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Job demands, control and support: Meta-analyzing moderator effects of gender, nationality, and occupation

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ABSTRACT

The job demands-control (-support) model (JDC(S)) remains one of the most influential to HR-related issues of work stress, organizational behavior, and job design. However, despite over 37 years of research, the first meta-analysis of the model was conducted only recently. It examined interrelationships between the model's three workplace characteristics: demand, control and support in order to better understand how employees view relationships between these prominent work dimensions. A rather surprising result was the near-zero demand-control relationship, which was found to be moderated by gender. The current analysis extends our understanding of DCS interrelationships to include examination of nationality and occupation as additional moderating variables. We also build on the initial review by extending moderator analysis to relationships between demand-control-support dimensions and job satisfaction and emotional exhaustion — the two most examined psychological outcomes in primary studies. The present meta-analysis narrows the field of studies to 141 studies ($N_{(\text{Individuals})} = 145{,}424$) of Karasek's model which include these outcomes. Our findings show additional patterns of gender moderation, including moderation of the demands-job satisfaction relationship. Additionally, both nationality and occupation moderate *every* DCS interrelationship, and relationship with job satisfaction and emotional exhaustion in some way. Our results offer new understanding as to the boundaries of these relationships, and the JDC(S) model; and invite further theory building and meta-analytic investigation.

Much of organizational literature is devoted to understanding and predicting the phenomenon of stress in the workplace, given its importance to HR-related issues of work stress, organizational behavior, and job design (Kahn & Byosiere, 1992). Lazarus and Folkman (1984) defined stress as "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (p. 19). Work stress is not a single event, but a process that involves appraisal, response, and attempts to meet goals while managing *stressors*, which are demands from the work environment as experienced by individuals (Sulsky & Smith, 2005). Physiological and/or psychological reactions to these stressors constitute strain, which often arise from attempting to function effectively in the face of too many challenges (Kahn & Byosiere, 1992).

The devotion of scientific resources towards better understanding stress and strain may be motivated by its costly implications to individual and organizational health and well-being. For example, according to the American Institute for Stress, excessive work stress costs the US economy over $300 billion annually in healthcare, missed work, and stress reduction treatments (Stambor, 2006). Given these costs to individual and organizational well-being, attempts to predict and control stressors, before the onset of strain, has been a central concern in abating this "modern day pandemic" (Sulsky & Smith, 2005, p. 2). For example, numerous theories within

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organizational research have been proposed to explain how characteristics of work relate to individual stress and strain, and organizational outcomes (e.g., Cummings & Cooper, 1979; Dawis & Lofquist, 1984; Hackman & Oldham, 1976; Hobfoll, 1989).

In 1979, Robert Karasek introduced the job demand-control (JDC) model, which outlined the impact of work characteristics on stress, health, and occupational wellbeing (Karasek, 1979). Karasek envisioned job demands and job control as essential workplace characteristics for influencing employee well-being, motivation, and productivity; as well as various physiological and psychological strains. The model was later extended to account for social support at work as a third predictor of well-being and strain (job demand-control-support [JDCS]; Karasek & Theorell, 1990). Both versions of the model examine strain using two contrasting, but not mutually exclusive hypotheses. First, the *strain* hypothesis pertains to an increased likelihood of strain when demands are increased, control and/or support are decreased, or when the combined worsening of demands, control, and support creates a greater likelihood of strain than the effect of any of these separately (i.e., a multiplicative effect; Karasek & Theorell, 1990). Thus, "high strain" jobs may be the result of both additive *and* multiplicative effects of perceived demands, control and/or support (Van Vegchel, de Jonge, & Landsbergis, 2005). In contrast, the *buffer* hypothesis is concerned exclusively with interactive effects between these dimensions, based on the tenet that reducing demands is key to minimizing strain (Van der Doef & Maes, 1999).

The JDC(S) model has been highly influential in occupational stress and health literature for over 36 years, and has been the theoretical foundation of more empirical studies than any other work stress model (Griffin & Clarke, 2011; Kain & Jex, 2010). This is arguably because of the model's simplicity, ease of testing (i.e., demands, control, support, and strain occur frequently and in varied forms), and the practical implications that can be gleaned from it. Examinations of the model have taken place across a vast array of occupations and workforce demographics, on several continents. This widespread research (over 300 published examinations to date) has led to several mainly vote counting (e.g., Light & Smith, 1971) reviews of findings (i.e., Belkic, Landsbergis, Schnall, & Baker, 2004; De Lange, Taris, Kompier, Houtman, & Bongers, 2003; Häusser, Mojzisch, Niesel, & Schulz-Hardt, 2010; Schnall, Landsbergis, & Baker, 1994; Theorell & Karasek, 1996; Van der Doef & Maes, 1998, 1999), which have concluded that demands, control, and support are independently related to various forms of strain. However, a relative sparseness of multiplicative effects has led to doubts regarding the predictive value the buffer hypothesis (e.g., Beehr, Glaser, Canali, & Wallwey, 2001; De Jonge & Dormann, 2006; Taris & Kompier, 2003). For example, many studies of the buffer hypothesis have suffered from low power, which is a frequent weakness of research involving interactional effects (McClelland & Judd, 1993).

1. Meta-analytic research of the JDC(S) model

Despite its enduring contribution to work stress research, attention has only recently turned to cumulative (e.g., *meta-analytic*) research of the model. This is an important transition because accumulating and aggregating JDC(S) studies can advance the theory by contributing information about the magnitude and stability of the propositions as well as the limitations of the theory. Given the aforementioned hypotheses of the model, meta-analytic investigation of the buffer hypothesis would be revealing. However, this is prevented by a lack of uniformity in the research domain (i.e., inconsistent control variables across primary studies; van der Doef & Maes, 1999). Thus, in taking the first steps to meta-analyze studies of the model, Luchman and González-Morales (2013) adopted an alternative approach to meta-analytic investigation of the model by examining cumulative *interrelationships* between the model's core dimensions (e.g., demands, control and support). They reasoned that understanding the magnitude and stability of interrelationships between how demanding work is perceived to be, how much control one perceives over work, and how supported one feels in the workplace would shed new light on employees' experience of work, which would allow for more effective design of jobs and more accurate work stress interventions.

We believe that Luchman and González-Morales' (2013) investigation has fundamentally progressed research on the JDC(S) model by focusing on key work characteristic interrelationships which have been largely overlooked by primary studies of the model, and previous reviews. The authors ground their review in Hobfoll's (2001) conservation of resources (COR) theory, which views employees as attempting to obtain, retain, protect, and restore resources needed to cope with demand stressors. They hypothesized that demands would be negatively related to (i) control, because employees perceiving a high degree of control over work could restructure their work in order to reduce lost personal resources due to high demands (Hobfoll, 2001; Spector, 2002); (ii) supervisor support because of the instrumental and task-related assistance, and reduced perceptions of resource loss from high demands that results from positive social relationships (Hobfoll, 2001; Lin, 1999); and (iii) coworker support, because supportive coworker environments often result in greater task assistance among coworkers, allowing employees the ability to call upon the resources of others when faced with high demands (Hobfoll, 2001; Settoon & Mossholder, 2002). Additionally, they hypothesized a positive relationship between control and workplace support resources, because according to COR theory gaining personal resources requires using personal resources, resulting in resource gain spirals that happen when reciprocal relationships are formed between resources in one domain versus another (Hobfoll, 2001).

In line with expectations, Luchman and González-Morales (2013) found demands to be negatively related to both coworker and supervisor support, and that these resources were positively interrelated, such that those who perceived higher levels of control over work also felt supported, and vice-versa. However, counter to expectations of a negative demand-control relationship, Luchman and González-Morales (2013) found this relationship to be *near-zero*. Additionally, although none of the four confidence intervals for their supported hypotheses included zero (thus indicating significant directional effects at the population level, Judge, Bono, Ilies, & Gerhardt, 2002), *all* effect sizes showed evidence of heterogeneity (as indicated by the significant Q statistics on Table 1 in their study, p. 43), thus indicating the possibility of moderators in *all* demand-control-support interrelationships (Hunter & Schmidt, 2004). Thus, the authors conducted an exploratory moderator analysis, and found that samples of mainly