as OC for higher executives and major professionals than administrative, sales, clerical workers, machine operators, minor professionals, technicians, or semiskilled workers, suggesting the moderation of job type between job characteristics and worker outcomes predicted by our study. Job type is also expected to be a moderator for skill variety-worker outcome relationships due to differing expectations for the amount of skill variety anticipated across job types which may impede the beneficial effects of skill variety on worker outcomes that have been found in JCM research (e.g., Bos, Donders, Schouteten, & van der Gulden, 2013; Lambert & Paoline, 2008) for blue-collar jobs.

Job Type and Skill Variety—Job Satisfaction and Skill Variety—OC Relationships

Due to the typical routinized and structured nature of blue-collar work, expectations for skill variety may be lower within these jobs compared to white- or pink- collar jobs, which inherently would lead to weaker relationships between skill variety and job satisfaction for blue-collar jobs compared to other job types. There have been several studies showing the link between skill variety and job satisfaction but the moderating role of job type has never been tested in this relationship, nor has its potential moderating role in skill variety-OC relationships. Regarding the two existing studies specifically utilizing pink-collar workers, Dubinsky and Skinner (1984) found the common positive relationship between several job characteristics (skill variety, role ambiguity, and role conflict) and job satisfaction in a sample of salespeople. In addition, Iecovich (2011) found both job variety and autonomy were positively linked to overall job satisfaction with a sample of live-in home care workers. These two studies provide initial support for skill variety's positive relationship with job satisfaction in the service industry. Yet no comparisons have been made with other job types within the same study as this study does. We hypothesize:

H5a and b: There will be a stronger positive relationship between skill variety and job satisfaction as well as organizational commitment for white- and pink- collar jobs than for blue-collar jobs.

Job Type and Skill Variety—Turnover Intentions Relationship

If expectation differences exist for skill variety levels across jobs as predicted, this in turn would also impact skill variety's effect on turnover intentions. Typical findings from the JCM could not necessarily be

expected for jobs in which skill variety is anticipated less (blue-collar). However, for white- and pink- collar jobs which typically highly value and expect skill variety, common findings regarding a negative relationship between skill variety and turnover intentions could be expected. Regarding skill variety's differential impact on turnover intentions across jobs, though Chelte and Tausky (1986) did not focus on job characteristics from the JCM beyond skill variety, they did find that across three occupation levels (administrators, faculty, and blue-collar workers), the antecedents varied greatly for turnover intentions. In addition, Jerneić and Kutleša (2012) found job level to moderate the job attitude-turnover intentions relationship, such that differential turnover intention predictors for junior researchers and higher level researchers in an organization were found. We hypothesize:

H5c: There will be a stronger negative relationship between skill variety and turnover intentions for white- and pink- collar jobs than for blue-collar jobs.

Job Type and Skill Variety—Perception of Stress Relationship

Regarding the impact of job type on the relationship between skill variety and perceptions of stress, it is important to note that overall, blue-collar workers tend to have higher injury and illness incident rates than white-collar workers (Root & Sebastian, 1981) and general higher stress levels for blue-collar compared to white-collar jobs have been explained in terms of blue-collar workers' higher prevalence rates for shift work (Monk & Tepas, 1985), repetitive work (Cox, 1985), and machine-paced work (Smith, 1985), which have low skill variety and low task significance overall. Based on the similar nature of white- and pink- collar work (both typically less structured than blue-collar jobs), it is logical that employees in pink-collar jobs may also have higher well-being than those in blue-collar jobs. Though related existing research regarding job type as a moderator of skill variety-well-being relationships is very limited, there is initial support to suggest these relationships would be stronger for pink- and white- collar jobs compared to those that are blue-collar. We hypothesize:

H5d: There will be a stronger negative relationship between skill variety and perceptions of the job as stressful for white- and pink- collar jobs than for blue-collar jobs.

Job Type Moderating Task Significance—Worker Outcome Relationships

Based on findings that blue-collar work is often more routinized, structured, and monotonous (Cox, 1985) and thus blue-collar workers are likely to have fewer expectations for task significance, this may limit the extent to which meaning through task significance can affect worker outcomes in these jobs. Essentially, blue-collar work is likely to be limited in the amount of task significance that occurs and in turn limits the beneficial impact that task significance can have on worker outcomes. However, due to their typical less structured nature and higher expectations for task significance in their work, white- and pink- collar workers may have stronger relationships between this characteristic and the worker outcomes in this study.

Job Type and Task Significance—Worker Outcome Relationships

No research yet to date has studied the potential moderating effect of job type on relationships between task significance and job satisfaction, OC, as well as perceptions of the job as stressful, and thus this study attempts to fill the gap in this important area of research. There is however one study that provides initial support for the moderating role of job type on the task significance-turnover intentions relationship. Huang (2011) conducted a study of job characteristics with Chinese and Japanese samples and found a consistency across these two countries that as expected, white-collar jobs were reported by employees as having higher

levels of task significance, learning, and autonomy than blue-collar jobs. Furthermore, general patterns of the aforementioned job characteristics with turnover intentions were also in support of the JCM for white-collar jobs. It is clear that further research is needed in order to explicitly test for the moderating effect of job type on all task significance-worker outcome relationships. We hypothesize:

H6a-d: There will be a stronger positive relationship between task significance and both job satisfaction and OC, but a stronger negative relationship between task significance and both turnover intentions and perceptions of the job as stressful for white- and pink- collar jobs than for blue-collar jobs.

Method

Participants and Dataset

This study utilized the Work Orientation Survey III dataset which is a multi-stage random stratified sample collected by the International Social Survey Programme from 2005 through 2007. Data was collected via a standardized survey given by mail in a written format, orally in person, or in person with a written format, depending on the country. All participants were 18 years or older except for in Finland and Japan which have age minimums of 15 and 16 years respectively. Only employees working full-time, who are not self-employed, and who work for pay were utilized from this dataset. The age range was 16-87 years ($M = 40.69$, $SD = 11.59$) and fifty-five percent of the participants were male in the data used for this study.

The following are the countries included in the final dataset: Canada ($n = 371$), Switzerland ($n = 384$), the Netherlands ($n = 467$), Germany: West ($n = 339$) and East ($n = 188$), Australia ($n = 637$), Spain ($n = 397$), Denmark ($n = 752$), Finland ($n = 455$), France ($n = 744$), Hungary ($n = 345$), England ($n = 285$), Ireland ($n = 339$), Israel ($n = 324$), Japan ($n = 285$), South Korea ($n = 435$), Mexico ($n = 298$), Portugal ($n = 811$), New Zealand ($n = 504$), the Philippines ($n = 168$), Russia ($n = 740$), Sweden ($n = 508$), Slovenia ($n = 411$), Taiwan ($n = 836$), and the USA ($n = 695$), resulting in a final sample size of 11,718 which is a sufficient sample for analyses run in this study (Scherbaum & Ferreter, 2009).

Measures

All measures are items from the Work Orientation Survey III (2005-2007) wave. As described below, most of the scales for the job characteristics and worker outcome variables have varying response options and numbers of response options. Therefore, they were standardized to z-scores before calculating the mean score of each participant's perception of the three job characteristics and the dependent variables so as to put all responses on the same scale.

Job characteristic of autonomy. Autonomy was measured with three items. The first item is "I can work independently", with response options ranging 1-5 on a Likert scale, 1 being "Strongly agree" to 5 for "Strongly disagree". As higher scores for this item in the original dataset indicated lower autonomy, this item was reverse scored so higher scores indicated higher autonomy. The second item is "Which of the following statements best describes how your working hours are decided? (By working hours we mean here the times you start and finish work, and not the total hours you work per week or month)". Response options for this item ranged from 1-3; "Starting and finishing times are decided by my employer and I cannot change them on my own", "I can decide the time I start and finish work, within certain limits", and "I am entirely free to decide when I start and finish work", with the first response option scored as 1, the second as 2, and the third as 3. For this item, higher scores indicate higher autonomy so it was not reverse scored. The third item is "Which of the

following statements best describes how your daily work is organized?", with response options ranging from 1-3; "I'm free to decide how my daily work is organized", "I can decide how my daily work is organized, within certain limits", or "I am not free to decide how my daily work is organized". In the original dataset higher response values on this item indicated less autonomy on the job. Therefore, this item was reverse scored so higher scores indicated higher autonomy prior to standardizing and calculating a mean score for autonomy. These items are similar to those of other measures of job autonomy (Bass & Grzywacz, 2011; Hackman & Oldham, 1974). A composite score was created by aggregating the scores of these three items ($\alpha = 0.62$).

Job characteristic of task significance. Task significance was measured with two items; "In my job I can help other people" and "My job is useful to society". Both items had response options from 1-5, 1 being "Strongly agree" to 5 for "Strongly disagree". Low scores indicate high task significance. These items were reversed scored in order for higher scores to indicate greater task significance. These two items are similar to those of Hackman and Oldham's (1974) and Morgeson and Humphrey's (2006) task significance scale. A task significance score was created by aggregating the scores of these two items ($\alpha = 0.72$).

Job characteristic of skill variety. Skill variety was measured with two items; "My job is interesting" and "My job gives me a chance to improve my skills". Both of these items had response options from 1-5, 1 being "Strongly agree" to 5 for "Strongly disagree" with low scores indicating high skill variety, but they were reverse scored so higher scores indicated high skill variety. These two items were aggregated to create a skill variety score ($\alpha = 0.70$) and these items are similar to skill variety items used in pre-existing measures (Bass & Grzywacz, 2011).

Job satisfaction. This variable was measured with one item, "How satisfied are you in your (main) job?" which is similar to Malach-Pines and Keinan's (2006) general job satisfaction item. Responses were on a 7 point Likert scale, with 1 being "Completely satisfied" to 7 being "Completely dissatisfied". In the original dataset, low scores indicate higher job satisfaction so this item was reverse scored in order for a higher score to indicate greater satisfaction.

Organizational commitment. This variable was measured with two items; "I am willing to work harder than I have to in order to help the firm or organization I work for succeed" and "I am proud to be working for my firm or organization". These items were on a 5-point Likert scale, with 1 being "Strongly agree" and 5 for "Strongly disagree". In the original dataset, higher scores indicated lower OC but these items were reversed scored in order for higher scores to indicate greater OC. These items are similar to those used in other measures of OC (e.g., Emberland & Rundmo, 2010). A composite score for each respondent was created by aggregating the scores of these two items ($\alpha = 0.69$).

Turnover intentions. Turnover intentions were measured with two items. The first item is "I would turn down another job that offered quite a bit more pay in order to stay with this organization". The response scale for this item is a 5 point Likert scale, with 1 being "Strongly agree" and 5 being "Strongly disagree". A higher score on this item indicates higher turnover intentions. The second item is "All in all, how likely is it that you will try to find a job with another firm or organization within the next 12 months?", which is on a 4-point Likert scale with 1 being "Very likely" to 4 being "Very unlikely". A lower score on this item indicates higher turnover intentions in the original dataset but this item was reverse scored in order for higher scores to indicate higher turnover intentions. These items are similar to those of other turnover intentions scales (Bozeman & Perrewe, 2001; Jung & Yoon, 2013). A composite score for each respondent was created by aggregating the scores of these two items ($\alpha = 0.48$).

Perceptions of the job as stressful. This variable was measured with one item; "How often do you find your work stressful"? The response options for this item range from 1-5, with 1 indicating "Always", to 5 indicating "Never", with higher scores indicating lower stress. Higher scores indicate higher perceptions of the job as stressful and this item is similar to pre-existing items of stress (Hystad, Eid, & Brevik, 2011).

Procedure: Coding Job Type

The dataset included the occupation title and international labor organization code of each respondent's job. The principle investigator coded these occupation titles as blue-collar, white-collar, or pink-collar in line with the aforementioned existing definitions of each job type in the literature. The co-author then examined the coding and discussed minor adjustments to the coding scheme with the principle investigator. A consensus was reached through discussion between the two authors for the final coding of each job title. Due to the nature of the jobs regarding their typical activities and structure, white- and pink- collar jobs are more similar to each other than they are to blue-collar jobs. Therefore, to test the hypotheses related to these expectations, white- and pink- collar jobs were coded jointly (both coded as 1) while blue-collar jobs were coded independently (coded as 0). All analyses testing for the moderating role of job type were also done with white-, pink-, and blue- collar jobs all coded separately. Out of the 15 relationships, only one became significant when all three job types were coded separately, though this relationship did not change in direction. No other relationships changed regarding significance levels or the direction of the relationships.

Results

Standardizing Measures

Descriptive analyses were examined for each item and means and standard deviations of each item on the original metric (prior to standardizing) but reverse coded when appropriate are included in Table 1. All subsequent analyses report on standardized data.

Table 1

Means and Standard Deviations of Each Item on Original Metric

Item	M	SD
Autonomy 1[a]	3.76	1.08
Autonomy 2[b]	1.52	0.62
Autonomy 3[b]	1.95	0.70
Task significance 1[a]	3.82	1.01
Task significance 2[a]	3.85	0.98
Skill variety 1[a]	3.82	1.00
Skill variety 2[a]	3.74	1.04
Job satisfaction[c]	5.22	1.17
OC 1[a]	3.50	1.08
OC 2[a]	3.69	0.96
Turnover intentions 1[a]	3.34	1.22
Turnover intentions 2[d]	1.97	1.00
Perception as stressful [a]	3.25	1.02

Notes. [a] = 5-point Likert scale; [b] = 3-point scale (not Likert scale); [c] = 7-point Likert scale; [d] = 4-point Likert scale.

Correlations

Interrcorrelations for job characteristics, worker outcomes, and age are presented in Table 2. Prior research

has found age to affect perceptions of job characteristics and actual worker outcomes (Bos et al., 2013). Therefore, correlations were examined between age and all the variables in this study. As age was significantly correlated with each job characteristic as well as all but one worker outcome, age was used as a control variable at level 1 in all multilevel analyses. Table 3 presents the intercorrelations between each job characteristic and job type.

Table 2

Intercorrelations for Dependent Variables and Age after Standardizing

Variable	1	2	3	4	5	6	7	8
1. OC								
2. Satisfaction	0.48**							
3. Stress	-0.06**	-0.19**						
4. Turnover Intentions	-0.40**	-0.45**	0.09**					
5. Age	0.04**	0.08**	0.01	-0.23**				
6. Autonomy	0.28**	0.26**	-0.02*	-0.13**	0.06**			
7. Skill Variety	0.46**	0.50**	0.01	-0.28**	0.12**	0.39**		
8. Task Significance	0.29**	0.28**	0.03**	-0.19**	0.08**	0.18**	0.49**	
9. Gender	-0.03**	0.00	0.03**	0.00	-0.05**	-0.08**	0.01	0.08**

Notes. * $p < 0.05$ level (two-tailed); ** $p < 0.01$ level (two-tailed); Gender was coded with male = 1, female = 2.

Table 3

Intercorrelations for Job Characteristics and Job Type after Standardizing

Variable	1	2	3
1. Autonomy			
2. Skill Variety	0.24**		
3. Task Significance	0.18**	0.19**	
4. Job Type	0.22**	0.17**	0.14**

Note. ** $p < 0.01$ level (two-tailed).

Multilevel Analyses

Given the nested structure of the data, multilevel modeling was used in this study. In nested data situations, the assumption of independence of observations cannot be ensured (Raudenbush & Bryk, 2002) due to the relationships that exist among the individuals that are nested within the same job. Specifically, perceptions of job characteristics may be more similar within a given job type than across jobs because there may be aspects of their environment that affect all the participants in a given job in the same way.

Various sets of analyses were done to test whether job characteristic-worker outcome relationships systematically differ as a function of job type. The first set of analyses determined if job characteristics predict worker outcomes with no level 2 predictors (replication of JCM relationships). The second set tested if there is an effect of job type on worker outcomes. For all statistical models, separate analyses for each dependent variable (job satisfaction, OC, turnover intentions, and perceptions of the job as stressful) were conducted.

Null models. The analyses started with an examination of the null model which is shown in the first set of equations. In the null model, the level 1 (participant-level) equation is:

$$\gamma_{ij} = \beta_{oj} + r_{ij} \qquad \text{Eq. 1}$$

γ_{ij} represents the individual score of a specific participant on the dependent variables. β_{oj} is the mean level of the dependent variable for the jth individual in a group (group mean) and r_{ij} is the level 1 residual which shows the variance not accounted for within individual scores. The level 2 equation for the null model is:

$$\beta_{0j} = \gamma_{00} + \mu_{0j} \qquad \text{Eq. 2}$$

γ_{00} is the grand mean across all job types. Therefore, the group mean is a function of the sum of the grand mean and the between group variance (μ_{0j}). Before the hypotheses regarding the moderating effect of job type were tested, it was determined that there was variation among the group means.

Level 1 analyses. Hypothesis 1a which predicts employees who report their jobs to be higher on autonomy will have higher job satisfaction than those with jobs lower on autonomy was tested by the below equation set 3. The same analyses were conducted to test for the effect of autonomy on OC, turnover intentions, and perceptions of the job as stressful. Furthermore, the same procedure was done to test the effects of task significance and skill variety on all four worker outcomes. For these hypotheses to be supported, γ_{10} needed to be significant.

Level 1:

$$JobSatisfaction = \beta_{0j} + \beta_{1j}(AUTONOMY) + \beta_{2j}(AGE) + r_0 \qquad \text{Eq. 3}$$

Level 2:

$$\beta_0 = \gamma_{00} + \mu_{0j}$$

$$\beta_1 = \gamma_{10} + \mu_{1j}$$

$$\beta_2 = \gamma_{20} + \mu_{2j}$$

Variance components. Variance components indicate whether or not significant variance is left unexplained at a given level. τ_{00} represents the variance component in the level 2 intercept term and if significant, this indicates some jobs have higher mean scores on a given worker outcome than others. Furthermore, τ_{11} represents the variance component in the level 2 slope term and if significant, it indicates that there is variability in the level 1 slopes that is unexplained by the level 2 predictors (Snijders & Bosker, 1994). Therefore, all results tables for multilevel analyses conducted include variance components and indicate whether they are significant.

Effect size. Effect sizes for level 1 as well as for all level 2 relationships were computed using Snijders and Bosker's (1994) technique of computing total variance explained which utilizes both level 1 and 2 variance components to avoid issues of negative values that commonly occur when computing amount of variance explained in a multilevel model using other effect size calculations. In their empirical test of various measures for computing variance explained in multilevel models, LaHuis, Hartman, Hakoyama, and Clark (2014) found the S&B technique to be an appropriate manner of calculating explained variance. Equation 4 shows Snijders and Bosker's (1994) technique. All multilevel analyses results tables include these effect sizes.

$$\text{Effect size} = 1 - \frac{(\sigma^2 full + \tau 00 full)}{(\sigma^2 null + \tau 00 null)} \qquad \text{Eq. 4}$$

This effect size is computed by estimating total variance from a model with no predictor and total variance from a model with relevant predictors.

Autonomy. Hypotheses 1a and 1b predicted significantly positive relationships between autonomy and both job satisfaction and OC, while Hypotheses 1c, and 1d stated negative relationships were expected for autonomy with the worker outcome variables of turnover intentions, and perceptions of the job as stressful. Significant relationships (γ_{10}) between autonomy and each of the worker outcome variables were in the predicted direction ($p < 0.001$). Thus, Hypotheses 1a-1d were supported. As shown in Table 4 which indicates the estimates for the variance components and effect sizes, there is significant variance unexplained for the relationships between autonomy (as well as skill variety and task significance) and the outcomes of OC, turnover intentions, and perceptions of the job as stressful, suggesting there is further variance that could be explained by a level 2 predictor, such as job type.

Table 4

Level 1 Analyses for Job Characteristic—Worker Outcome Relationships Controlling for Age

Variable	df	Coefficient (γ_{10})	Standard Error	τ_{11}	Effect Size
Autonomy					
OC	475	0.31***	0.01	0.01***	0.10
Satisfaction	475	0.35***	0.01	0.01	0.08
Turnover intentions	475	-0.13***	0.01	0.01*	0.02
Stress	475	-0.07***	0.01	0.01**	-0.02
Skill variety					
OC	475	0.45***	0.01	0.00	0.22
Satisfaction	475	0.57**	0.01	0.00***	0.27
Turnover Intentions	475	-0.26**	0.01	0.00**	0.16
Stress	475	-0.03	0.01	0.00**	0.09
Task significance					
OC	475	0.30***	0.01	0.01***	0.10
Satisfaction	475	0.31***	0.01	0.01**	0.08
Turnover Intentions	475	-0.16***	0.01	0.00	0.03
Stress	475	0.00	0.01	0.01*	0.01

Notes. * indicates significance at the 0.05 level; ** indicates significance at the 0.01 level; *** indicates significance at the 0.001 level.

Skill variety. Hypotheses 2a and 2b predicted significantly positive relationships between skill variety and both job satisfaction and OC, while Hypotheses 2c, and 2d stated negative relationships were expected for skill variety with turnover intentions and perceptions of the job as stressful. For the relationships between skill variety and each of the four worker outcome variables, all were in the predicted direction ($p < 0.001$) for each relationship except for perceptions of the job as stressful. Thus, Hypotheses 2a-2c were supported.

Task significance. Hypotheses 3a and 3b predicted significantly positive relationships between task significance and both job satisfaction and OC, while Hypotheses 3c, and 3d stated negative relationships were expected for task significance with turnover intentions and perceptions of the job as stressful. Significant relationships between task significance and the three worker outcome variables of job satisfaction, OC, and turnover intentions were in the predicted direction ($p < 0.001$). Thus, Hypotheses 3a, 3b, and 3c were supported. However, no support for Hypothesis 3d was found, as there was no significant relationship found between task significance and perceptions of the job as stressful ($p = 0.72$).

Level 2 analyses for effect of job type. At level 2, job type was entered into the model to test if it moderated the level 1 relationships. An example of the level 2 set of equations (Equation 5) to test this set of hypotheses is below for Hypothesis 4a and γ_{11} needed to be significant in these equations to be supported. This would indicate that relationships between level 1 variables are moderated by job type. The same steps were taken to test for the effect of job type on autonomy on the other three dependent variables as well as the effect of job type on the relationships between the job characteristics of skill variety and task significance on all four worker outcomes.

Level 1:

$$JobSatisfaction = \beta_{0j} + \beta_{1j}(AUTONOMY) + \beta_{2j}(AGE) + r_0 \qquad \text{Eq. 5}$$

Level 2:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(JOBTYPE_j) + \mu_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}(JOBTYPE_j) + \mu_{1j}$$

$$\beta_{2j} = \gamma_{20} + \gamma_{21} + \mu_{2j}$$

Autonomy. Hypotheses 4a-4d predicted stronger relationships between autonomy and worker outcomes of job satisfaction, OC, turnover intentions, and perceptions of the job as stressful for white- and pink- collar jobs than for blue-collar jobs. However, there was no support for Hypotheses 4a-4d, and in fact the relationship between autonomy and OC was significantly weaker ($p < 0.01$, Effect size = 0.10) for white- and pink- collar jobs than for those that are blue-collar, which is in the opposite direction as predicted for Hypothesis 4b. Table 5 indicates the results and estimates for the variance components and effect sizes for all level 2 analyses.

Table 5

Level 2 Analyses for Effect of Job Type on Outcomes when Controlling for Age at Level 1

Variable	df	Coefficient (γ11)	Standard Error	τ11	Effect Size
Autonomy × Job type					
OC	474	-0.06**	0.03	0.01***	0.10
Satisfaction	474	-0.01	0.03	0.01	0.08
Turnover Intentions	474	0.04	0.03	0.01*	0.02
Stress	474	0.04	0.03	0.01*	0.03
Skill Variety × Job type					
OC	474	0.00	0.02	0.01**	0.22
Satisfaction	474	0.09***	0.02	0.01***	0.28
Turnover Intentions	474	-0.06**	0.02	0.00	0.10
Stress	474	0.05	0.03	0.01**	0.05
Task Significance × Job type					
OC	474	-0.06*	0.03	0.01***	0.11
Satisfaction	474	0.02	0.03	0.01**	0.08
Turnover Intentions	474	0.00	0.02	0.00	0.04
Stress	474	0.08**	0.03	0.00	0.05

Notes. * indicates significance at the 0.05 level; ** indicates significance at the 0.01 level; *** indicates significance at the 0.001 level; Job type was coded with white- and pink-collar = 1, blue-collar = 0.

Skill variety. Hypotheses 5a-5d predicted stronger relationships between skill variety and worker outcomes of job satisfaction, OC, turnover intentions, and perceptions of the job as stressful for white- and pink- collar jobs than for blue-collar jobs. While there was support for Hypothesis 5a indicating that there was a stronger relationship between skill variety and job satisfaction for white- and pink- collar jobs as compared to those that were blue-collar ($p < 0.001$, Effect Size = 0.28), there was no support for Hypotheses 5b-5d, and in fact the relationship between skill variety and turnover intentions (Hypothesis 5c) was significantly weaker ($p < 0.01$, Effect size = 0.10) for white- and pink- collar jobs than for blue-collar, which is in the opposite direction as predicted.

Task significance. Hypotheses 6a-6d predicted stronger relationships between task significance and worker outcomes of job satisfaction, OC, turnover intentions, and perceptions of the job as stressful for white- and pink- collar jobs than for blue-collar jobs. There was support for Hypothesis 6d indicating that there was a stronger relationship between task significance and perceptions of the job as stressful for white- and pink- collar jobs as compared to those that were blue-collar ($p < 0.01$, Effect size = 0.05). However, there was no support for Hypotheses 6a, 6b, or 6c and instead, the relationship between task significance and OC was significantly weaker ($p < 0.05$, Effect size = 0.11) for white- and pink- collar jobs than for those that are blue-collar, which is in the opposite direction as predicted.

Discussion

The purpose of this study was to examine job type as a potential moderator of relationships depicted by the job characteristics model (JCM). Though much existing research is in support of the general tenets of the JCM regarding job characteristics' impact on employee motivation, job satisfaction, and turnover intentions (Huang & Van de Vliert, 2003; Lambert et al., 2012; Oldham & Hackman, 1980), there are gaps in this research domain in terms of additional worker outcomes such as perceptions of the job as stressful, as well as the examination of macro-level contextual variables as possible moderators of these relationships, such as job type. Furthermore, prior research has not studied job characteristic-worker outcome relationships on a large scale cross-cultural study involving a diverse set of jobs with a multilevel design. Oldham and Hackman (2010) discuss how the context of work is changing and their model must be used in novel ways, as has Parker (2014). Our study follows this call to move work design research forward.

Theoretical Implications

Findings indicate relationships between skill variety and job satisfaction as well as between task significance and perceptions of the job as stressful were stronger for white- and pink- collar jobs compared to blue-collar jobs. Therefore as expected, these job characteristics are important to consider for organizations looking to improve satisfaction and minimize perceptions of stress for these workers. However, relationships between autonomy and OC, skill variety and turnover intentions, as well as task significance and OC were weaker for white- and pink- collar compared to blue-collar jobs, indicating manual labor and manufacturing jobs may benefit more from these job characteristics than other jobs in terms of OC and turnover intentions. The unexpected findings that pink- and white- collar jobs had weaker autonomy-OC, skill variety-turnover intentions, and task significance-OC relationships than blue-collar jobs suggests turnover intentions could be decreased and OC could be increased for blue-collar workers if they are provided these three job characteristics within their work. Perhaps the typical routinized and repetitive nature of many blue-collar jobs (Cox, 1985)

may not overpower the potential beneficial impact of these specific job characteristics in these jobs, though following Morgeson et al.'s work (2010), it was predicted they would minimize the effect of these job characteristics. Potentially these findings are rooted in blue-collar workers' stronger positive responses when experiencing these job characteristics because these jobs do not tend to have high levels of them.

The theoretical implications of the findings indicating the moderating role of job type on multiple job characteristic-worker outcome relationships indicates job type is an important contextual variable that should be acknowledged in future work design research as well as existing and future work design theories. Including job type in work design models would allow for a better understanding of which job characteristics are likely to be related to which worker outcomes given a specific job of interest. These results support the viewpoint that the relationships found by the JCM in existing research may not generalize across all jobs.

Practical Implications

The finding that job type moderated some job characteristic-worker outcome relationships is crucial information for organizations which plan to implement job redesign, as some specific job characteristics seem to be linked to important worker outcomes more in certain jobs than others. As the redesign process is often expensive and time-consuming, it is most efficient to focus those resources on jobs that may benefit most from these changes and the findings from this study offer initial evidence to guide their appropriate allocation. Additionally, the unexpected findings showing pink- and white- collar jobs had weaker autonomy-OC, skill variety-turnover intentions, and task significance-OC relationships than blue-collar jobs is valuable information for organizations attempting to improve their employee retention rate and OC levels in blue-collar jobs. These findings provide initial evidence that higher autonomy and task significance could improve OC levels of blue-collar employees and combined with skill variety, they also have less intent to leave the company. Therefore, these three job characteristics do seem to be providing meaning and a sense of personal responsibility (Hackman & Oldham, 1976) and in turn are linked to beneficial worker outcomes for blue-collar jobs, perhaps even more so than others. This is not so for findings related to skill variety-job satisfaction or task significance-perceptions of the job as stressful relationships as mentioned earlier, which indicate organizations wishing to improve satisfaction and minimize perceptions of stress from one's job for white- or pink- collar workers should focus on increasing skill variety and task significance levels respectively.

Potential Limitations

As is true of all research, there are potential limitations to the findings of this study. The first is the use of archival data. These data are cross-sectional and though longitudinal data would be quite interesting to examine, this study is a strong initial attempt to test job type as a moderator as it utilizes employee data across 24 countries and hundreds of job titles and organizations. The use of an existing data source constrains the variables available and the quality of measurement as the researcher can only use available items. For example, the effect of the job characteristics of feedback or task identity could not be tested because the dataset did not include them. In addition, job satisfaction and perceptions of the job as stressful were one-item measures so reliability estimates for the scores on these measures could not be computed. More importantly, the use of archival datasets results in a potential issue regarding measures' construct validity. Items from the dataset that were most similar to those from existing measures were used but no measure included a full range of exact items included in published scales. In support of construct validity however, many correlations between the job

characteristics and outcomes included in this study are similar to those reported in existing research (Brown & Peterson, 1993; Thatcher, Stepina, & Boyle, 2003).

Future Research

Though this study answers the recent call that has been put forth by multiple researchers (Morgeson et al., 2010; Oldham & Hackman, 2010; Parker, 2014) for large-scale, multilevel, cross-cultural work design study that examines additional moderators of job characteristic-worker outcome relationships, this is an initial study toward this purpose. We did find that job type moderates some job characteristic-worker outcome relationships. However, future research must be conducted to further examine these complex relationships in order to build theory as well as inform practitioners how, when, and why given job characteristics impact worker outcomes. Below are examples of specific areas for which to focus such future work.

First, future work should examine counterintuitive findings from this study. If these findings are replicated, subsequent studies should attempt to understand why they are occurring. Future studies could be conducted through quasi-experimental, experimental, and longitudinal designs across several years within organizations by specifically manipulating autonomy and task significance levels for a subset of both blue-collar as well as pink- and white- collar positions within a company to determine if blue-collar jobs benefit more from these characteristics regarding the specific outcome of OC than other jobs. Secondly, as the results indicate, for most job characteristic-worker outcome relationships, there was a significant amount of variance left unexplained when including job type as a level 2 predictor. This suggests other moderators may exist so future research should attempt to study additional moderators. One such variable may be organizational culture (Schein, 2010). Different types of organizational culture exist (e.g., adhocracy, clan, market, hierarchy) (Hartnell, Ou, & Kinicki, 2011) which provide an indication of which artifacts, espoused beliefs and values, and underlying assumptions are involved in a given organization. Though testing organizational culture as a moderator is a recent trend in organizational culture research (Schneider et al., 2013), this has not yet been brought forth as a moderator in the context proposed here. Third, further research is needed in regards not only to task identity and feedback (JCM variables not examined in this study), but to also go beyond the JCM's characteristics as Mohrman (2003) has done regarding the study of network building and growth/professional development job characteristics as motivators, especially for white-collar workers. In line with Grotto and Lyness' (2010) examination of autonomy and skill development job characteristics in relation to negative work to nonwork spillover, there are interesting avenues for the job characteristic of development opportunities and alternative well-being outcomes. These variables could be examined for jobs that have exceptionally high turnover rates such as those in foodservice and preparation jobs or white-collar jobs such as technicians, as a route towards minimizing turnover in these jobs while also increasing satisfaction, OC, and well-being for these workers.

Conclusion

Though the general relationships predicted by the JCM were found between the job characteristics of autonomy, skill variety, and task significance and worker outcomes of job satisfaction, OC, and turnover intentions (and at times perceptions of the job as stressful) replicating past findings for the JCM, job type was found to be a moderator of some of these relationships. Importantly however, these moderating relationships were dependent upon the specific job characteristic or worker outcome in question. For example, relationships were stronger for white- and pink- collar than blue-collar jobs in some instances but were stronger in

blue-collar jobs for others. This study provides initial evidence for this important macro-level variable in work design research while urging both researchers and practitioners alike to acknowledge the complicated nature of these relationships. It is also important to study job characteristics separately, as they have differing impacts on worker outcomes. This study's findings are useful regarding work design within organizations, as they justify that job type must be taken into account to most accurately understand how job characteristics are related to worker outcomes.

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