Stressful Work and Turnover: The Mediating Role of Psychological Strain

A thesis presented to
the faculty of
the College of Arts and Sciences of Ohio University

In partial fulfillment
of the requirements for the degree
Master of Science

Marcus J. Fila

May 2013

© 2013 Marcus J. Fila. All Rights Reserved.

This thesis titled
Stressful Work and Turnover: The Mediating Role of Psychological Strain

by
MARCUS J. FILA

has been approved for
the Department of Psychology
and the College of Arts and Sciences by

Rodger W. Griffeth
Professor of Psychology

Robert Frank
Dean, College of Arts and Sciences

Abstract

FILA, MARCUS J., M.S., May 2013, Psychology

Stressful Work and Turnover: The Mediating Role of Psychological Strains

Director of Thesis: Rodger W. Griffeth

The subject of employee turnover continues to attract global research attention (Hom, Mitchell, Lee, & Griffeth, 2012). The job demands-control-support model (JDC(S); Karasek & Theorell, 1990) is a conceptual model that can be used to examine the stress-strain-turnover process. To date, however, only one study has examined this process (De Croon, Blonk, Broersen, & Frings-Dresen, 2004). Because there are several theoretical and methodological issues apparent with this study, the present study represents a revised and extended version of De Croon et al. (2004). A sample of 443 employees of a large national insurance company answered a survey at two six-month time periods, measuring actual voluntary turnover six months later. Although the correlation matrix supported the hypothesized bivariate relationships, a structural equation model showed poor fit to the data, and the reversal of two relationships in the model. Believing this was due to multicollinearity, I examined a revised model which better fit the data, and supported all nine hypotheses. Furthermore, psychological strain in the form of job dissatisfaction and emotional exhaustion fully mediated the relationship between stress (demands, control, and support), and voluntary turnover. Research and managerial implications are discussed.

Acknowledgments

I would like to dearly thank my loving and supportive wife, who has proven to be a great sounding board in all situations. My thanks also go to her parents, and US-based Aunt and Uncle, who have always kept us in their thoughts and prayers, and have supported us no end. I would also like to thank my generous and ever-loving parents, who remain enthusiastic about all of my endeavors. They too have been a great support.

Thanks must also go to my advisor, Dr. Rodger Griffeth, for his patience and provision throughout this process.

Finally, I would like to dedicate this Master's thesis and degree to my two late grandfathers: Wladyslaw Fila, and Sir John Philip Battersby. Both dedicated their lives to education, and will forever be a fine example of what it means to live for others.

TABLE OF CONTENTS

	Page
Abstract.....	3
Acknowledgments.....	4
List of Tables	7
List of Figures	8
Chapter 1: Introduction and Review of Literature	9
Work Stress: The Fit Perspective.....	12
The person-environment fit model.....	13
The conservation of resources model.....	15
The cybernetic model of stress.....	16
The job demand-control-support (JDC(S)) model.....	18
The Present Study	24
Stressful work as an antecedent of psychological strain.....	26
Psychological job strain as an antecedent of turnover intention.....	29
Turnover intentions as an antecedent of voluntary turnover.....	30
Chapter 2: Methods.....	33
Data and Sample	33
Measurement.....	33
Job demands.....	33
Job control.....	34
Workplace support.....	34
Emotional exhaustion.....	35
Job satisfaction.....	35
Turnover intention.....	35
Voluntary turnover.....	36
Analysis	36
Chapter 3: Results	39
Measurement Model	39
Structural Equation Model.....	44

	6
A Test of a Revised Model	49
Chapter 4: Discussion	55
Summary of Findings.....	55
Limitations and Future Research	59
Managerial Implications	62
Conclusions.....	64
References	67

List of Tables

	Page
Table 1: Means, Standard Deviations, Cronbach Alphas, and Correlations of Study Variables.....	41

List of Figures

	Page
Figure 1: Conceptual model of the proposed stress-strain-turnover process based on organizational stress and turnover theories	26
Figure 2: Model of hypotheses to be tested	31
Figure 3: Model of standardized path coefficients	47
Figure 4: Model of standardized path coefficients including direct paths from demands, control, and support to turnover intentions	48
Figure 5: Model of standardized path coefficients of the revised model.....	52
Figure 6: Model of standardized path coefficients in revised model, including direct paths from demands, control, and support to turnover intentions	54

Chapter 1: Introduction and Review of Literature

Employee turnover constitutes the act of an employee leaving his/her present work organization (Mobley, 1982). Managers and researchers have long been interested in identifying the causes of turnover, with research now drawing global attention to the subject (Hom, 2010). A major reason for this surrounds the costs of exit, as well as of recruitment and training replacement employees (Cascio, 1991). These costs can seriously impact an organization's financial health, and are estimated to be between 93 and 200% of a leaver's salary (Allen, Bryant, & Vardaman, 2010; Cascio, 2000; Johnson, 1995). To illustrate; based on a 10% annual turnover rate, an organization consisting of 1,000 employees earning an average of \$50K each is estimated to have an annual turnover cost of between \$4.6 and \$10 million (Griffeth & Hom, 2001). Besides direct financial loss, other reasons for sustained interest in turnover include disruption to the flow of operations (Ton & Huckman, 2008), the greater likelihood of workplace accidents (Shaw, Gupta, & Delery, 2005), and decrements to work quality and customer service proficiency (Hancock, Allen, Bosco, McDaniel, & Pearce, 2011).

There are also costs of turnover to the individual. These can be *economic*, such as the loss of vested pension benefits; *adjustment-related*, through sacrificing benefits of organization-specific training and tenure (Shore et al., 2000); or *psychological* (Salancik, 1977), such as when an employee who extols the organization or freely chooses it over many others decides to quit (O'Reilly & Caldwell, 1981). Turnover may also affect remaining employees by increasing their workload (Appelbaum, Delage, Labib, & Gault, 1997), or by threatening their morale, commitment, and retention (Cappelli, 2000;

Mueller & Price, 1989; Salancik & Pfeffer, 1978). Finally, other organizations may be impacted, such as when an individual quits to follow a moving spouse/partner (Maertz, Stevens, & Campion, 2003; Ramesh & Gelfand, 2010).

In their recent review of turnover literature, Steel and Lounsbury (2009) classified job stress as a secondary (or distal) dimension of turnover which focuses on employee perceptions of the current job and organization. They assert that “many turnover theorists (e.g., Mobley, 1977) assume that deteriorating job situations set the turnover process in motion”, and that “Deteriorating job situations, whether real or imagined, create tension within the individual for change” (p. 277). This corresponds with organizational stress theory, which casts voluntary turnover as a behavioral reaction to stress and strain encountered in the workplace based on working conditions (Ajzen 1985, 1991; Kahn & Byosiére, 1992). Examination of this process is generally achieved by capturing employees’ perceptions of work-related phenomena, and modeling relationships between these perceptions, psychological strains, and turnover behavior (De Croon et al., 2004; Griffin & Clarke, 2011; Kahn & Byosiére, 1992; Sulsky & Smith, 2005).

One study to date (De Croon et al., 2004) has examined this process using the job demands-control (-support) (JDC(S)) model (Karasek & Theorell, 1990). The authors found support for the mediating role of psychological strain on stressful work and turnover. However, the stress and turnover literatures suggest that their study contains several theoretical and methodological shortcomings that I plan to address in this study. Specifically, De Croon and colleagues (2004) omitted the ‘support’ dimension of the JDC(S) model, despite the model having long been extended to account for the role of

workplace support on strain (Karasek & Theorell, 1990). They also examined the mediating role of strains ('fatigue', and the 'need for recovery after work') which are not theorized by the model's creators to be outcomes of high demands, low control, and low support. Moreover, these strains are not known antecedents of turnover. Additionally, the authors did not examine the mediating role of job satisfaction, despite it being the most examined form of psychological strain in this literature (Sulsky & Smith, 2005), and a core mechanism of turnover theory (Steel & Lounsbury, 2009). Fourthly, De Croon et al (2004) did not include turnover intentions in the turnover process, despite a substantial body of research showing it to be the single best predictor of voluntary turnover (Griffeth & Hom, 1995; Griffeth, Hom, & Gaertner, 2000; Hom & Griffeth, 2001). Finally, the authors measured self-reported rather than actual turnover and were thereby unable to verify the voluntariness of turnover cases. Rectifying these shortcomings is important for understanding how stressful work may lead to voluntary turnover via psychological strain in a way more consistent with organizational stress theory (Kahn & Byosiore, 1992). Therefore, the purpose of this study is a revision and extension of the major predictions of De Croon et al's (2004) study to address these shortcomings.

The JDC(S) model is one of several to examine stress at work from the "fit" perspective (Griffin & Clarke, 2011). In the following sections I outline the fit perspective of stress, and several prominent models of work stress that are based on this perspective, including the JDC(S) model. I also discuss De Croon et al's (2004) study and how their shortcomings will be addressed in the proposed study.

Work Stress: The Fit Perspective

Work stress is defined as a negative emotional state due to adverse experiences in the workplace (Beehr & Bhagat, 1985; Hart & Cooper, 2001). Stress is not a single event, but a process involving appraisal, response, and attempts to cope with and manage stressors in order to meet goals (Sulsky & Smith, 2005). Strain represents an organism's stress reactions from attempting to function effectively in the face of too many environmental challenges (Karasek & Theorell, 1990). Thus, strains are adverse and potentially harmful reactions to stressful work, and are measured as physiological and psychological outcomes of stress (Kahn & Byosiore, 1992; Sulsky & Smith, 2005). Griffin and Clarke's (2011) recent review of the stress field echoes previous sentiments about an employee's perceived fit with the workplace being central to minimizing their stress at work (Edwards & Cooper, 1990; Eulberg, Weekley, & Bhagat, 1988; French, Caplan, & Harrison, 1982). Perceptions of fit are largely driven by cognitive appraisal of correspondence between work demands and the availability of coping resources (French et al., 1982), with stress likely to be experienced if demands are thought to exceed resources (Lazarus, 1966). Thus, an individual's perceived fit with their workplace depends on appraisal of interactions between themselves and the environment to determine this perception (Griffin & Clarke, 2011).

According to Edwards (1996), it may be conceptually advantageous to approach work stress from the fit perspective as opposed to alternative approaches, such as viewing stress as a *condition* or an *event* in a given situation (Cooper & Marshall, 1976; Hall & Mansfield, 1971; Matteson & Ivancevich, 1979), or as a psychophysiological *response* of

the focal person (Ivancevich & Matteson, 1980; Parker & DeCotiis, 1983; Selye, 1956, 1976). This is because situational approaches overlook individual differences in cognitive appraisal, and response approaches yielding the same response across subjects fail to capture possible variations in the psychological meaning of situations (Edwards, 1996; Lazarus & Folkman, 1984; McGrath, 1970). Moreover, consistent with organizational stress theory, a major implication of the fit perspective is that employees attributing strain to poor fit may voluntarily leave the organization (French et al., 1982; Kahn & Byosiére, 1992). Thus, the fit perspective is central to employee retention as per the stress-strain-turnover process outlined by Kahn and Byosiére (1992), which is the focus of the present study.

Throughout the history of organizational research, over a hundred stress models have been used to model relationships between stressors, strains, and physiological, psychological, and behavioral outcomes (Sulsky & Smith, 2005). However, according to Griffin and Clarke (2011), the concepts of fit and discrepancy are particularly important for conveying interdependence between demands and coping resources in the person-environment fit, conservation of resources, cybernetic, and JDC(S) models. These models share a common focus on employees' desire for homeostasis with the work environment in order to facilitate manageable work (Griffin & Clarke, 2011). The next section reviews these major fit models in the organizational stress literature.

The person-environment fit model. The person-environment fit model (PE-Fit: Dawis & Lofquist, 1984; Kristof-Brown, Zimmerman & Johnson, 2005; Schneider, 1987) is used to examine the degree of compatibility or match between individuals and some

aspect of their work environment. The model continues to be greatly influential on organizational stress research (Kristoff-Brown & Guay, 2011; Sulsky & Smith, 2005), for several reasons. First, it includes a wide range of concepts, including the match between personal interests and vocational characteristics; the congruence between individual values and organizational cultures; the compatibility of individual preferences and organizational systems; the match between an employee's knowledge, skills, abilities (KSAs) and the demands of a given job; the correspondence between individual needs and work supplies; and the goal similarity and personal compatibility between employees and their peers and supervisor(s) (Kristoff-Brown & Guay, 2011). Second, the model affords flexibility in what constitutes a 'match' between person and environment characteristics. Arranged along a continuum, these degrees of fit range from identical correspondence, where there is an exact match between commensurate P and E (Edwards, 2007), to general compatibility, where P and E characteristics need not be metrically commensurate if they are conceptually related (Turban & Keon, 1993). Third, the model is flexible as to whether or not commensurate dimensions must be measured for person and environment, or whether resultant strains are themselves indicators of misfit. For example, Edwards, Caplan, and Harrison (1998) argued that "without commensurate dimensions it is impossible to determine the proximity of the person and the environment to one another..." (p. 31). However, Schneider (2001), (creator of the attraction-selection-attrition [ASA] framework that provides a strong theoretical foundation for fit; Kristoff-Brown & Guay, 2011) argues that "This obsession [with commensurate P and E

measures] is self-defeating....because it asks us to anthropomorphize environments” (p. 46).

Although these features of the model have led to an enormous amount of P-E fit research, reviews have called for greater precision in defining the model’s boundaries in order to stimulate theoretical progress and to avoid confusion about how this model incorporates the stress variable (Edwards, 2008; Harrison, 2007; Judge, 2007).

Alternative models with more clearly defined boundaries include the conservation of resources model (COR: Hobfoll, 1989), the cybernetic model (Cummings & Cooper, 1979), and the JDC(S) model (Karasek, 1979; Karasek & Theorell, 1990).

The conservation of resources model. The conservation of resources model (COR: Hobfoll, 1989) views employees as attempting to obtain, retain, protect, and restore resources needed to cope with demand stressors. “Resources” encompass many things, such as objects, personal characteristics, and conditions. However, the central focus appears to be on cognitive and emotional resources needed for work and daily transactions with others (Jex & Yankelevich, 2008). According to Hobfoll (1989), stress is triggered by failure to acquire sufficient resources, or by threat or actual loss of them. Hobfoll’s theory has been useful in explaining certain types of work stress (Sulsky & Smith, 2005), such as the effects of lost social support when work demands are high (Hobfoll, 2001). For example, Lee and Ashforth (1996) used COR as their guiding framework to examine how demand and resource components are related to three job burnout dimensions (emotional exhaustion, depersonalization, and lack of personal accomplishment; Maslach & Jackson, 1981). They found emotional exhaustion to be

most strongly related to resource and demand components, suggesting that workers experiencing burnout are the most sensitive to resource loss. However, in his meta-analysis of the COR model Halbesleben (2006) found that this was the case only with work-related resources. Thus, he questioned using the model to predict workers' emotional exhaustion when the source of the resources (e.g., work vs. non-work) is unclear. The cybernetic model of stress (Cummings & Cooper, 1979) and the JDC(S) model (Karasek, 1979; Karasek & Theorell, 1990) are arguably less problematic in this regard because they focus on resources that are found exclusively within the workplace (Griffin & Clarke, 2011).

The cybernetic model of stress. The cybernetic model of stress (Cummings & Cooper, 1979) views the stress process as a series of goals and feedback loops. Through cycles of feedback, individuals monitor discrepancies between their perceptions of workplace characteristics and preferred or referent states. Stress is triggered by discrepancies (a prominent example being preferred versus actual levels of demands; Griffin & Clarke, 2011), and these discrepancies motivate the individual to either change the environment in some way or to adapt to it. Coping actions are then followed by new appraisals of discrepancies, and the cycle repeats itself. Thus, behavior is assumed to be driven by desire for balance between oneself and the environment (Edwards, 1992), with stress the result of interruptions to this homeostasis (Miller, 1965).

The need of all biological systems (including humans) for feedback loops to function appropriately gives the model logical appeal (Sulsky & Smith, 2005). Moreover, the major tenets of the model – that discrepancies affect strain, and greater discrepancies

have greater negative effects - have received support (Doest, Maes, Gebhardt, & Koelewijn, 2006; Elsass & Veiga, 1997). However, primarily cognitive or “rational” theories have often not been successful in explaining human behavior, arguably because they fail to account for the emotional component of stress (Nisbett & Ross, 1980). In contrast, the emotional component of stress underpins the JDC(S) model’s attempts to explain human behavior (Kain & Jex, 2010; Karasek & Theorell, 1990).

In summary, the fit perspective of stress has been widely researched using models that commonly examine discrepancies between environmental demands and coping resources. However, limitations of the approaches reviewed include the lack of precise model boundaries of the P-E fit model (Judge, 2007), differing results in COR studies based on the source of resources (Halbesleben, 2006), and the failure of rational/cognitive theories to account for emotions in stress (Nisbett & Ross, 1980). In contrast, the JDC(S) model accounts for emotions by examining self-reported perceptions of stress (Karasek, 1979). It also examines the perceived availability of specific work-based coping resources (i.e., control and support; Karasek & Theorell, 1990). Griffin and Clarke’s (2011) recent review of the organizational stress literature points to shared themes in fit models being that organizations (1) make reasonable *demands* of employees, (2) afford sufficient *control* over how to meet demands, and (3) ensure provision of adequate *support* within the workplace. Although these concepts are present in some form in the fit models presented earlier, they are at the very heart of the JDC(S) model’s approach to the fit perspective. For this reason, the proposed study will examine the stress-strain-turnover process using the JDC(S) model.

The job demand-control-support (JDC(S)) model. The JDC(S) model (Karasek, 1979; Karasek & Theorell, 1990) views work demands, control over working processes, and workplace social support as integral to the fit perspective of stress. Demands are physical, social, or organizational aspects of the job that require sustained physical or mental effort (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; De Jonge & Dormann, 2006). These include *role ambiguity*, which is the degree to which work is demanding because of uncertainty regarding expectations (Kahn et al., 1964); and *role conflict*, which is stress attributed to incompatibility between multiple sets of work demands (Beehr & Newman, 1978). Control is an individual's perceived ability to effect a desired change in their work environment (Greenberger & Strasser, 1986). The desire for control is well established in behavioral science literature (e.g., Averill, 1973; Frese, 1989; Ganster, 1989), and is usually manifest as participation in decision making and/or autonomy (De Jonge et al., 2001; Hackman & Oldham, 1980; Kahn & Jex, 2010; Van der Doef & Maes, 1999). Support refers to helpful workplace relationships regarding job-related matters (Price, 1997). This generally constitutes support from supervisors and coworkers (e.g., Berman, West, & Richter, 2002; Dunseath, Beehr, & King 1995; Hausser et al., 2010; Karasek & Theorell, 1990; Lim, 1996; Shadur, Kienzle, & Rodwell 1999).

Although underutilization can result in stress from boredom (Kahn & Byosiene, 1992; Selye, 1956), the main tenet of the JDC(S) model is that high demands can be stressful, especially if control and/or support are low. This combination is termed the "high strain" job (Karasek & Theorell, 1990). According to Karasek (1979) high-strain

jobs are detrimental to health and psychological well-being because they impede an individual's ability to complete work in a specified time frame and to perform to their maximum. More specifically, when people have high demands but limited control over how to perform them, they continually devote high amounts of cognitive resources to meeting them. This results in an elevated level of physiological arousal and increased cardiovascular and nervous system attention (Karasek, 1979). If sustained, their bodies begin to run out of resources, leading to impairment of physical functioning and psychological well-being (Hausser et al., 2010; Karasek, 1979). Moreover, this effect is exaggerated if workplace support is low (Johnson & Hall, 1988; Karasek & Theorell, 1990). Thus, perception of fit centers on demands being manageable, and the availability of control and support resources (Kain & Jex, 2010). Control and support resources are hypothesized to both reduce stress directly, and buffer stress from high demands (Hausser et al., 2010; Johnson & Hall, 1988; Karasek & Theorell, 1990). This focus on balance between demands and resources aligns with the underpinning of the P-E fit model (Dawis & Lofquist, 1984), the COR theory (Hobfoll, 2001), and the discrepancy appraisals of the cybernetic model (Cummings & Cooper, 1979; Edwards, 1992).

The JDC(S) model is the most widely researched in work stress literature (Kain & Jex, 2010; Sulsky & Smith, 2005), and also features in research on workplace characteristics and motivation (Diefendorff & Chandler, 2011), and job design (Grant et al., 2011). Numerous empirical studies have found support for negative main effects of demands, and positive main effects of control and support on various forms of strain (c.f., De Lange et al., 2003; Hausser et al., 2010; Van der Doef & Maes, 1999). However,

interactive effects have been rare (De Jonge & Dorman, 2006; Hausser et al., 2010; Kain & Jex, 2010; Taris & Kompier, 2003; Theorell & Karasek, 1996; Van der Doef & Maes, 1999). This has led to some scholars doubting the model's predictive value (e.g., Beehr, Glaser, Canali, & Wallwey, 2001). However, Karasek (1979; in De Lange et al., 2003) argued that interactive effects are unnecessary to support the model because; (1) its basic premise is supported if demands, control, (and support) separately exert main effects on strain; (2) reducing job demands and increasing control (and support) would reduce strain even if no interaction is present; and (3) implications for job redesign are the same with or without multiplicative effects. Griffin and Clarke (2011) also acknowledged difficulty in assessing the unique importance of interactions in the stress process independent of main effects, because "interactions are often reported in relation to multiple main effects...and the proportion of variance is often small" (p. 370).

Despite the prominence of the JDC(S) model, only one study to date has attempted to test the model within the context of turnover theory (e.g., De Croon et al., 2004). In their study, De Croon et al. (2004) found support for their predictions that two forms of strain (i.e., 'need for recovery after work', and 'fatigue') would increase the relationship between stressful work and voluntary turnover. Specifically, they found that stressful work (i.e., high physical, psychological, and supervisor demands, and low control) was positively related to fatigue and the need for recovery after work, respectively, and that these strains each predicted voluntary turnover. Thus, the authors concluded that psychological strain mediates the relationship between stressful work and voluntary turnover, according to organizational stress theory (e.g., Kahn & Byosiére,

1992). However, both the stress and turnover literatures point to several adjustments that could build upon De Croon et al's (2004) initial contribution. First, where the authors tested only the demand and control constructs of the JDC(S) model, the effects of support should also be examined. This would align with the JDC model's major extension to include workplace support (Johnson & Hall, 1988), and the accumulated subsequent evidence of a negative relationship between support and psychological strain (Hausser et al., 2010; Kain & Jex, 2010).

A second improvement could be measuring emotional exhaustion as a form of psychological strain. Emotional exhaustion refers to feelings of being overextended, of being "...drained or used up, unable to face a day's work, totally unenthusiastic" (Sulsky & Smith, 2005 p.45). Employees experience emotional exhaustion when their emotional resources are sufficiently depleted so as to no longer be able to meet the demands of work-related stressors (Lee & Ashforth, 1996). It is the most prominent of three burnout dimensions given its robust relationship with job-related stressors (the other two being depersonalization and reduced personal accomplishment, Maslach, 1998; Maslach, et al., 2001). De Croon et al (2004) measured 'fatigue' and the 'need for recovery after work' as proxies of emotional exhaustion. Fatigue and need for recovery after work are conceptually similar forms of strain to emotional exhaustion (Schaufeli & Van Dierendonek, 1999). However, as Cooper and colleagues (2001) note: "Although it is clear that the stress process is associated with a wide range of psychological strains, there has often been limited theoretical justification for the specific strains included in a particular study." Emotional exhaustion is a more theoretically and empirically

established outcome of stressful work (Hausser et al., 2010; Lee & Ashforth, 1996) and antecedent of turnover (Todd & Deery-Schmitt, 1996; Wright & Cropanzano, 1998) than fatigue or the need for recovery after work. Thus, it is more relevant to examine psychological strain in the form of emotional exhaustion than these surrogates, which are arguably experienced by every worker. Moreover, experiencing fatigue or the need for recovery after work does not necessarily equate to experiencing emotional exhaustion, which is a more chronic form of psychological strain (Sulsky & Smith, 2005).

A third contribution to complement De Croon et al.'s (2004) original study could be to measure job dissatisfaction as a form of psychological strain. Job satisfaction is a positive and pleasurable state resulting from positive appraisal of the job (Cranny, Smith, & Stone, 1992; Locke, 1976). It represents a manifestation of cognitive evaluations of one's job (Spector, 1997), and can affect organizational functioning through decrements in performance, and employees' desire to leave the organization (Hom, 2010).

Conversely, job dissatisfaction is the most established form of psychological strain in work stress literature (Griffin & Clarke, 2011; Kahn & Byosiére, 1992), and is central to organizational stress theory for two reasons. First, it is affected by employee stress levels (Sulsky & Smith, 2005). This is based on reactions to situational factors such as pay (Rice, Phillips, & McFarlin, 1990), and to job characteristics including demands, skill variety, task identity, task significance, autonomy, and job feedback (Hackman & Oldham, 1975, 1980). For example, numerous tests of the JDC(S) model have found negative associations between high demands and job satisfaction, as well as positive relationships between control and support, respectively, and satisfaction (Hausser et al.,

2010; Van der Doef & Maes, 1999). Second, job dissatisfaction is a firmly established antecedent of turnover (Griffeth & Hom, 2001; Hom & Griffeth, 1995). It is one of a very few core mechanisms of turnover theory which have been heavily used throughout the field's history (Steel & Lounsbury, 2009). This omission is acknowledge by De Croon et al. (2004), who stated that "Presumably, the effect of job control...and job demands on turnover is also mediated by job satisfaction, which plays a central role in turnover (decision) models.... unfortunately, a validated measure of job satisfaction was not included in this study" (p. 451).

A fourth improvement could be to include turnover intentions in any predictive model of the stress-strain-turnover process. Turnover intention is defined as a conscious and deliberate willingness to leave the organization (Tett & Meyer, 1993). A substantial body of empirical research shows that turnover intention is the single best predictor of voluntary turnover (Griffeth & Hom, 1995; Griffeth et al., 2000; Hom & Griffeth, 2001). Moreover, Hom, Mitchell, Lee, and Griffeth (2012) view intentions as playing an important role in the time-based process of turnover, between attitudinal causes of turnover such as psychological strains, and the act of leaving. De Croon and colleagues (2004) examined the effect of strain on turnover directly. However, despite finding support, the predictive validity of their model may have been improved by accounting for turnover intentions.

Finally, studies of the stress-strain-turnover process could measure actual turnover in order to verify the voluntariness of turnover cases. Turnover voluntariness refers to whether the employee left by his/her own volition or had their employment terminated by

the organization (Price, 1977). De Croon and colleagues (2004) were the first to use turnover in a test of the JDC(S) model. Moreover, they implemented a behavior check to verify departure date (e.g., Blau, 2007). However, by measuring self-reported rather than actual turnover they were unable to verify the turnover voluntariness. Verifying turnover voluntariness is important because terminated employees may leave for different reasons to those of voluntary leavers (e.g., for reasons other than strain) (Hom & Griffeth, 1995). Thus, predictive validity of additional studies of the stress-strain-turnover process may be improved by allowing for distinction between voluntary and involuntary cases of turnover.

In summary, De Croon et al (2004) was the first to examine the stress-strain-turnover process according to organizational stress theory (Griffin & Clarke, 2011; Kahn & Byosiére, 1992) using the JDC(S) model (Karasek & Theorell, 1990). In doing so, they have extended the traditional role of the model (which has been to examine a series of physiological and psychological strains) by examining the mediating effect of psychological strain on employee turnover. However, their initial study presents several opportunities for subsequent examinations to improve predictive validity of the stress-strain-turnover process by addressing the aforementioned concerns. In the following section I outline how these improvements will be made in a second examination of stress-strain-turnover process using the JDC(S) model (Karasek & Theorell, 1990).

The Present Study

Organizational stress theory mandates that (1) stress induces strain, and (2) strain may lead to behavioral reactions in employees (Kahn & Byosiére, 1992). One such

behavior is voluntary turnover (Griffin & Clarke, 2011; Hom & Griffeth, 1995). From an organizational stress perspective, voluntary turnover may result from an employee's perception of poor fit between themselves and the organization (Lewin, 1951; Murray, 1938). The most salient concepts of the fit perspective surround demands made of employees and their coping resources, in particular their control over work and support from workplace constituents (Griffin & Clarke, 2011). These are central to the JDC(S) model (Karasek & Theorell, 1990), which is the most researched in organizational stress literature (Kain & Jex, 2010). However, only one study to date has claimed to examine this stress-to-strain-to-turnover process using the JDC(S) model (De Croon et al., 2004). I have highlighted several improvements that can be made in subsequent similar studies, and argue that implementing them would give a better understanding of how stressful work may lead to voluntary turnover via psychological strain (Kahn & Byosiore, 1992). As such, the purpose of this study is to revise and extend De Croon et al's (2004) study to address these shortcomings. In accordance with these aims, a conceptual model of the stress-strain-turnover process is as follows (see figure 1).

Figure 1. Conceptual model of the proposed stress-strain-turnover process based on organizational stress theory (Kahn & Byosiere, 1992). JDC(S) theory (Karasek & Theorell, 1990), employee turnover theory (Hom & Griffeth, 1995).

First, in addition to demands and control I will examine the effect of workplace support on strain, consistent with the JDC(S) model (Johnson & Hall, 1988; Karasek & Theorell, 1990). Second, emotional exhaustion and job dissatisfaction will both be examined as forms of psychological strain. Third, the possible mediating effect of turnover intentions on strain and turnover will be examined. Finally, I will examine actual (rather than self-reported) incidents of voluntary turnover, for the purpose of verifying the voluntariness of these cases. The relationships underpinning the proposed model are outlined as follows.

Stressful work as an antecedent of psychological strain. The negative effect of job stressors on strains is central to organizational stress literature (Jex & Crossley, 2005; Kahn & Byosiere, 1992). Job demands need not be stressful. However, they may induce

strains when a high degree of effort is required to meet them, from which the employee has not adequately recovered (Meijman & Mulder, 1998). For example, numerous studies have shown positive associations between role ambiguity (e.g., Abramis, 1994; Jackson & Schuler, 1985; Lang, Thomas, Bliese, & Adler, 2007), role conflict (Ortqvist & Wincent, 2006), and strain. In particular, research shows detrimental effects of these role states on job satisfaction (Katz & Kahn, 1978; Manojlovich & Laschinger, 2007; Rizzo, House, & Lertzman, 1970), and their contributions to emotional exhaustion (Babakus, Cravens, Johnston, & Moncrief, 1999; Ghorpade, Lackritz, & Singh, 2011; Lee & Ashforth, 1996; Ortqvist & Wincent, 2010; Schwab & Iwanicki, 1982). Finally, the greatest weight of evidence in JDC(S) studies suggests that high demands decrease job satisfaction, and facilitate emotional exhaustion (Hausser et al., 2010). Therefore, consistent with Karasek and Theorell (1990), I propose the following:

Hypothesis 1: Job demands will be positively related to emotional exhaustion.

Hypothesis 2: Job demands will be negatively related to job satisfaction.

Karasek and Theorell (1990) suggest that reducing demands in high strain jobs is fundamental to employee well-being. However, Griffin and Clarke (2011, p. 382) suggest that “many jobs are characterized by high demands, where the nature of the demands cannot be changed”, thus control and support are important to stress minimization “by facilitating problem solving” (p. 370). Research suggests that control promotes a healthier coping style (Tetrick & Larocco, 1987), and that even its illusion can reduce stress (Friedland, Keinan, & Regev, 1992). Conversely, low control can induce strain by frustrating the intrinsic need to be and feel competent (Frese, 1989; Spector, 1986; White,

1959). Many studies find strong negative associations between control and psychological strains (De Lange et al., 2003; Kain & Jex, 2010; Van der Doef & Maes, 1999), and particularly job dissatisfaction (Griffin & Clarke, 2011), and emotional exhaustion (Hausser et al., 2010). Therefore, in line with Karasek and Theorell (1990), I hypothesize the following:

Hypothesis 3: Control will be negatively related to emotional exhaustion.

Hypothesis 4: Control will be positively related to job satisfaction.

Social support “has been one of the most prominent resources investigated in the stress process” (Griffin & Clarke, 2011, p. 367) and is an integral part of the JDC(S) model (Karasek & Theorell, 1990). Workplace support is thought to reduce strain by facilitating active coping patterns (Pearlin & Schooler, 1978), and by engendering a positive sense of identity through socially confirmed values of contributions to collective goals (Stryker & Burke, 2000). Conversely, low workplace support is thought to increase strain by inducing feelings of isolation (Johnson & Hall, 1988). Kahn and Byosiére (1992) reviewed 22 studies that had examined the workplace support-to-strain relationship, will all but two reporting a significant negative effect. Additionally, Viswesvaran, Sanchez, and Fisher’s (1999) meta-analysis of the effects of workplace support in the stress process shows a medium-sized negative direct effect between support and strain ($\rho = -.21$). This indicates the negative effect of support on strain across a variety of work environments and situations (Griffin & Clarke, 2011). For example, support may increase job satisfaction and reduce emotional exhaustion, even when demands are high and other resources are scarce (Halbesleben & Buckley, 2004; Hausser

et al., 2010; Pei, Li & Zang, 2009; Van der Doef & Maes, 1999; Walters & Raybould, 2007). Therefore, based on Karasek and Theorell's (1990) extended JDC(S) model, I hypothesize the following:

Hypothesis 5: Support will be negatively related to emotional exhaustion.

Hypothesis 6: Support will be positively related to job satisfaction.

Psychological job strain as an antecedent of turnover intention. The second proposition of organizational stress theory is that strain leads to the enactment of behavioral coping mechanisms (Griffin & Clarke, 2011; Kahn & Byosiére, 1992). However, these behaviors are generally reasoned before being enacted (Ajzen, 1991). Fishbein's (1967) and Fishbein and Ajzen's (1975) model of relationships among beliefs, attitudes, intentions, and behaviors, and Locke's (1968) model of task motivation outline the role of intentions as linking attitudes to behavior. For example, excessive stress and strain are reasons why some employees consider quitting based on perceptions that alternative (or no) employment would be less stressful than remaining with the organization (Hom & Griffeth, 1995; Kahn & Byosiére, 1992; Karasek & Theorell, 1990; Sulsky & Smith, 2005). Several studies provide evidence of this mediating effect of emotional exhaustion on stressful work and turnover intentions (e.g., Durcharme, Knuden & Roman, 2007; Moore, 2000; Taris, Schreurs & Van Iersel-Van Silfhout, 2001). Moreover, as previously mentioned the negative relationship between job satisfaction and turnover intentions is a bedrock of the turnover literature (Griffeth & Hom, 2001; Hom & Griffeth, 1995; Mobley, 1977; Mobley et al., 1979; Price & Mueller, 1986). Therefore, I hypothesize the following:

Hypothesis 7: Emotional exhaustion will be positively related to turnover intentions.

Hypothesis 8: Job satisfaction will be negatively related to turnover intentions.

Turnover intentions as an antecedent of voluntary turnover. Within turnover research, turnover intention is the single best predictor of voluntary turnover (Hom et al., 2012). For example, Hom and Kinicki (2001) found in a predictive study of turnover in retail store employees that 60% of employees who had answered “Definitely Yes” to a question of intention to quit, had left the organization 6 months later. As such, acceptance that voluntary turnover is preceded by intention to leave is almost ubiquitous (Griffeth & Hom, 2001; Hom, Griffeth & Sellar, 1984; Hom & Griffeth, 1995; Mobley, 1977; Mobley et al., 1979). Therefore, I hypothesize the following:

Hypothesis 9: Turnover intentions will be positively related to voluntary turnover.

Figure 2 outlines the model of hypotheses to be tested.

Figure 2. Model of hypotheses to be tested.

In addition to the nine bivariate hypotheses outlined above, the goal of the proposed model is to examine mediating role of psychological job strain (i.e., emotional exhaustion and job satisfaction) on stress and turnover, consistent with organizational stress theory (Kahn & Byosiene, 1992). Mediation is defined according to guidelines set forth by Aquino, Griffeth, Allen, and Hom (1997). Mediation is generally thought of in its most robust version, which requires X to be significantly related to Y as a precondition for showing that a third variable (M) mediates this link (Baron & Kenny, 1986). However, Aquino, et al. (1997) suggest that mediation also exists when X is not directly related to Y but is only related through M. Accordingly, the proposed model would support the stress-strain-turnover process outlined in organizational stress theory if (1)

demands, control, and support are each significantly related to emotional exhaustion and/or job satisfaction in the direction hypothesized; (2) emotional exhaustion and/or job satisfaction significantly predict turnover intentions; (3) demands, control, and support are each *not* significantly related to turnover intention directly; and (4) turnover intention significantly predicts voluntary turnover.

Chapter 2: Methods

Data and Sample

The sample consisted of 443 employees of a large national insurance company who completed a paper-and-pencil survey at two time points, six months apart, as part of a larger survey (Griffeth, Steel, Allen, & Bryan, 2005). Turnover data was subsequently collected six months after the second time point. The job responsibilities of sample members were fairly homogeneous, with most being insurance/sales counselors or underwriters. The average age of survey respondents was 30, and their average tenure with the organization was 3.74 years. Seventy-eight percent were men, 73.3% Caucasian, and 23.3% African American. Two-hundred and thirty-six of the original 443 participants (53%) completed the survey at the second time point. Employees were assured of the confidentiality of their responses and their participation was voluntary. When the analysis was conducted, three employees who were fired by the organization were excluded from the analyses.

Measurement

The following constructs were measured from Time 1 responses:

Job demands. Job demands were measured using 5-items of the job stress scale from Price and Mueller (1981). These included 3-items from the role ambiguity and 2-items from the role conflict subscales. These, and similar scales have been used in JDC(S) studies (Hausser et al., 2010). Responses were made on a 5-point Likert scale (1 = “Never”, 5 = “Always”). Sample items included: “I do not know what my responsibilities are in performing my job” (role ambiguity), and “Job requests from my

supervisors and coworkers are often conflicting.” (role conflict). Job demands scale scores were calculated by averaging the individual’s scores on the respective items with a high score representing high demands.

Job control. Job control was measured using Price and Mueller’s (1981) 3-item scales of “autonomy” and 3 “task variety”, respectively. Responses were made on a 5-point Likert scale (1= “Strongly Disagree”). Scales of autonomy and task variety have been frequently utilized in JDC(S) studies (Hausser et al., 2010; Karasek & Theorell, 1990; Van der Doef & Maes, 1999). Sample items included: “I have a lot of input in deciding what tasks, or parts of tasks I will do”, “I have little or no influence on things that affect me on the job” (reverse-scored), and “I have the opportunity to do a number of different things on my job”. Scores were calculated by averaging the individual’s scores on the respective items with a low score representing low control.

Workplace support. Workplace support was measured using two of the four subscales of the social support Price and Mueller (1981) inventory: “Coworker Support” (3-items), and “Supervisor Support” (3-items). Responses were made on a 7-point Likert scale (1= “Strongly Disagree”). These scales are commonly used to measure workplace social support in JDC(S) studies (Hausser et al., 2010). Sample items included: “My coworkers are helpful to me in getting my job done”; and “My supervisor can be relied upon when things get tough on my job”. Workplace support scale scores were calculated by averaging the individual’s scores on the respective items with a low score representing low support.

Emotional exhaustion. Emotional exhaustion was measured using the 9-item emotional exhaustion subscale from Maslach and Jackson's (1981) burnout inventory. This scale has been used in a number of previous JDC(S) studies (Hausser et al., 2010). Moreover, Knudsen, Ducharme, and Roman (2006) found a strong positive relationship between this measure of emotional exhaustion, and turnover intentions. Responses were made on a 7-point Likert scale (1= "Strongly Disagree"). Sample items included: "I feel emotionally drained from my work", "I feel fatigued in the morning when I get up and have to face another day on the job", and "I feel like I'm at the end of my rope". Emotional exhaustion scale scores were calculated by averaging the individual's scores on the respective items with a high score representing high emotional exhaustion.

Job satisfaction. Job satisfaction was measured using a 4-item scale from Price and Mueller (1981). These authors found a strong negative relationship between job satisfaction and turnover intention (Price & Mueller, 1981). Responses were made on a 7-point Likert scale (1= "Strongly Disagree"). Sample items included: "I find enjoyment in my job"; and "Most days I am enthusiastic about my job". Job satisfaction scores were calculated by averaging the individual's scores on the respective items with a high score representing high satisfaction.

The following construct was measured from time 2:

Turnover intention. Turnover intention was measured using a 3-item sub-scale of intention to quit from Hom and Griffeth's (1991) withdrawal cognitions scale. This withdrawal cognitions scale significantly predicted voluntary turnover (Hom & Griffeth, 1991). Responses were made on a 5-point Likert scale (1 = "Strongly Disagree"), and

sample items included: “I intend to leave this organization within the next 12 months,” “I intend to quit my present job”. Turnover intention scores were calculated by averaging the individual’s scores on the respective items with a high score representing a high intention to quit.

The following construct was measured at time 3:

Voluntary turnover. Turnover is a binary measure (1= turnover, 0= stayer).

Cases where the employee had been terminated by the organization were not included in the study.

Analysis

Statistical analysis was conducted using MPlus, a statistical software package used for structural equation modeling (SEM). SEM allows simultaneous tests of theoretical propositions about relationships among multiples variables in a complex model (Bentler, 1990). The first stage of my analysis involved testing a measurement model of the key predictor scales by performing a confirmatory factor analysis (CFA). I proposed a six-factor model (demands, control, support, emotional exhaustion, job satisfaction, and turnover intention), using a combination of incremental and absolute fit indices. The first of these is the chi-square value, which indicates relative to the degrees of freedom (df) whether the observed (the sample) and estimated (fitted) covariance matrices differ. According to Joreskog and Sorbom (1993), it is beneficial to consider the chi-square value as a measure of *fit* as opposed to a test statistic. Specifically, the recommendation in SEM analyses is to obtain a non-significant chi-square value, because

a small value corresponds to a good fit. Therefore, the chi-square measure could be seen as a ‘badness of fit’ measure (Joreskog & Sorbom, 1993).

One drawback to the chi-square measure is its sensitivity to even trivial differences between the covariance matrix and fitted model (and thus probable rejection of the model) in samples of approximately 200 or more respondents (Turner, Stride, Carter, McCaughey, & Carroll, 2012). Thus, as a stand-alone measure, the chi-square test may be insufficient to gauge model adequacy, despite being the only statistically-based measure of goodness-of-fit available in SEM (Hu & Bentler, 1995). Therefore, other indices of fit were also used (Bollen, 1990). These were as follows: (1) The comparative fit index (CFI), which is derived from a comparison of a hypothesized model with the null model; (2) the root-mean-square error of approximation (RMSEA), which is another method for assessing a model’s fit to the data (Browne & Cudeck, 1993); (3) the standardized root mean square residual (SRMR), which is the average of the standardized residuals between the specified and obtained variance-covariance matrices (Hu & Bentler, 1998); and finally (4) Akaike information criteria (AIC), which offers a relative measure of information lost when a model is used to describe reality. Thus, the AIC can be said to describe a tradeoff between the accuracy and complexity of a model, with the smallest value indicating the better fit and greater parsimony (Pousette & Hanse, 2002). Although specifying specific cut-offs can be problematic (Turner et al., 2012), Hu and Bentler (1995, 1998) suggest values above .90 for the CFI; ideally less than 0.06, but certainly less than 0.10 for the RMSEA, and below 0.08 for SRMR. In addition to these

measures, the internal consistency reliability (Cronbach's alpha statistic) was calculated for each scale.

The second stage of my analysis involved testing a structural equation model to test the nine proposed hypotheses (see figure 2). First, paths from demands, control, and support, respectively, at time 1 to emotional exhaustion and job satisfaction address hypotheses 1-6 of the study. Second, paths from emotional exhaustion and job satisfaction to turnover intentions at time 2 address hypotheses 7 and 8. Finally, the path from turnover intentions at time 2 to voluntary turnover at time 3 addresses hypothesis 9. One-tailed tests of path coefficients were applied to the stated hypotheses, and the 95% level of statistical significance was applied throughout.

The third stage of my analysis involved testing for mediating effects of job satisfaction and emotional exhaustion on the relationships between demands, control, and support, and turnover intention.

Chapter 3: Results

Measurement Model

The primary focus of the estimation process in SEM is to yield a discrepancy (i.e., residual) matrix between the sample and population covariance matrices (Hu & Bentler, 1998). For the present study, the quality of the six-factor measurement model expected to underlie these scales (i.e., demands, control, workplace support, job satisfaction, emotional exhaustion, and turnover intention) was tested using confirmatory factor analysis (CFA). Voluntary turnover was not included in the CFA because fit indices in confirmatory factor analyses are adversely affected when categorical data, which follow non-normal distributions, are included (Finney & DiStefano, 2006). Specifically, CFI is typically underestimated (Babakus, Ferguson, & Joreskog, 1987), which may lead to researchers discarding a plausible model because it has a seemingly inadequate fit to the data (Hutchinson & Olmos, 1998).

Despite not including voluntary turnover in the CFA, results indicated that overall fit to the data was unsatisfactory, $\chi^2(480) = 1,924, p < 0.001$, CFI = 0.81, RMSEA = 0.083, SRMR = 0.079, AIC = 40,202. First, chi square exceeded the cutoff value at the .001 level by 489 (almost double). However, as previously mentioned chi square is sensitive to even trivial differences between the covariance matrix and fitted model (and thus probable rejection of the model) in samples of approximately 200 or more respondents (Turner et al., 2012). Thus, model adequacy must be gauged by more than this measure alone (Bollen, 1990). Second, the comparative fit index (CFI), which is derived from a comparison of a hypothesized model with the null model, and should be

above 0.90 (Hu & Bentler, 1995, 1998), was only 0.81. Thus, the hypothesized model was not a close enough match to the null model. Third, RMSEA and SRMR were marginally acceptable at 0.083, and 0.079, respectively (Hu & Bentler, 1998). However, despite this it was concluded that the model did not adequately fit the data, given the low CFI (Byrne, 2011).

This poor fit is perhaps not surprising given that respecification of the measurement model is usually required (Aquino et al., 1997). Decisions on how a model should be respecified should take into account both content and statistical decisions. The preferred solution for problem fit is to delete problem indicators (Anderson & Gerbing, 1988). Problem indicators are those which do not significantly load onto the factor in question, and those with significant but weak loadings (Hair, Anderson, Tatham, & Black, 1992). These authors suggest that item loadings above 0.30 are considered to be sufficiently important for inclusion, those above 0.40 are more important, and that those above 0.50 are considered very important. However, they also stressed that there are no accepted “absolute” standards for the cut-offs; the choice is based on judgment, purpose of the study, and prior studies. Based on evaluation of item content and inspection of modification indices, five indicators with loadings below 0.50 were dropped from the model. Model fit to the data improved, $\chi^2(335) = 1,141, p < 0.001$, CFI = 0.88, RMSEA = 0.074, SRMR = 0.074, AIC = 34,228. However, the CFI remained marginally short of the standards outlined by Hu and Bentler (1998). As such, CFA indicates that the proposed model did not fit the data sufficiently for the purposes of structural equation

modeling (Hu & Bentler, 1998). Table 1 presents the means, standard deviations, reliabilities, and correlations among the model's components.

Table 1.
Means, Standard Deviations, Cronbach Alphas, and Correlations of Study Variables

Item	Mean	SD	Item					
			1	2	3	4	5	6
1. Demands	2.14	0.65	(.75)					
2. Control	2.67	0.74	-.28**	(.70)				
3. Support	3.50	0.75	-.57**	.56**	(.81)			
4. Job Satisfaction	4.52	1.33	-.31**	.75**	.43**	(.85)		
5. Emo Exhaustion	3.37	1.35	.28**	-.64**	-.35**	-.70**	(.91)	
6. Turnover Int'	1.86	1.01	.16*	-.51**	-.15*	-.51**	.46**	(.95)
7. Vol' Turnover	0.07	0.26	-.09	-.26**	.04	-.18*	.21*	.53**

Note. $N = 236-443$. * $p < 0.05$, ** $p < 0.01$; Coefficient alphas are on the diagonal, and correlations below diagonal. Emo Exhaustion = Emotional Exhaustion; Turnover Int' = Turnover Intentions; Vol' Turnover = Voluntary Turnover.

The reliability of the set of items underlying each factor indicated satisfactory internal consistency. This aligns with other studies using these measures. For example, role conflict and role ambiguity (e.g., “demands”) had internal reliability ratings of 0.84 and 0.77, respectively in Agho, Mueller, and Price (1993). Routinization (the inverse of task variety; Karasek & Theorell, 1990) and autonomy (e.g., “control”) each had cronbach alphas of 0.81 in the same study. Third, supervisor and coworker support (e.g.,

“support”) has internal reliabilities of 0.84 and 0.68, respectively, in Ko, Price, and Mueller (1997). Fourth, a host of JDC(S) studies have measured emotional exhaustion using Maslach & Jackson’s (1981) measure, with alphas approximately ranging from 0.86 to 0.94. Similarly, a number of JDC(S) studies have measured job satisfaction using Price and Mueller’s 4-item scale, with internal reliabilities ranging from 0.82 to 0.86. Finally, turnover intention was measured with an alpha of 0.95 in Hom and Griffeth’s (1991) study.

The Pearson correlation coefficient matrix in Table 1 shows support for the nine hypothesized bivariate relationships. First, job demands are positively correlated with emotional exhaustion ($r = .28, p < .01$), and negatively correlated to job satisfaction ($r = -.31, p < .01$), supporting hypotheses 1 and 2, respectively. Also, job control is negatively correlated with emotional exhaustion ($r = -.64, p < .01$), and positively correlated with job satisfaction ($r = .75, p < .01$), supporting hypotheses 3 and 4, respectively. Additionally, workplace support is negatively correlated with emotional exhaustion ($r = -.35, p < .01$), and positively correlated with job satisfaction ($r = .43, p < .01$), supporting hypotheses 5 and 6, respectively. Moreover, emotional exhaustion is negatively correlated with turnover intention ($r = -.51, p < .01$), supporting hypotheses 7, and job satisfaction is positively correlated with turnover intention ($r = .46, p < .01$), supporting hypotheses 8. And, turnover intention is positively correlated with voluntary turnover ($r = .53, p < .01$), supporting hypotheses 9. Finally, relationships between respective stressor and strain variables and turnover intention are consistent with the stress and turnover literatures. That is, job demands are positively correlated with turnover intention

($r = .16, p < .05$); job control and workplace support are negatively correlated with turnover intention ($r = -.51, p < .01$), ($r = -.15, p < .05$), respectively. Emotional exhaustion is positively correlated with turnover intention ($r = .46, p < .01$); and job satisfaction is negatively correlated with turnover intention ($r = -.51, p < .01$).

One potential issue with the factors in the model is that many variables are not distinct from one another, with moderate-to-high correlations found between several of them. This may be due to common method variance between the six factors that are exogenous to voluntary turnover in the model (i.e., all measures used except for voluntary turnover were self-report) (Podsakoff & Organ, 1986). Common method variance is defined as the use of a single method to measure variables in a study, which can threaten the study's construct validity by overestimating associations (McMillan & Schumacher, 2006). Although voluntary turnover was measured objectively, common method bias may account for the relationships between stressors (i.e., demands, control, and support), psychological strains (i.e., emotional exhaustion and job dissatisfaction), and turnover intention in the model. Therefore, consistent with Podsakoff and Organ's (1986) recommendations, the goodness-of-fit of a single factor model incorporating all six latent factors was measured to test for mono-method bias. However, this single factor model yielded a substantially weaker fit, $\chi^2 (495) = 4,332, p < 0.001$, CFI = 0.48 RMSEA = 0.133, SRMR = 0.117, AIC = 42,579, than the six factor model incorporating all latent factors in the tested model, $\chi^2 (480) = 1,924, p < 0.001$, CFI = 0.81 RMSEA = 0.083, SRMR = 0.079, AIC = 40,202, which suggests that common method variance is not a pervasive issue in the tested model. One possible explanation for this is that common

method variance is reduced when data is collected across multiple time points (Avolio, Yammarino, & Bass, 1991), as in the present study.

Structural Equation Model

Despite the relatively poor fit of the model to the data, the 6-factor measurement model was extended to 7-factor structural equation model (the SEM included voluntary turnover). As previously mentioned, three employees who were involuntarily terminated from the organization were not included in the analysis. The model explained 20% of variance in turnover cases. However, as expected given the results of the CFA, the model's fit with the data was unsatisfactory, $\chi^2(516) = 1,047, p < 0.001$, CFI = 0.77, RMSEA = 0.048, WRMR = 1.167. Mplus did not provide a fit indices for SRMR or AIC because the SEM included a categorical variable (i.e., voluntary turnover) (Muthen & Muthen, 2007). When the CFA included a mixture of continuous and categorical variables, Mplus determines the number of categories for each factor indicator. The default estimator of this is the *weighted* root mean residual (WRMR), which is a robust weighted least squares estimator (Muthen & Muthen, 2007). SRMR and AIC fit statistics are only provided when the SEM consists entirely of continuous factors. However, as with SRMR, WRMR values range from 0 to very large, with smaller numbers preferred. Similarly, for good fitting models WRMR should be less than 0.90, with numerical integration becoming "increasingly more computationally demanding as the number of factors and the sample size increase" (Muthen & Muthen, 2007, p. 57). The WRMR for the current study was WRMR of 1.167, thus indicated inadequate fit to the data.

Therefore, despite a strong RMSEA, it was concluded that the model did not adequately fit the data because of the low CFI, and the high WRMR values (Byrne, 2011).

Inspections of the path coefficients of the model were mixed in terms of support for the nine hypotheses (see figure 3). Job demands were positively related to emotional exhaustion ($b = 0.22, p < 0.01$), and negatively related to job satisfaction ($b = -0.23, p < 0.05$), thus supporting hypotheses 1 and 2. Job control was negatively related to emotional exhaustion ($b = -0.86, p < 0.01$), and positively related to job satisfaction ($b = 1.06, p < 0.01$) in support of hypotheses 3 and 4. Emotional exhaustion at time 1 was positively related to turnover intention at time 2 ($b = 0.21, p < 0.01$) in support of hypothesis 7. Additionally, job satisfaction was negatively related to turnover intention at time 2 ($b = -0.35, p < 0.01$), thus supporting hypothesis 8. Moreover, turnover intention at time 2 was positively related to voluntary turnover recorded at time 3 ($b = 0.45, p < 0.01$), thus supporting hypothesis 9.

Although hypotheses 1-4, and 7-9 were supported, in contrast to the extant literature (e.g., Hausser et al., 2010; Van der Doef & Maes, 1999) workplace support was positively related to emotional exhaustion ($b = 0.33, p < 0.01$), and negatively related to job satisfaction ($b = -0.39, p < 0.01$), thus failing to support hypotheses 5 and 6. These findings appear to be attributable to a statistical phenomenon known as “reversal paradox”, rather than a genuinely opposite relationship. The reversal paradox refers to the possibility of two variables being positively (or negatively) related, and simultaneously both being negatively (or positively) related within each level of a third variable (Messick & Van de Geer, 1981). Reversal paradox is a likely phenomenon when two variables, A

and B are highly correlated with each other but have different relationships with Y, with the weaker relationship reversing direction (Messick & Van de Geer, 1981).

Consequently, the model must be affected by multicollinearity (a high degree of correlation among the model's predictor variables; Grewal, Cote, & Baumgartner, 2004) for reversal paradox to take place (Gromping & Landau, 2010). More specifically, *two* cases of reversal paradox are apparent in the findings because relationships between support and both emotional exhaustion and job satisfaction were in the opposite directions to that expected. Unfortunately, most 'solutions' to multicollinearity are bespoke, such as eliminating a variable (which may lead to misspecification error), or restricting parameters (which is not always possible; Grewal et al., 2004). One potential solution with the current model was to include only one strain (e.g., either job satisfaction or emotional exhaustion), thereby reducing multicollinearity by removing one of two highly correlated variables ($r = -.70, p < .01$) in the model. However, the reversed relationships between support and strain remained, regardless of whether job satisfaction or emotional exhaustion was removed.

Figure 3. Model of standardized path coefficients. Note. * $p < 0.05$, ** $p < 0.01$

With regards to the mediating effect of psychological strain on stressful work and voluntary turnover, all pathways in the model were significant (see figure 3). However, the direct path from demands to turnover intention at time 2 was not significant (see figure 4). This implies that emotional exhaustion and job satisfaction mediate the relationships between demands turnover intention (Aquino et al., 1997). The direct path from control to turnover intention was significant, indicating that there was no mediating effect of job satisfaction or emotional exhaustion on control and turnover intention. Finally, the direct path from support to turnover intention was significant, but in the opposite direction to that expected. This suggests that emotional exhaustion and job satisfaction do not mediate the relationship between support and turnover intention.

However, similar to the relationships between support and job satisfaction and emotional exhaustion, respectively, the direction of this relationship between support and turnover intention may be due to a reversal paradox (Messick & Van de Geer, 1981). Thus, a different approach was required to examine the stress-strain-turnover relationship using the current data. One such approach is outlined in the following section.

Figure 4. Model of standardized path coefficients including direct paths from demands, control, and support to turnover intentions. Note. $^{*}p < 0.05$, $^{**}p < 0.01$

A Test of a Revised Model

Alternative approaches to testing the model are possible without compromising the statistical or theoretical validity of the study. As such, a different approach was used in order to alleviate the issues of inadequate fit to the data, and cases of reversal paradox due to multicollinearity in the original model. First, latent factors for stressors (demands, control, and support) or strains (job satisfaction and emotional exhaustion) were replaced with observed variables in the form of observed scale mean scores (the unweighted average of their respective set of items). This was done to reduce multicollinearity in the model because many correlations would be smaller given that error is not accounted for in observed variables (Mason & Perreault, 1991). One study to have taken this approach using the JDC(S) model is Turner et al. (2012).

Second, workplace support was replaced with perceived organizational support (POS; Eisenberger, Huntington, Hutchison & Sowa, 1986) rather than perceived support from coworkers and supervisor(s). POS represents an overarching manifestation of social support from the workplace (Coyle-Shapiro, & Newman, 2004). In conjunction with, or addition to support from coworkers and supervisor(s), employees are thought to form opinions about the extent to which the organization values their opinion and cares about their well-being (Chen, Eisenberger, Johnson, Sucharski, & Aselage, 2009). POS has developed a strong presence in the organizational literature over recent decades, including reviews of its effect on strain outcomes and turnover intentions (Rhoades & Eisenberger, 2002; Riggle, Edmondson, & Hansen, 2009). POS has rarely, if ever, been measured in JDCS studies, which usually conceptualize and measure workplace support

as that of coworkers and supervisor(s) (Hausser et al., 2010; Karasek & Theorell, 1990). However, given that the premise of the JDC(S) model is to examine employee perceptions of the work environment (Karasek, 1979; Karasek & Theorell, 1990), POS should arguably constitute a part of such examinations.

Finally, demands and control were measured using alternative constructs. One criticism of the JDC(S) model has been that its dimensions can be measured in many different ways, thus inviting the question of what the model is actually measuring (Kristensen, 1995). However, this flexible approach has also been a catalyst for the model's broad array of findings and lasting influence in the stress and organizational literatures (Kain & Jex, 2010). For example, many studies of the model have operationalized job demands as role conflict and ambiguity (Hausser et al., 2010) given the premise that having conflicting or ambiguous goals can be stressful (Sulsky & Smith, 2005). However, Karasek's (1979) original concept of demands relates to "overload" in one's job, defined as occurring when "the environmental situation poses demands which exceed the individual's capabilities for meeting them" (p. 287). Moreover, as with role conflict and role ambiguity, evidence points to role overload being positively related to emotional exhaustion, and negatively related to job satisfaction (Griffin & Clarke, 2011). The similarity of these relationships is perhaps the main reason why the interchangeability between JDC(S) studies in how demands are measured (c.f. Van der Doef & Maes, 1999). Similarly, control has also been measured in a number of different ways across studies of the model. Specifically, according the Karasek and Theorell (1990) there is "a close practical linkage between the two theoretically distinct concepts

of the breadth of skills usable on the job (Adam Smith's [1976] specialization of labor, our *skill discretion*, or task variety) and social authority over making decisions (our *decision authority*, or autonomy)" (p. 58). Most JDC(S) studies have focused on skill discretion *or* decision authority when measuring perceived control, with literature evidencing similar relationships between these, and psychological strains (Kain & Jex, 2010).

In light of these alternative approaches, the model was re-examined. First, demands were measured using a 3-item subscale of *role overload* from the job stress scale from Price and Mueller (1981). Responses were made on a 5-point Likert scale (1 = "Never", 5 = "Always"), and sample items included: "The workload on my job is too heavy". Second, control was measured using the task variety scale, as outlined previously. However, the autonomy scale was dropped from the control factor in order to focus exclusively on the *skill discretion* approach to measuring control (Karasek & Theorell, 1990). The main reason for retaining task variety rather than autonomy was the inadequate reliability of the autonomy scale (0.66) when measured independently. Third, support was measured using the 16 item short form of the POS from the Eisenberger et al. (1986) measure of support inventory. Responses were made on a 7-point Likert scale (1 = "Never", 7 = "Always"), and sample items included: "The organization cares about my well-being". Finally, demands, control, and support remained as latent factors. However, job satisfaction and emotional exhaustion factors were replaced with observed mean scores in order to reduce multicollinearity, and to improve the sample-parameter ratio (see Turner et al., 2012).

Internal reliabilities for role overload, task variety, and POS were all adequate (0.77, 0.75, and 0.94, respectively), and results of the revised measurement model indicated a far more satisfactory fit to the data than the original model, $\chi^2 (312) = 908.71$, $p < 0.001$, CFI = 0.90, RMSEA = 0.066, SRMR = 0.084. Moreover, the revised structural equation model also indicated a superior fit than that of the original model, $\chi^2 (341) = 554.29$, $p < 0.001$, CFI = 0.91, RMSEA = 0.038, WRMR = 0.078, and explained 27.5% of variance in voluntary turnover cases. All nine hypotheses were supported in the revised model (see figure 5).

Figure 5. Model of standardized path coefficients of the revised model. Note. * $p < 0.05$, ** $p < 0.01$

Finally, I found a mediating effect of job satisfaction and emotional exhaustion on demands, control, and support, respectively, and turnover intention. In line with Aquino et al's (1997) definition of mediation, paths from demands, control, and support to job satisfaction and emotional exhaustion were significant, as were paths from these strain variables to turnover intentions. However, direct paths from demands, control, and support, to turnover intention were not significant (see figure 6), thus implying a mediating effect, as originally proposed.

Figure 6. Model of standardized path coefficients in revised model, including direct paths from demands, control, and support to turnover intentions (with bold arrows). Note. $*p < 0.05$, $**p < 0.01$

Chapter 4: Discussion

Summary of Findings

The original model provides mixed evidence for the mediating role of emotional exhaustion and job satisfaction on stressful work on voluntary turnover, consistent with organizational stress theory (e.g., Kahn & Byosiére, 1992). First, the positive relationships between demands and emotional exhaustion, and the negative relationship between demands and job satisfaction further support the classical position of work stress literature that demands are positively related to psychological job strain (e.g., Jex & Crossley, 2005; Kahn & Byosiére, 1992; Selye, 1956, 1976; Sulsky & Smith, 2005). Second, the finding that perceptions of control are positively related to job satisfaction and negatively related to emotional exhaustion is also consistent with the JDC(S) (Hausser et al., 2010; Karasek & Theorell, 1990; Van der Doef & Maes, 1999), and other work stress literature (Kahn & Byosiére, 1992; Sulsky & Smith, 2005). Third, the relationships between emotional exhaustion and job satisfaction, respectively, with turnover intentions were as expected. That is, emotional exhaustion at time 1 was positively related to turnover intentions at time 2, and job satisfaction at time 1 was negatively related with turnover intentions at time 2. These findings corroborate the turnover literature, which has repeatedly found the negative relationship between emotional exhaustion and turnover intention (e.g., Durcharme, Knuden & Roman, 2007; Moore, 2000; Taris, Schreurs & Van Iersel-Van Silfhout, 2001), and the positive relationship between job satisfaction and turnover intention (e.g., Griffeth & Hom, 2001; Hom & Griffeth, 1995; Mobley, 1977; Mobley et al., 1979; Price & Mueller, 1986).

Fourth, turnover intentions positively predicted incidents of voluntary turnover, in line with a substantial body of prior research evidence (e.g., Griffeth & Hom, 1995; Griffeth, Hom, & Gaertner, 2000; Hom & Griffeth, 2001).

Fifth, in spite of the aforementioned supportive relationships, associations between support and emotional exhaustion, and job satisfaction, respectively, contradict a vast weight of JDC(S) and other work stress studies (e.g., Hausser et al., 2010; Griffin & Clarke, 2011; Karasek & Theorell, 1990). Moreover, the indirect path from support to turnover intention in figure 4 was also in the opposite direction to that expected (c.f., Hom et al., 2010). Consistent with Messick and Van de Geer (1981), these findings may be due to reversal paradox because: (1) control and support are fairly highly correlated ($r = 0.56$); (2) control and support, as resources, should have similar (i.e., negative) relationships with strains (Kahn & Byosiore, 1992; Karasek & Theorell, 1990), despite the model showing opposite relationships with emotional exhaustion ($b = -0.86, p < 0.01$; $b = 0.33, p < 0.01$, respectively), and job satisfaction ($b = 1.06, p < 0.01$; $b = -0.39, p < 0.01$, respectively); and (3) support has a weaker relationship with both emotional exhaustion and job satisfaction than does control (see Table 1), and as such is the variable with the reversed coefficient. A counter argument to this finding concerns many situations where “a marginal perspective and an assessment of each regressor conditional on the value of others (i.e., considering several regressors simultaneously) will lead to meaningful and sizable changes in the magnitude of the respective regression coefficients” (Gromping & Landau, 2010, p. 196). In other words, relationships may change based on the other variables in the regression equation. Moreover, “...since

changes in the direction of coefficients always cause surprises, they have sometimes been termed ‘paradoxes’” (Gromping & Landau, 2010, p. 196). However, these authors also argue that to determine whether or not these reversed relationships are due to reversal paradox “...it is crucial to understand the nature of the question at hand and decide for the adequate perspective” (Gromping & Landau, 2010, p. 196).

Despite the possibility of spuriously concluding the presence of reversal paradox, there are several reasons to believe that two legitimate cases of it may exist in the original model. First, support at work might intuitively be expected to be negatively related to emotional exhaustion, and positively related to job satisfaction, given its facilitative role in accomplishing tasks (Karasek & Theorell, 1990). Second, as previously mentioned, evidence in the literature almost unanimously corroborates this (Griffin & Clarke, 2011; Kahn & Byosiére, 1992; Karasek & Theorell, 1990). A third reason is that the model appears to be affected by multicollinearity, which is a necessary circumstance for reversal paradox to take place (Gromping & Landau, 2010). Multicollinearity results in highly unstable regression coefficients, which leads to serious problems when making inferences and predictions based on the model in question (Belsley 1991, Rawlings et al. 1998). It is generally more visible in SEM than in regression because measurement error is controlled for in structural models consisting of latent factors (Mason & Perreault, 1991). Although the presence of error results in less variance accounted for in the dependent variable versus when it is controlled for, measurement error also attenuates correlations among exogenous variables (Hu & Bentler, 1999). Thus, the correlations among predictors are higher in SEM than they would have been in regression analysis

(Maruyama, 1998). The relevance of multicollinearity to the issue of reversal paradox is Lipovetsky and Conklin's (2001) key assumption that a discrepancy between the signs of correlations and coefficients must be due to random error in the estimated coefficient because of multicollinearity. This is found in the present findings, where support is negatively correlated with emotional exhaustion ($r = -.35$), and positively correlated with job satisfaction ($r = .43$), but is *positively* related to emotional exhaustion ($b = 0.33$, $p < .01$), and *negatively* related with job satisfaction ($b = -0.39$, $p < .01$). A fourth reason to suspect a reversal paradox is that when demand and control factors are eliminated from the model, the respective relationships between support and job satisfaction and emotional exhaustion are significant in the direction expected. That is, support is negatively related to emotional exhaustion ($b = -0.71$, $p < 0.01$), and positively related to job satisfaction ($b = 0.88$, $p < 0.01$) (figure not shown). Additionally, the direct path from support to turnover intention in figure 4 is also in the direction expected ($b = 1.47$, $p < 0.05$), when demands and control factors are eliminated from the model (figure not shown).

An revised version of the model was tested in order to remediate the three failings of the first model; that is, its inadequate fit to the data, reversed relationships between support and strain due to a reversal paradox, and an inconclusive test of mediation for this same reason. This model measured demands, control, and support using different constructs than in the original model, but without compromising either the construct, or theoretical validity of the study. Results showed an acceptable fit to the data, and all nine of the study's hypotheses were supported. Moreover, job dissatisfaction and emotional

exhaustion fully mediated the relationships between demands, control, and support, and turnover intention. Thus, the alternative model supported the research aims of the study.

Limitations and Future Research

Aside to limitations of inadequate fit to the data and reversal paradox found in the original model, this study has two main limitations. First, despite one of the main premises of organizational stress theory being that job stressors *predict* strains (Kahn & Byosiére, 1992), stressors and strains in the model were recorded at a single time point. Thus, results may be attributable to reverse/reciprocal causality. Reverse/reciprocal causality is cause and effect in reverse, such that the effect precedes the cause (Tharenou, 1993). For example, findings show a positive relationship between perceived demands and emotional exhaustion. However, it is possible that being emotionally exhausted may evoke perceptions of job demands being high. Similarly, results show a negative relationship between perceived control and emotional exhaustion. However, an employee who feels able to cope with the pressures of work (i.e., who is *not* emotionally exhausted) may be likely to perceive a greater extent of control. Thus, it would have been preferable to measure stressors, strain, turnover intention, and voluntary turnover at four time points, rather than three. However, a weight of predictive evidence from other JDC(S) studies suggests that demands, control, and support respectively predict emotional exhaustion and job satisfaction (Hausser et al., 2010; Van der Doef & Maes, 1999). Thus, the limitation in the present study is a limitation of the tested model, rather than a limitation of overall understanding of how stressors predict strains according the JDC(S) theory (Karasek & Theorell, 1990).

A second limitation is that the sample consists predominantly of Caucasian males. This may reduce the generalizability of findings for two reasons. First, evidence suggests that gender differences exist in stress coping behaviors, even when a stressor is identical for males and females (Ptacek, Smith, & Dodge, 1994). Second, racial differences are thought to exist in how stressors account for self-reported mental health (Williams, Yu, Jackson & Anderson, 1997). Thus, results of these same measures in a more racially and sexually heterogeneous sample may yield different findings to those of the present study. Despite this possibility, the weight of evidence that turnover intention predicts voluntary turnover is sufficiently consistent (Griffeth & Hom, 2001; Hom & Griffeth, 1995) that it is unlikely to be due to the relative homogeneity of the present sample.

Future research could address these limitations by measuring stressors, strains, turnover intention, and voluntary turnover at four different time points, and examining the stress-strain-turnover process in more diverse samples of employees. However, future research could also replicate and extend the current study in several different ways. First, generalizability of findings could be tested by examining a similar model with samples of employees from various other professions. Little has thus far been written on how the dimensions of the JDC(S) model might differently affect employees in varying professions (Taris & Kompier, 2003). However, Sulsky and Smith (2005) acknowledge that there are vastly different stressors pervading different occupational groups. Thus, an understanding of this may help further knowledge of how demands, control, and support may lead to voluntary turnover across a broad spectrum of occupational groups.

Second, future research could eliminate the possibility of common method bias by searching for indicators of stress and strain other than self-reports. This threat is inherent in studies which rely of self-reports to measure *both* stressors and strains (Taris & Kompier, 2003). However, despite widespread criticism of this practice (Spector, 2006), individual perceptions are a critical component of the stress process (Lazarus, 1966). Moreover, a large body of research suggests that actual existence or degree of stress may be less important to an individual's well-being than how the individual appraises and copes with perceived stress (for review, see Aldwin & Revenson, 1987). Thus, self-report measures are popular in stress research because they allow for assessment of affective, somatic, and cognitive aspects of perceived stress and psychological strain, and in doing so have high face validity (Sulsky & Smith, 2005). If researchers are aware of the inherent dangers of common method bias, a number of statistical and post hoc remedies, and procedural methods for dealing with this can reduce the problem (see Podsakoff & Organ, 1986).

Future research could also extend the present model by examining interactive effects of demands, control, and support on psychological strain, turnover intentions, and voluntary turnover. Thus far, studies of the JDC(S) model examining turnover (i.e., De Croon et al., 2004, and the present study), and turnover intention (e.g., Durcharme, Knuden & Roman, 2007; Moore, 2000; Taris, Schreurs & Van Iersel-Van Silfhout, 2001) have examined only main effects of demands, control, and support. However, despite skepticism surrounding interactive effects between the model's dimensions (Beehr et al., 2001), enough interactive effects have been found to suggest that under the right

circumstances (i.e., a sufficiently large sample size) further examination may be warranted (Hausser et al., 2010). Finally, future studies could also include other established predictors of turnover in addition to job satisfaction, emotional exhaustion, and turnover intentions. Job satisfaction and turnover intentions have played consistent roles in most models of employee turnover (Steel & Lounsbury, 2009). However, the role of perceived alternatives on intention to quit is also a bedrock of the turnover literature (Griffeth & Hom, 2001; Hom & Griffeth, 1995).

Managerial Implications

Accounting for the reversal paradox effect in the original model, and the outlined limitations of the study, the finding that stress may induce voluntary turnover via strain in the revised model has several implications for management. The first relates to job design as a form of primary stress intervention. Primary stress interventions are concerned with taking actions to reduce or eliminate sources of stress in the workplace that are inherent to negative effects on individuals (Murphy, 1988). Job design was originally defined as the set of opportunities and constraints structured into assigned tasks and responsibilities that affect how an employee accomplishes and experiences work (Hackman & Oldham, 1980). This definition has since broadened to processes and outcomes of how work is experienced and enacted by employees, and how it is organized and structured (Morgeson & Humphrey, 2008; Parker & Wall, 1998). The JDC(S) model is one perspective of job design (Grant, Fried, & Juillerat, 2011).

Job design continues to be an important subject in organizational research for a number of reasons surrounding its role in how employees experience work. First, job

design theory remains high in validity, importance, and usefulness and has facilitated the description, diagnosis, and resolution to a number of work-based practical problems (Miner, 2003). Second, job design influences the very foundations of employee experiences and actions across the board of occupations and organizations (Grant et al., 2011). Third, job design is an actionable feature of how organizations are designed and run. Thus, it can be manipulated by leaders more easily than many other organizational contexts, such as culture, climate, and relationships (Hackman & Oldham, 1980). Fourth, the creation of new types of jobs in dramatically changing domestic and international landscapes lends itself to renewed interest in job design (Elsbach & Hargadon, 2006; Grant & Parker, 2009). Specifically, recent rapid increases in autonomy, decision latitude, professionalisation, and flattening organizations have witnessed expansion, revision, and negotiation in employee roles (Parker, Wall, & Jackson, 1997; Rousseau, Ho, & Greenberg, 2006; Wrzesniewski & Dutton, 2001). Thus, employees are becoming more adept than ever before at recognizing a well- versus poorly-designed job (Morgeson & Humphrey, 2008). The results of this study suggest that how jobs are designed based on demands, control, and support may affect employee retention (Morgeson & Humphrey, 2008; Parker & Ohly, 2008).

Along with designing jobs to be less stressful for employees, additional managerial considerations may include secondary and tertiary responses to work stress in order to reduce psychological strain and unwanted turnover. Secondary interventions focus on the prompt detection and management of stress by increasing awareness and improving stress management skills of the individual through training and educational

activities (Cooper & Cartwright, 1997). Stress thresholds vary between individuals and across different situations based on a number of moderators, such as personality, coping strategies, attitudes, training, past experiences (Sulsky & Smith, 2005). As such, secondary interventions can focus on development of self-awareness, as well as a host of basic relaxation techniques and lifestyle modification programs (Matteson & Ivancevich, 1987; Semmer, 2006; Van der Klink et al., 2001). For example, Van der Klink et al. (2001) found that both behavioral-cognitive and relaxation techniques had a positive effect on workplace stress. Finally, tertiary interventions are concerned with the treatment, rehabilitation, and recovery of those who have suffered or are suffering from serious ill health as a result of stress (Cooper & Cartwright, 1997). This typically involves internal or external counseling services through employee assistance programs (EAPs) (Cooper & Cartwright, 1997). Tertiary intervention appears to be a last resort for dealing with psychological strain in the workplace, because those afflicted may be the most likely to leave the organization in order to alleviate stress (Sulsky & Smith, 2005).

Conclusions

The present study is only the second examination of the stress-strain-turnover process consistent with organizational stress theory (e.g., Kahn & Byosiére, 1992) using the JDC(S) model (Karasek & Theorell, 1990). This study aimed to revise and extend the original work of De Croon et al. (2004) by making several methodological improvements to how the stress-strain-turnover process is measured, based on both the work stress and employee turnover literatures. All relationships in the tested model were supported except for those of workplace support and both emotional exhaustion and job satisfaction, which

were in the opposite directions, respectively. However, evidence suggests that this was due to a reversal paradox, and the model was revised in several ways to eliminate both this problem and the issue of inadequate fit to the data. Moreover, a revised model based on several plausible measurement adjustments indicated that psychological strains of emotional exhaustion and job dissatisfaction completely mediate the relationship between demands, control, and support, and turnover intentions; and that turnover intention predicts voluntary turnover.

Throughout the latter half of the twentieth century, scholars have derived and examined a multitude of theories and constructs with the purpose of better predicting voluntary separations from the workplace. These have been broadly classified into comprehensive models of turnover (Lee & Mitchell, 1994; Mobley, 1977; Mobley et al., 1979; Price & Mueller, 1981; Steers & Mowday, 1981), a series of new explanatory constructs (Mitchell, Holtom, Lee, Sablinski, & Erez, 2001; Trevor, 2001), and methodological solutions designed to improve the measurement of turnover (Griffeth, et al., 2005). However, despite vastly differing contents, nearly all of these perspectives are underpinned by the following sequence: Distal antecedents (e.g., job characteristics, personality) predict attitudinal antecedents (e.g., job satisfaction), which predicts quit intentions and voluntary turnover in the criterion space (Hom et al., 2012). This aligns with organizational stress theory, according to which work stress induces psychological strain, which then leads to behavioral coping measures such as voluntary turnover (Kahn & Byosiene, 1992).

Work stress is increasingly becoming a modern day pandemic (Sulsky & Smith, 2005), and its role in employee turnover is widely recognized (Hom & Griffeth, 1995; Steel & Lounsbury, 2009). As we move deeper into the twenty-first century it is imperative that our understanding of this pervasive phenomenon leads to practical solutions to reducing unwanted and dysfunctional employee turnover, the consequences of which to both the organization and employee, are manifold.

References

- Abramis, D. J. (1994). Work role ambiguity, job satisfaction, and job performance: Meta-analyses and review. *Psychological Reports*, 75, 1411–1433.
doi:10.2466/pr0.1994.75.3f.1411
- Agho, A. O., Mueller, C. W., & Price J. L. (1993). Determinants of employee job satisfaction: An empirical test of a causal model. *Human Relations*, 46, 1007-1027. doi:10.1177/001872679304600806
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior* (pp. 11-19). New York: Springer Verlag.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211. doi:10.1016/0749-5978(91)90020-t
- Aldwin, C., & Revenson, T. A. (1987). Does coping help? A reexamination of the relation between coping and mental health. *Journal of Personality and Social Psychology*, 53, 337-348.
- Allen, D., Bryant, P., & Vardaman, J. (2010). Retaining talent: Replacing misconceptions with evidence-based strategies. *Academy of Management Perspective*, 24, 48-64.
doi:10.5465/AMP.2010.51827775
- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice – A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411-423. doi:10.1037/0033-2909.103.3.411

- Appelbaum, S. H., Delage, C., Labib, N., & Gault, G. (1997). The survivor syndrome: Aftermath of downsizing. *Career Development International*, 2(6), 278-86. doi:10.1108/13620439710178639
- Aquino, K., Griffeth, R. W., Allen, D. G., & Hom, P. W. (1997). Integrating justice constructs into the turnover process: A test of a referent cognitions model. *Academy of Management Journal*, 40(5), 1208-1227. doi:10.2307/256933
- Averill, J. R. (1973). Personal control over aversive stimuli and its relationship to stress. *Psychological Bulletin*, 80, 286-303. doi:10.1037/h0034845
- Avolio, B. J., Yammarino, F. J., & Bass, B. M. (1991). Identifying common methods variance with data collected from a single source: An unresolved sticky issue. *Journal of Management*, 17(3), 571-587.
- Babakus, E., Cravens, D. W., Johnston, M., & Moncrief, W. C. (1999). The role of emotional exhaustion in sales force attitude and behavior relationships. *Journal of the Academy of Marketing Science*, 27(1), 58-70. doi:10.1177/0092070399271005
- Babakus, E., Ferguson Jr, C. E., & Jöreskog, K. G. (1987). The sensitivity of confirmatory maximum likelihood factor analysis to violations of measurement scale and distributional assumptions. *Journal of Marketing Research*, 222-228.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182. doi:10.1037/0022-3514.51.6.1173

- Beehr, T. A., & Bhagat, R. S. (1985). *Human stress and cognition in organizations: An integrated perspective*. New York: Wiley.
- Beehr, T. A., Glaser, K. M., Canali, K. G., Wallwey, D. A. (2001). Back to basics: Re-examination of demand-control theory of occupational stress. *Work & Stress*, 15(2), 115-130. doi: 10.1080/02678370110067002
- Beehr, T. A., & Newman, J. E. (1978). Job stress, employee health, and organizational effectiveness: A facet analysis, model, and literature review. *Personnel Psychology*, 31, 665–699. doi:10.1111/j.1744-6570.1978.tb02118.x
- Belsley, D. A. (1991). *Conditioning Diagnostics*. New York: John Wiley.
- Bentler, P. M. (1989). *EQS structural equation program*. Los Angeles: BMDP Statistical Software.
- Bentler, P. M. (1990). Comparative indexes in structural models. *Psychological Bulletin*, 107, 238-246. doi:10.1037/0033-2909.107.2.238
- Berman, E. M., West, J. P., & Richter, M. N. (2002). Workplace relations: Friendship patterns and consequences (according to managers). *Public Administration Review*, 62, 217-230. doi:10.1111/0033-3352.00172
- Blau, G. (2007). Does a corresponding set of variables for explaining voluntary organizational turnover transfer to explaining voluntary occupational turnover. *Journal of Vocational Behavior*, 70, 135-148. doi:10.1016/j.jvb.2006.07.007
- Bollen, K. A. (1990). Overall fit in covariance structure models: Two types of sample size effects. *Psychological Bulletin*, 107, 256-259. doi:10.1037/0033-2909.107.2.256

- Brown, R. L. (1997). Assessing specific mediational effects in complex theoretical models. *Structural Equation Modeling*, 4, 142-156.
doi:10.1080/10705519709540067
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing Structural Equation Models* (pp. 136-162). London: Sage.
- Byrne, B. M. (2011). *Structural equation modeling with Mplus: Basic concepts, applications, and programming*. Mahwah, NJ: Erlbaum.
- Cappelli, P. (2000). A market-driven approach to retaining talent. *Harvard Business Review*, 78(1), 103-111.
- Cascio, W. F. (1991). *Costing human resources: The financial impact of behavior in organizations*, (3rd Ed.). Boston: PWS-Kent.
- Cascio, W. F. (2000). *Costing human resources*. Cincinnati, OH: South-Western.
- Chen, Z., Eisenberger, R., Johnson, K., Sucharski, I., & Aselage, J. (2009). Perceived organizational support and extra-role performance: which leads to which? *Journal of Social Psychology*, 149 (1), 119-24. doi:10.3200/SOCP.149.1.119-124.
- Cooper, C. L., & Cartwright, S. (1997). An intervention strategy for workplace stress. *Journal of Psychosomatic Research*, 43(1), 7-16. doi:10.1016/S0022-3999(96)00392-3
- Cooper, C. L., Dewe, P., & O'Driscoll, M. P. (2001). *Organizational stress: A review and critique of theory, research, and applications*. Thousand Oaks, CA: Sage.

- Cooper, C. L., & Marshall, J. (1976). Occupational sources of stress: A review of the literature relating to coronary heart disease and mental health. *Journal of Occupational Psychology*, 49, 11-28. doi:10.1111/j.2044-8325.1976.tb00325.x
- Coyle-Shapiro, J. A. M., & Neuman, J. H. (2004). The psychological contract and individual differences: The role of exchange and creditor ideologies. *Journal of Vocational Behavior*, 64, 150-164. doi:10.1016/S0001-8791(03)00031-9
- Cranny, C. J., Smith, P. C., & Stone, E. F. (1992). *Job satisfaction: How people feel about their jobs and how it affects their performance*. New York: Lexington Press.
- Cummings, T. G., & Cooper, C. L. (1979). A cybernetic framework for studying occupational stress, *Human Relation*, 32, 395-418.
doi:10.1177/001872677903200504
- Dawis, R. V., & Lofquist, L. H. (1984). *A psychological theory of work adjustment*. Minneapolis: University of Minnesota Press.
- De Croon, E. M., Blonk, R. W. B., Broersen, J. P. J., & Frings-Dresen, M. H. W. (2004). Stressful work, psychological job strain, and turnover: A 2-year prospective cohort study of truck drivers. *Journal of Applied Psychology*, 89(3), 442-454.
doi:10.1037/0021-9010.89.3.442
- De Jonge, J., & Dormann, C. (2006). Stressors, resources, and strain at work: A longitudinal test of the triple match principle. *Journal of Applied Psychology*, 91, 1359-1374. doi:10.1037/0021-9010.91.5.1359

- De Jonge, J., Dormann, C., Janssen, P. M. P., Dollard, M. F., Landeweerd, J. A., & Nijhuis, F. J. N. (2001). Testing the reciprocal relationships between job characteristics and psychological well-being: a cross lagged structural equation model. *Journal of Occupational and Organizational Psychology*, 74, 29–46. doi:10.1348/096317901167217
- De Lange, A. H., Taris, T. W., Kompier, M. A. J., Houtman, L. L. D., & Bongers, P. M. (2003). The very best of the millennium: Longitudinal research and the demand-control (-support) model. *Journal of Occupational Health Psychology*, 8, 282–305. doi:10.1037/1076-8998.8.4.282
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86, 499–512. doi:10.1037/0021-9010.86.3.499
- Diefendorff, J. M., & Chandler, M. M. (2011). Motivating employees. In S. Zedeck (Ed.), *APA handbook of Industrial and Organizational Psychology, Vol 3: Maintaining, expanding, and contracting the organization* (pp. 65-135). Washington, DC, US: American Psychological Association
- Doest, L., Maes, S., Gebhardt, W. A., & Koelewijn, H. (2006). Personal goal facilitation through work: Implications for employee satisfaction and well-being. *Applied Psychology: An International Review*, 55, 192–219. doi:10.1111/j.1464-0597.2006.00232.x

- Durcharme, H. K., Knuden, L. J., & Roman, P. M. (2007). The adoption of medications in substance abuse treatment: Associations with organizational characteristics and technology clusters. *Drug and Alcohol Dependence*, 87 (2-3), 164-174.
doi:10.1016/j.drugalcdep.2006.08.013
- Edwards, J. R. (1992). A cybernetic theory of stress, coping, and well-being in organizations. *Academy of Management Review*, 17(2), 238-274.
doi:10.2307/258772
- Edwards, J. R. (1996). An examination of competing versions of the person-environment fit approach to stress. *Academy of Management Journal*, 39, 292-339.
doi:10.2307/256782
- Edwards, J. R. (2007). Polynomial regression and response surface methodology. In C. Ostroff, & T. A. Judge (Eds.), *Perspectives on organizational fit* (pp. 209-258). San Francisco: Jossey-Bass.
- Edwards, J. R. (2008). Person-environment fit in organizations: An assessment of theoretical progress. *The Academy of Management Annals*, 2, 167-230.
doi:10.1080/19416520802211503
- Edwards, J. R., Caplan, R. D., & Harrison, R. V. (1998). Person-environment fit theory: Conceptual foundations, empirical evidence, and directions for future research. In C. L. Cooper (Ed.), *Theories of organizational stress* (pp. 28-67). Oxford, England: Oxford University Press.

- Edwards, J. R., & Cooper, C. L. (1990). The person-environment fit approach to stress: Recurring problems and some suggested solutions. *Journal of Organizational Behavior, 11*, 293-307. doi:10.1002/job.4030110405
- Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology, 71*, 500–507. doi: 0021-9010/90/500.75
- Elsass, P. M., & Veiga, J. F. (1997). Job control and job strain: A test of three models. *Journal of Occupational Health Psychology, 2*, 195–211. doi: 10.1037/1076-8998.2.3.195
- Elsbach, K. D., & Hargadon, A. B. (2006). Enhancing creativity through “mindless” work: A framework of workday design. *Organization Science, 17*, 470-483. doi: 10.1287/orsc.1060.0193
- Eulberg, J. R., Weekley, J. A., & Bhagat, R. S. (1988). Models of stress in organizational research: A metatheoretical perspective. *Human Relations, 41*, 331-350. doi: 10.1177/001872678804100404
- Fishbein, M. (1967). Attitude and the prediction of behavior. In M. Fishbein (Ed.), *Readings in attitude theory and measurement*. New York: Wiley, 1967.
- Finney, S. J., & DiStefano, C. (2006). Non-normal and categorical data in structural equation modeling. *Structural equation modeling: A second course*, (pp. 269-314). Greenwich, CT: Information Age Publishing.

- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- French, J. R. P., Caplan, R. D., & Harrison, R. V. (1982). *The mechanisms of job stress and strain*. London: Wiley.
- Frese, M. (1989). Theoretical models of control and health. In S. L. Sauter, J. J. Hurrell, & C. C. Cooper (Eds.), *Job control and worker health*. New York: Wiley.
- Friedland, N., Keinan, G., & Regev, Y. (1992). Controlling the uncontrollable: Effects of stress on illusory perceptions of controllability. *Journal of Personality and Social Psychology*, 63, 923-931. doi:10.1037/0022-3514.63.6.923
- Ganster, D. (1989). Worker control and well-being: A review of research in the workplace. In S. L. Sauter, J. J. Hurrell, & C. C. Cooper (Eds.), *Job control and worker health* (pp. 3-24). New York: Wiley.
- Ghorpade, J., Lackritz, J. Y., Singh, G. (2011). Personality as a moderator of the relationship between role conflict, role ambiguity, and burnout. *Journal of Applied Social Psychology*, 41(6), 1275-1298. doi:10.1111/j.1559-1816.2011.00763.x
- Grant, A. M., Fried, Y., & Juillerat, T. (2011). Work matters: Job design in classic and contemporary perspectives. In S. Zedeck (Ed.), *APA handbook of industrial and organizational psychology, Vol 1: Building and developing the organization* (pp. 417-453). Washington, DC: American Psychological Association.

- Grant, A. M., & Parker, S. K. (2009). Redesigning work design theories: The rise of relational and proactive perspectives. *Academy of Management Annals*, 3, 273–331. doi:10.1080/19416520903047327
- Greenberger, D., & Strasser, S. (1986). The development and application of a model of personal control in organizations. *Academy of Management Review*, 11, 164-177. doi:10.2307/258338
- Grewal, R., Cote, J. A., & Baumgartner, H (2004). Multicollinearity and measurement error in structural equation models: implications for theory testing. *Marketing Science*, 23(4), 519-29. doi:10.1287/mksc.1040.0070
- Griffeth, R. W., & Hom, P. W. (2001). *Retaining valued employees*. Thousand Oaks, CA: Sage.
- Griffeth, R. W., Hom, P. W., & Gaertner. (2000). A meta-analysis of antecedents and correlates of employee turnover: update, moderator tests, and research implications for the next millennium. *Journal of Management*, 26(3), 463-488. doi:10.1177/014920630002600305
- Griffeth, R. W., Steel, R. P., Allen, D. G., & Bryan, N. (2005). The development of a multidimensional measure of job market cognitions: The employment opportunity index (EOI). *Journal of Applied Psychology*, 90(2), 335-349. doi:10.1037/0021-9010.90.2.335
- Griffin, M. A., & Clarke, S. (2011). Stress and well-being at work. In S. Zedeck (Ed.), *APA handbook of industrial and organizational psychology*, (p. 359-397). Washington, DC: American Psychological Association.

- Gromping, U., & Landau, S. (2010). Do not adjust coefficients in shapley value regression. *Applied Stochastic Models in Business and Industry*, 26, 194-202. doi:10.1002/asmb.773
- Hackman, J. R., & Oldham, G. R. (1975). Development of the job diagnostic survey. *Journal of Applied Psychology*, 60, 159-170. doi:10.1037/h0076546
- Hackman, J. R., & Oldham, G. R. (1980). *Work redesign*. Reading, MA: Addison-Wesley.
- Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1992). *Multivariate data analysis with readings* (4th ed.). New York: McMillan.
- Halbesleben, J. R. (2006). Sources of social support and burnout: A meta-analytic test of the conservation of resources model. *Journal of Applied Psychology*, 91, 1134-1145. doi:10.1037/0021-9010.91.5.1134
- Halbesleben, J. R. B., & Buckley, M. R. (2004). Burnout in organizational life. *Journal of Management*, 30, 859-879. doi:10.1016/j.jm.2004.06.004
- Hall, D. T., & Mansfield, R. (1971). Organizational and individual response to external stress. *Administrative Science Quarterly*, 16, 533-547. doi:10.2307/2391771
- Hancock, J., Allen, D., Bosco, F., McDaniel, K., & Pearce, C. (2011). Meta-analytic review of employee turnover as a predictor of firm performance. *Journal of Management*. doi:10.1177/0149206311424943.
- Harrison, D. A. (2007). Pitching fits in applied psychological research: Making fit methods fit theory. In C. Ostroff & T. A. Judge (Eds.), *Perspectives on organizational fit* (pp. 389-416). New York: Erlbaum.

- Hart, P. M., & Cooper, C. L. (2001). Occupational stress: Toward a more integrated framework. In N. Anderson, D. S. Ones, H. K. Sinangil, & C. Viswesvaran (Eds.), *Handbook of industrial, work, and organizational psychology* (Vol. 2, pp. 93–114). Thousand Oaks, CA: Sage.
- Hausser, J. A., Mojzisch, A., Niesel, M., & Schulz-Hardt, S. (2010). Ten years on: A review of recent research on the job demand-control (-support) model and psychological well-being. *Work & Stress*, 24(1), 1-35.
doi:10.1080/02678371003683747
- Hayes, A. F., Preacher, K. J., & Myers, T. A. (2011). Mediation and the estimation of indirect effects in political communication research. In E. P. Bucy & R. L. Holbert (Eds.), *Sourcebook for political communication research: Methods, measures, and analytical techniques*. New York: Routledge.
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44, 513-524. doi:10.1037/0003-066X.44.3.513
- Hobfoll, S. E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied Psychology*, 50, 337-370. doi:10.1111/1464-0597.00062
- Hom, P. W. (2010). Organizational exit. In S. Zedeck (Ed.), *Handbook of industrial/organizational psychology*, Vol. 2, pp. 67-117. Washington, DC: American Psychological Association.

- Hom, P. W., & Griffeth, R. W. (1991). Structural equations modeling test of a turnover theory: Cross-sectional and longitudinal analyses. *Journal of Applied Psychology*, 76, 350–366. doi:10.1037/0021-9010.76.3.350
- Hom, P. W., & Griffeth, R. W. (1995). *Employee turnover*. Cincinnati, OH: South-Western College Publishing.
- Hom, P. H., Griffeth, R. W., & Sellaro, C. L. (1984). The validity of Mobley's (1977) model of employee turnover. *Organizational Behavior and Human Performance*, 34(2), 141-174. doi:10.1016/0030-5073(84)90001-1
- Hom, P. W., & Kinicki, A. (2001). Toward a more comprehensive and integrated understanding of how job affect initiates turnover. *Academy of Management Journal*, 44(5), 975-987. doi:10.2307/3069441
- Hom, P. W., Mitchell, T., Lee, T. W., & Griffeth, R. W. (2012). Reviewing employee turnover: Focusing on proximal withdrawal states and an expanded criterion. *Psychological Bulletin*, 138(5), 831-858. doi:10.1037/a0027983
- Hu, L. T., & Bentler, P. M. (1995). Evaluating model fit. In: R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues and applications*. Newbury Park, California: Sage Publications.
- Hu, L. T., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods*, 3, 424-453. doi:10.1037/1082-989X.3.4.424

- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1-55.
doi:10.1080/10705519909540118
- Hutchinson, S. R., & Olmos, A. (1998). Behavior of descriptive fit indexes in confirmatory factor analysis using ordered categorical data. *Structural Equation Modeling: A Multidisciplinary Journal*, 5(4), 344-364.
doi:10.1080/10705519809540111
- Ivancevich, J. M., & Matteson, M. T. (1980). *Stress and work*. Glenview, IL: Scott Foresman.
- Jackson, S. E., & Schuler, R.S. (1985). A meta-analysis and conceptual critique of research on role ambiguity and role conflict in work settings. *Organizational Behavior and Human Decision Processes*, 36, 16-78. doi:10.1016/0749-5978(85)90020-2
- James, L. A. & James, L. R. (1989). Integrating work environment perceptions: Explorations into the measurement of meaning. *Journal of Applied Psychology*, 74(5), 739-751. doi:10.1037/0021-9010.74.5.739
- Jex, S. M., & Crossley, C. D. (2005). Organizational consequences. In J. Barling, E. K. Kelloway and M. R. Frone (Eds.), *Handbook of Work Stress* (pp. 575-600). Thousand Oaks, CA: Sage.

- Jex, S. M., & Yankelevich, M. (2008). Work stress. In J. M. Barling, & C. L. Cooper (Eds.), *The SAGE Handbook of Organizational Behavior*. London: Sage Publications.
- Johnson, A. A. (1995). The business case for work-family programs. *Journal of Accountancy*, 180, 53-57.
- Johnson, J. V., & Hall, E. M. (1988). Job strain, work place social support, and cardiovascular disease: A cross-sectional study of a random sample of the Swedish working population. *American Journal of Public Health*, 78, 1336-1342.
doi:10.2105/AJPH.78.10.1336
- Joreskog, K. G., & Sorbom, D. (1993). *LISREL 8: Structural Equation Modeling with the SIMPLIS Command Language*. Hillsdale, NJ: Lawrence Erlbaum.
- Judge, T. A. (2007). The future of person-organization fit research: Comments, observations, and a few suggestions. In C. Ostroff & T. A. Judge (Eds.), *Perspectives on organizational fit* (pp. 417-445). New York: Erlbaum.
- Kahn, R. L., & Byosiére, P. (1992). *Stress in organizations*. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology*: Vol. 3 (pp. 571-650). Palo Alto, CA: Consulting Psychologists Press.
- Kahn, R. L., Wolfe, D. M., Quinn, R. P., & Snoek, J. D. (1964). *Organizational stress: Studies in role conflict and ambiguity*. New York: Wiley.

- Kain, K., & Jex, S. (2010). Karasek's (1979) job demands-control model: A summary of current issues and recommendations for future research. In P. L. Perrewe, & D. C. Ganster (Eds.), *New developments in theoretical and conceptual approaches to job stress* (pp. 237-268). Bingley, UK: Emerald Group Publishing Limited.
- Karasek, R. A. (1979). Job demands, job decision latitude, and mental strain: Implications for job redesign. *Administrative Science Quarterly*, 24, 285-387.
doi:0001-8392/79/2402-0285\$00.75
- Karasek, R. A. and Theorell, T. (1990). *Healthy work: Stress, productivity, and the reconstruction of working life*. New York: Basic Books.
- Katz, D., & Kahn, R. L. (1978). *The social psychology of organizations* (rev. ed.). New York, NY: Wiley.
- Knudsen H. K., Ducharme, L. J., & Roman, P. M. (2006). Counselor emotional exhaustion and turnover intention in therapeutic communities. *Journal of Substance Abuse Treatment*, 31, 173-180. doi:10.1016/j.jsat.2006.04.003
- Ko, J. W., Price, J. L., & Mueller C. W. (1997). Assessment of Meyer and Allen's three-component model of organizational commitment in South Korea. *Journal of Applied Psychology*, 82(6), 961-973. doi:10.1037/0021-9010.82.6.961
- Kristensen, T. S. (1995). The demand-control-support model: Methodological challenges for future research. *Stress Medicine*, 11, 17-26. doi:10.1002/smi.2460110104
- Kristoff-Brown, A., & Guay, R. P., (2011). Person-environment fit. In S. Zedeck (Ed.), *APA handbook of industrial and organizational psychology*, Vol. 3, (p. 3-50). Washington, DC. American Psychological Association.

- Kristof-Brown, A., Zimmerman, R. D., & Johnson, E. C. (2005). Consequences of individual's fit at work: A meta-analysis of person-job, person-organization, person-group, and person-supervisor fit. *Personnel Psychology*, 58, 281-342. doi:10.1111/j.1744-6570.2005.00672.x
- Lang, J., Thomas, J. L., Bliese, P. D., & Adler, A. B. (2007). Job demands and job performance: The mediating effect of psychological and physical strain and the moderating effect of role clarity. *Journal of Occupational Health Psychology*, 12, 116-124. doi:10.1037/1076-8998.12.2.116
- Lazarus, R. S. (1966). *Psychological stress and the coping process*. New York: McGraw-Hill.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- Lee, R. T., & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*, 81, 123-133. doi:10.1037/0021-9010.81.2.123
- Lee, T. W., & Mitchell, T. R. (1994). An alternative approach: The unfolding model of voluntary employee turnover. *Academy of Management Review*, 19, 51-89. doi:10.2307/258835
- Lewin, K. (1951). *Field theory in social science*. New York: Harper.
- Lim, V. K. G. (1996). Job insecurity and its outcomes: Moderating effects of work-based and nonwork-based social support. *Human Relations*, 49, 171. doi:10.1177/001872679604900203

- Lipovetsky, S., & Conklin, M. (2001). Analysis of regression in game theory approach. *Applied Stochastic Models in Business and Industry*, 17, 319-330.
doi:10.1002/asmb.446
- Locke, E. A. (1968). Toward a theory of task motivation and incentives. *Organizational Behavior and Human Performance*, 3, 157- 189. doi:10.1016/0030-5073(68)90004-4
- Locke, E. A. (1976). The nature and causes of job satisfaction. In M. D. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (1st ed.), pp. 1297-1394. Chicago, IL: Rand McNally.
- Maruyama, G. M. (1998). *Basics of structural equation modeling*. Thousand Oaks, CA: Sage.
- Maslach, C. (1998). A multidimensional theory of burnout. In C. L. Cooper (ed.), *Theories of Organizational Stress* (pp. 68–85). Oxford, UK: Oxford University Press.
- Maslach, C., & Jackson S. E. (1981). The measurement of experienced burnout. *Journal of Occupational Behavior*, 2, 99–113. doi:10.1002/job.4030020205
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52, 397-422. doi:10.1146/annurev.psych.52.1.397
- Mason, C. H., & Perreault, W. D. (1991). Collinearity, power, and interpretation of multiple regression analysis. *Journal of Marketing Research*. 28(8), 268–280.
doi:10.2307/3172863

- Matteson, M. T., & Ivancevich, J. M. (1979). Organizational stressors and heart disease: A research model. *Academy of Management Review*, 4, 347-357. doi: 10.5465/AMR.1979.428909
- Matteson, M. T., & Ivancevich, J. M. (1987). *Controlling work stress: Effective human resource and management strategies*. San Francisco: Jossey-Bass.
- McGrath, J. E. (1970). A conceptual formulation for research on stress. In J. E. McGrath (Ed.), *Social and psychological factors in stress* (pp. 10-21). New York: Holt, Rinehart & Winston.
- McMillan, J., & Schumacher, S. (2006). *Research in Education: Evidence-Based Inquiry*, 6th Ed. Boston, MA: Pearson.
- Messick, D. M., & Van de Geer, J. P. (1981). A reversal paradox. *Psychological Bulletin*, 90, 582–593. doi:10.1037/0033-2909.90.3.582
- Miller, J. G. (1965). Living systems: Basic concepts. *Behavioral Science*, 10, 193-237. doi:10.1002/bs.3830100302
- Miner, J. B. (2003). The rated importance, scientific validity, and practical usefulness of organizational behavior theories: A quantitative review. *Academy of Management Learning and Education*, 2, 250-268. doi:10.5465/AMLE.2003.10932132
- Mitchell, T. R., Holtom, B. C., Lee, T. W., Sablinski, C. J., & Erez, M. (2001). Why people stay: Using job embeddedness to predict voluntary turnover. *Academy of Management Journal*, 44, 1102–1121. doi:10.2307/3069391

- Mobley, W. H. (1977). Intermediate linkages in the relationship between job satisfaction and employee turnover. *Journal of Applied Psychology*, 62: 237-240.
doi:10.1037/0021-9010.62.2.237
- Mobley, W. H. (1982). Some unanswered questions in turnover and withdrawal research. *Academy of Management Review*, 7, 111-116. doi:10.5465/AMR.1982.4285493
- Mobley, W. H., Griffeth, R. W., Hand, H. H., & Meglino, B. (1979). Review and conceptual analysis of the employee turnover process. *Psychological Bulletin*, 86, 493–522. doi:10.1037/0033-2909.86.3.493
- Moore, J. E. (2000). Why is this happening? A causal attribution approach to work exhaustion consequences. *Academy of Management Review*, 25, 335-349.
doi:10.5465/AMR.2000.3312920
- Morgeson, F. P., & Humphrey, S. E. (2008). Job and team design: Toward a more integrative conceptualization of work design. In J. Marocchio (Ed.), *Research in personnel and human resource management* (Vol. 27, pp. 39-92). Bingley, England: Emerald Group Publishing.
- Mueller, C. W., & Price, J. L. (1989). Some consequences of turnover: A work unit analysis. *Human Relations*, 42, 389–402. doi:10.1177/001872678904200502
- Murphy, L. R. (1988). Workplace interventions for stress reduction and prevention. In C. L. Cooper, & R. Payne, (eds.). *Causes, coping, and consequences of stress at work*. Chichester, UK: John Wiley & Sons.
- Murray, H. (1938). *Explorations in personality*. New York: Oxford University Press.

- Muthén, L. K., & Muthén, B. O. (2007). *Mplus user's guide* (5th ed.). Los Angeles: Muthén & Muthén.
- O'Reilly, C., & Caldwell, D. (1981). The commitment and job tenure of new employees: Some evidence of post-decisional justification. *Administrative Science Quarterly*, 26, 597-616. doi:10.2307/2392342
- Örtqvist, D., & Wincent, J. (2006). Prominent consequences of role stress: A meta-analytic review. *International Journal of Stress Management*, 13, 399-422. doi:10.1037/1072-5245.13.4.399
- Örtqvist, D., & Wincent, J. (2010). Role stress, exhaustion, and satisfaction: A cross-lagged structural equation modeling approach supporting Hobfoll's loss spirals. *Journal of Applied Social Psychology*, 40(6), 1357-1384. doi: 10.1111/j.1559-1816.2010.00621.x
- Parker, D. F., & DeCotiis, T. A. (1983). Organizational determinants of job stress. *Organizational Behavior and Human Performance*, 32, 160-177. doi:10.1016/0030-5073(83)90145-9
- Parker, S. K., & Ohly, S. (2008). Designing motivating jobs. In R. Kanfer, G. Chen, & R. Pritchard (Eds.), *Work motivation: past, present, and future*, (pp. 233-384). New York: Routledge.
- Parker, S. K., & Wall, T. D. (1998). *Job and work design: Organizing work to promote well-being and effectiveness*. London: Sage.

- Parker, S. K., Wall, T. D., & Jackson, P. R. (1997). 'That's not my job': Developing flexible employee work orientations. *Academy of Management Journal*, 40, 899-929. doi:10.2307/256952
- Pearlin, L. I. & Schooler, C. (1978). The structure of coping. *Journal of Health and Social Behavior*, 19(1), 2-21. doi:10.2307/2136319
- Pei, G., Li, W., & Zhang, J. (2009). Perceived control, perceived organizational support, job burnout and psychological health of officer in Chinese armed police force: An equation modeling study. *Chinese Journal of Clinical Psychology* 17: 115-7.
- Podsakoff, P. M., & Organ, D.W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, 12, 531-544. doi:10.1177/014920638601200408
- Pousette, A., & Hanse, J. J. (2002). Job characteristics as predictors of ill-health and sickness absenteeism in different occupational types - A multigroup structural equation modeling approach. *Work and Stress*, 16, 229-250. doi:10.1080/02678370210162737
- Price, J. L. (1977). *The study of turnover*. Ames, Iowa: Iowa State University Press.
- Price, J. L. (1997). Handbook of organizational measurement. *International Journal of Manpower*, 18(4-6), 303-558. doi: 10.1108/01437729710182260
- Price, J. L., & Mueller, C. W. (1981). A causal model of turnover for nurses. *Academy of Management Journal*, 24, 543-565. doi:10.2307/255574
- Price, J. L., & Mueller, C. W. (1986). *Handbook of organizational measurement*. Marshfield, MA: Pitman Publishing.

- Ptacek, J. T., Smith, R. E., & Dodge, K. L. (1994). Gender differences in coping with stress: When stressor and appraisal do not differ. *Personality and Social Psychology Bulletin*, 8, 421-430. doi:10.1177/0146167294204009
- Ramesh, A., & Gelfand, M. (2010). Will they stay or will they go? The role of job embeddedness in predicting turnover in individualistic and collectivistic cultures. *Journal of Applied Psychology*, 95, 807-823. doi:10.1037/a0019464
- Rawlings, J. O., Pantula, S. G., & Dickey, D. A. (1998). *Applied regression analysis: A research tool, 2nd edition*. New York: Springer.
- Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: A review of the literature. *Journal of Applied Psychology*, 87, 698-714. doi:10.1037/0021-9010.87.4.698
- Rice, R. W., Phillips, S. M., & McFarlin, D. B. (1990). Multiple discrepancies and pay satisfaction. *Journal of Applied Psychology*, 75, 386-393. doi:10.1037/0021-9010.75.4.386
- Riggle, R. J., Edmondson, D. R., & Hansen, J. D. (2009). A meta-analysis of the relationship between perceived organizational support and job outcomes: 20 years of research. *Journal of Business Research*, 62, 1027–1030. doi:10.1016/j.jbusres.2008.05.003
- Rizzo, J. R., House, R. J., & Lirtzman, S. I. (1970). Role conflict and ambiguity in complex organizations. *Administrative Science Quarterly*, 95, 807-823. doi:10.2307/2391486

- Rousseau, D. M., Ho, V. T., & Greenberg, J. (2006). I-deals: Idiosyncratic terms in employment relationships. *Academy of Management Review*, 31, 977-994. doi:10.5465/AMR.2006.22527470
- Salancik, G. R. (1977). Commitment and the control of organizational behavior and belief. In B. M. Staw and G. R. Salancik (Eds.). *New directions in organizational behavior*. Chicago: St. Clair Press.
- Salancik G. R., & Pfeffer, J. (1978). A social information processing approach to job attitudes and task design. *Administrative Science Quarterly*, 23, 224-252. doi:10.2307/2392563
- Schaubroeck, J., Ganster, D. C., & Kemmerer, B. E. (1994). Job complexity, "type A" behavior, and cardiovascular disorder: A prospective study. *Academy of Management Journal*, 37, 426-439. doi:10.2307/256837
- Schaufeli, W. B., & Van Dierendonck, D. (1999). *UBOS - De Utrechtse Burnout Schaal Handleiding* [UBOS - The Utrecht Burnout Scale Manual]. Lisse, The Netherlands: Swets & Zeitlinger.
- Schneider, B. (1987). $E = f(P, B)$. The road to a radical approach to person-environment fit. *Journal of Vocational Behavior*, 31(3), 353-361. doi:10.1016/0001-8791(87)90051-0
- Schneider, B. (2001). Fits about fit. *Applied Psychology: An International Review*, 50, 141-152. doi:10.1111/1464-0597.00051

- Schwab, R. L., & Iwanicki, E. F. (1982). Perceived role conflict, role ambiguity, and teacher burnout. *Educational Administration Quarterly*, 18, 60-74.
doi:10.1177/0013161X82018001005
- Semmer, N. K. (2003). Job stress interventions and organization of work. In J. C. Quick, & L. E. Tetrick (eds.). *Handbook of occupational health psychology*. Washington: American Psychological Association.
- Shaw, J. D., Gupta, N., & Delery, J. E. (2005). Alternative conceptualizations of the relationship between voluntary turnover and organizational performance. *Academy of Management Journal*, 48(1), 50–68.
doi:10.5465/AMJ.2005.15993112
- Selye, H. (1956). *The stress of life*. New York: McGraw-Hill.
- Selye, H. (1976). *The stress of life* (2nd Ed.). New York: McGraw-Hill.
- Shadur, M. A., Kienzle, R., & Rodwell, J. R. (1999). The relationship between organizational climate and employee perceptions of involvement. *Group and Organization Management*, 24, 479-503. doi:10.1177/1059601199244005
- Shaw, J. D., Gupta, N., & Delery, J. E. (2005). Alternative conceptualizations of the relationship between voluntary turnover and organizational performance. *Academy of Management Journal*, 48, 50-68. doi:10.5465/AMJ.2005.15993112
- Smith, A. (1976). *An enquiry into the nature and causes of wealth of nations*, 2 vols. Chicago: University of Chicago Press.

- Spector, P. E. (1986). Perceived control by employees: A meta-analysis of studies concerning autonomy and participation at work. *Human Relations*, 39, 1005-1016. doi:10.1177/001872678603901104
- Spector, P. E. (1997). *Job satisfaction: Application, assessment, causes, and consequences*. Beverly Hills, CA: Sage.
- Spector, P.E. (2006). Method variance in organizational research. *Organizational Research Methods*, 9, 221-232. doi:10.1177/1094428105284955
- Steel, R. P., & Lounsbury, J. W. (2009). Turnover process models: Review and synthesis of a conceptual literature. *Human Resource Management Review*, 19, 271-282. doi:10.1016/j.hrmr.2009.04.002
- Steers, R.M., & Mowday, R.T. (1981). Employee turnover and postdecision accommodation processes. In L. Cummings & B. Staw (Eds.) *Research in Organizational Behavior*, 3, 235-281. Greenwich, CT: JAI Press.
- Stryker, S., & Burke, P. J. (2000). The past, present, and future of an identity theory. *Social Psychology Quarterly*, 63: 284-297. doi:10.2307/2695840
- Sulsky, L. M. & Smith, C. S. (2005). *Workstress*. Belmont, CA: Thomson Wadsworth.
- Taris, T. W., & Kompier, M. (2003). Challenges of longitudinal in occupational health psychology. *Scandinavian Journal of Work, Environment, and Health*, 29, 1-4. doi:10.5271/sjweh.697

- Taris, T. W., Schreurs, P. J. G., & Van Iersel-Van Silfhout, I. J. (2001). Job stress, job strain, and psychological withdrawal among Dutch University staff: Towards a dual-process model for the effects of occupational stress. *Work and Stress, 15*, 283–296. doi:10.1080/02678370110084049
- Tetrick, L. E., & Larocco, J. M. (1987). Understanding, prediction, and control as moderators of the relationships between perceived stress, satisfaction, and psychological well-being. *Journal of Applied Psychology, 72*, 538–543. doi:10.1037/0021-9010.72.4.538
- Tett, R. P., & Meyer, J. P. (1993). Job satisfaction, organizational commitment, turnover intention, and turnover: Path analyses based on meta-analytic findings. *Personnel Psychology, 46*, 259–293. doi:10.1111/j.1744-6570.1993.tb00874.x
- Tharenou, P. (1993). A test of reciprocal causality for absenteeism. *Journal of Organizational Behavior, 14*, 269–290. doi:10.1002/job.4030140306
- Theorell, T., & Karasek, R. A. (1996). Current issues relating to psychosocial job strain and cardiovascular disease research. *Journal of Occupational Health Psychology, 1*, 9–26. doi:10.1037/1076-8998.1.1.9
- Todd, C. M., & Deery-Schmitt, D. M. (1996). Factors affecting turnover among child care providers: A longitudinal study. *Early Childhood Research Quarterly, 11*, 351–376. doi:10.1016/S0885-2006(96)90012-5
- Ton, Z., & Huckman, R. (2008). Managing the impact of employee turnover on performance: The role of process conformance. *Organizational Science, 19*, 56–68. doi:10.1287/orsc.1070.0294

- Trevor, C. O. (2001). Interactions among actual ease-of-movement determinants and job satisfaction in the prediction of voluntary turnover. *Academy of Management Journal*, 44, 621-638. doi:10.2307/3069407
- Turban, D. B., & Keon, T. L. (1993). Organizational attractiveness: An interactionist perspective. *Journal of Applied Psychology*, 78, 184-193. doi:10.1037/0021-9010.78.2.184
- Turner, N., Stride, C. B., Carter, A. J., McCaughey, D., & Carroll, A. E. (2012). Job demands-control-support model and employee safety performance. *Accident Analysis and Prevention*, 45(3), 811-817. doi:10.1016/j.aap.2011.07.005
- Van der Doef, M., & Maes, S. (1999). The job demand-control (-support) model and psychological well-being: a review of 20 years of empirical research. *Work & Stress*, 13(2), 87-114. doi:10.1080/026783799296084
- Van der Klink, J., Blonk, R., Schene, A., & van Dijk, F. (2001). The benefits of interventions for work-related stress. *American Journal of Public Health*, 91, 270-276. doi:35400009865289.0130
- Viswesvaran, C., Sanchez, J. I., & Fisher, J. (1999). The role of social support in the process of work stress: A meta-analysis. *Journal of Vocational Behavior*, 54, 314-334. doi: 10.1006/jvbe.1998.1661
- Walters, G. & Raybould, M. (2007) Burnout and perceived organisational support among front-line hospitality employees. *Journal of Hospitality and Tourism Management*, 14(2): 144-156. doi:10.1375/jhtm.14.2.144

- White, R. (1959). Motivation reconsidered: The concept of competence. *Psychological Review*, 66, 297-333. doi:10.1037/h0040934
- Williams, D. R., Yu, Y., Jackson, J. S., & Anderson, N. B. (1997). Racial difference in physical and mental health. *Journal of Health Psychology*, 2(3), 335-351. doi:10.1177/135910539700200305
- Wright, T. A., & Cropanzano, R. (1998). Emotional exhaustion as a predictor of job performance and voluntary turnover. *Journal of Applied Psychology*, 83, 486–493. doi:10.1037/0021-9010.83.3.486
- Wrzesniewski, A., & Dutton, J. E. (2001). Crafting a job: Revisioning employees as active crafters of their work. *Academy of Management Review*, 26, 179-201. doi:10.5465/AMR.2001.4378011

OHIO
UNIVERSITY

Thesis and Dissertation Services