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Toward a better understanding of the effects of hindrance and challenge stressors on work behavior[☆]

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Abstract

This study investigated the processes whereby hindrance and challenge stressors may affect work behavior. Three mechanisms were examined to explain the differential effects these stressors have demonstrated: job satisfaction, strains, and work self-efficacy. A model is proposed in which both types of stressors will result in increases in strains, but that job satisfaction is primarily involved in the relationship between hindrance

stressors and citizenship behavior, and efficacy is involved in the relationship between challenge stressors and job performance. Although the results generally supported the dual-stressor framework showing meaningful relationships to the work outcomes through the proposed processes, the link between work self-efficacy and job performance was not significant. This model was analyzed using multi-source data collected from 143 employees from a variety of organizational settings. Implications for the conceptualization of stressors and the development of interventions are discussed.

Keywords

Occupational stress, Job performance, Organizational citizenship behavior, Job satisfaction, Work self-efficacy

1. Introduction

Workplace stress has received considerable research attention in recent years, largely due to the consequences it can have for both employees and organizations. The term stress has been used to mean a variety of meanings, leading to some confusion (Cooper & Dewe, 2004). Here, we use the term stress not as a label for any variable or set of variables, but only as a general term that encompasses a process through which variables in the workplace environment can lead to poor psychological and/or physical health and well-being. Stressors are characteristics of the work environment that cause strain, and strains are the label for the resulting poor psychological or physical well-being (O'Driscoll & Dewe, 2001). Ill health, anxiety, and burnout are examples of strains that could result from experiencing workplace stressors. There are other potential outcomes of stressors besides strains. That is, at the same time that stressors influence strain, stressors are not always correlated with non-strain outcomes such as poor job attitudes or poor performance. For example, a positive relationship was found between two types of stressors (monitoring and time demands) and the attitude of job satisfaction (Beehr, Glaser, Canali, & Wallwey, 2001), even though the time-demand stressor was also positively correlated with strain. Thus, while stressors lead to strains that are aversive outcomes, other outcomes of stressors, some positive and some negative, are possible. Exactly what the processes are whereby some stressors have a positive influence on these other outcomes remains an important but unanswered question, however.

The present study thus addresses the ways in which work stressors can be related to both strains and other important outcomes. Past research has made the distinction between those stressors that people experience as having the ability to threaten personal goals, referred to as *hindrance stressors*, or support personal goals, referred to as *challenge stressors* (Cavanaugh, Boswell, Roehling, & Boudreau, 2000). Both hindrance and challenge stressors can produce strains, but their effects on other variables differ. Challenge stressors such as high workload have potential gains for the employee (Boswell et al., 2004, Cavanaugh et al., 2000). If the employee can ultimately handle the high workload, then he or she can feel a sense of achievement resulting from high job performance; he or she might even receive material gains such as a better chance for promotions and pay raises. Hindrance stressors such as ambiguity, on the other hand, offer less opportunity for such gains. If the employee resolves the ambiguity, there is no reason to assume he or she will have especially high job performance. Instead, resolving the ambiguity will only enable the employee to perform at normal levels, which is less likely to result in feelings of high accomplishment or increased chances for promotions and higher pay. Some empirical support has been found recently for this dual dimensionality of stressors. For example, challenge-related stressors have been shown to be positively related to job satisfaction (e.g., Beehr et al., 2001, Podsakoff et al., 2007), organizational loyalty (e.g., Boswell et al., 2004), and job performance (e.g., LePine, Podsakoff, & LePine, 2005), whereas hindrance-related stressors were negatively related to these outcomes.

The purpose of the present study was to examine the processes through which this hindrance-challenge stressor framework affect strains, attitudes, and work behaviors. Despite the support found for this framework little that

has been done to understand those underlying mechanisms that account for the differential effects the two types of stressors have on work-related outcomes. Understanding these processes is important from both a theoretical and practical perspective. This framework can help explain the stress process by providing a strong theoretical rationale for the inconsistent results found in the relation between stressors and workplace outcomes. From a practical perspective, understanding this framework will help practitioners to identify effective prevention and intervention practices for particular stressors.

We posited a model in which an increase in both types of stressors is related to more strain, which will negatively influence organizational citizenship behaviors (OCBs) and job performance (Fig. 1). However, differences in the impact of the stressors on work behaviors are hypothesized to be a function of two additional intervening variables, namely job satisfaction and work self-efficacy. In the model, these are affected in opposite ways by hindrance and challenge stressors, explaining why simple, average relationships between stressors and work behaviors are indeterminate.

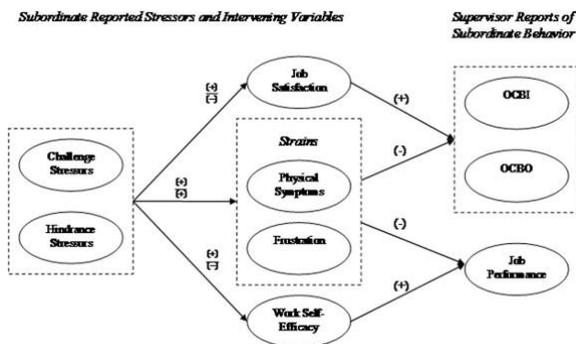


Fig. 1. Conceptual model of the effects of work stress on employee behaviour. $N = 143$.

1.1. Theoretical background

Although the aversive effects of stressors on strains have often been supported, there has also been some inconsistent evidence of more benign effects, especially on non-strain variables such as performance and attitudes. Some organizational research has suggested that the relationship between stress and work criteria depends on the nature of the stressor (Boswell et al., 2004, Cavanaugh et al., 2000, Scheck et al., 1997). A prime example draws upon Lazarus and Folkman's (1984) transactional theory of stress where they introduce the concepts of threat (i.e., hindrance) and challenge appraisals. Similarly Cavanaugh et al. (2000) classified stressors into hindrances and challenges, wherein hindrance stressors were comparable to the term threat appraisal and challenge stressors were similar to challenge appraisal. As noted earlier, hindrance stressors frustrate or pose a threat to reaching one's goals, whereas challenge stressors may facilitate goal achievement, if they can be overcome. Although hindrance versus challenge is an interpretation made by each individual person, most people are consistently more likely to appraise certain stressors as hindrances and others as challenges.

LePine et al. (2005) meta-analytically examined the hindrance-challenge stressor distinction in relation to some mediating variables and the outcome of job performance. They demonstrated that individuals engage in differing levels of job performance directly and indirectly through the effects of strains and motivation. Consistent with the traditional definition of stress in which stressors lead to strains, both types of stressors were positively related to strains. Strains can reduce performance, but challenge-related stressors were also positively related to motivation, and thereby had both a positive indirect path to performance through motivation and a negative indirect path to performance through strains. That study provided a theoretical explanation for the inconsistent results found for the stressor and in-role job performance relationship, wherein in-role job performance is generally believed to consist of those behaviors that are explicitly part of the job and influence the organization's substantive core processes such as directly transforming materials into goods and services

(Borman & Motowidlo, 1993). Although in-role behaviors are crucial for effective functioning of the organization, it is important to understand the relationship between stressors and other organization-relevant behaviors. The model in Fig. 1 suggests that the relationship between stressors and discretionary behaviors, or organizational citizenship behaviors (OCBs), also may be illuminated by the hindrance-challenge stressor framework.

OCBs entail any behavior that is “discretionary, not directly or explicitly recognized by the formal reward system, and in aggregate promotes the efficient and effective functioning of the organization” (Organ, 1988, p. 4). OCBs can be divided into two dimensions based on the target of behavior, those that are individually-directed (OCBI) and those that tend to be organizationally-directed (OCBO) (Williams & Anderson, 1991). OCBI consist of assisting or aiding other individuals in the workplace (e.g., helping a coworker finish his/her work), whereas OCBOs consist of behaviors that facilitate the organization reaching its goals (e.g., adhering to informal rules devised to maintain order). Occupational stress research has paid little attention to potential effects on OCBs, but the present study examines the possibility that stress reactions can be related to these extra efforts by employees.

Another contribution of the present study concerns the nature of strains. The meta-analysis examining hindrance and challenge stressors (LePine et al., 2005) combined a wide-range of diverse types of strains (e.g., health complaints, hostility, anxiety, frustration) into one category. Although this may have been necessary in order to gather enough data points for the meta-analysis, it may not be desirable from a theoretical perspective. The present study therefore examines two discrete types of strains individually: psychological and physical.

A third contribution of the present study is the identification of the particular motivational factor involved in the stressor-performance relationship in order to understand the distinct processes in how hindrance and challenge may result in different kinds of work behaviors. Increases or decreases in efficacy have been shown to be a critical motivational determinant in job performance (Stajkovic & Luthans, 1998). Moreover, the cognitive nature of efficacy beliefs is consistent with the appraisal process thought to be at the heart of the hindrance-challenge distinction. However, work self-efficacy may not be as critical in determining OCBs, given their discretionary basis. Regarding these behaviors, work attitudes (e.g., job satisfaction) that have been shown to be affected by stressors (e.g., Beehr et al., 2001) may serve to motivate extra-role behavior more than in-role job performance (Riketta, 2008).

1.2. A model of the effects of stressors on job performance and citizenship behavior

In Fig. 1, several hypotheses are integrated into a single model, with each link depicted by an arrow representing a hypothesis. The model posits that hindrance and challenge stressors both have positive direct effects on strains, but hindrance stressors are negatively related to job satisfaction and self-efficacy, while challenge stressors are positively related to these intermediate outcomes. In terms of predicting work behaviors, strains and job satisfaction are posited to influence OCBs, and strains and efficacy are proposed to influence job performance. Thus, the links between stressors and employee behaviors in the model involve job satisfaction, work self-efficacy, and strains as important processes.

1.2.1. Job satisfaction

Job satisfaction, defined as a psychological state resulting from the evaluation of one’s job experiences (Locke, 1976), has occasionally been conceptualized in the stress literature as a strain that is reverse-scored (e.g., Jex & Gudanowski, 1992). Strains and job dissatisfaction are conceptually different variables, however (Beehr, 1995). Stressors, by definition are positively related to strains (negative health-type outcomes). Job satisfaction, however, is an attitude, and its relationship to stressors can vary. It is proposed that hindrance stressors would be negatively related but that challenge stressors would be positively related to job satisfaction, even though

both stressors are expected to be positively related to strains. Limited empirical evidence supports this premise (e.g., Cavanaugh et al., 2000).

In addition, it is hypothesized that job satisfaction would be positively related to both OCBI and OCBO. In a recent meta-analysis, job satisfaction was related to OCBI, which was a combination of both OCBI and OCBO (Dalal, 2005). Individuals who were satisfied with their working conditions were more likely to make voluntary contributions of effort to benefit the organization and/or other employees in a positive manner. There is also a long history of research on the relationship between job satisfaction and job performance, usually finding positive correlations in the teens, but there is no clear theoretical agreement about the direction of a causal relationship between the two, if any (e.g., note meta-analyses by Iafaldano and Muchinsky, 1985, Judge et al., 2001). Therefore, a causal link between job satisfaction and performance was not proposed.

1.2.2. Work self-efficacy

Bandura (1997) conceptualized self-efficacy as a person's perceived ability to capably perform a job's tasks. LePine et al. (2005) reflected this definition by arguing that hindrance stressors would discourage motivation through the perception that an increase in effort would not improve the chances of meeting these hindering types of demands, whereas challenge stressors would foster motivation through the perception that increased effort would result in meeting these challenging types of job demands. In conducting their meta-analysis, LePine et al. had to use whatever combination of motivation-related variables was available in the previous empirical literature, therefore combining correlations from a wide variety of variables that were generally related to the construct of work motivation, including "job-work motivation, effort, persistence, felt challenge, learning motivation, and expectancy" (LePine et al., 2005, p. 267). The present study therefore directly measured the motivational mechanism linking stressors to performance that was suggested by LePine et al., proposing self-efficacy as a motivational variable intervening between hindrance and challenge stressors with performance.

The model contends that hindrance and challenge stressors will be differentially related to self-efficacy. Hindrance stressors should be negatively associated with self-efficacy because people are not likely to believe that they are capable of meeting these types of demands. By definition, hindrance stressors constrain or interfere with a person's perceived ability to fulfill a job demand or work-related goal. Challenge stressors, on the other hand, should be positively related to self-efficacy because people are likely to think that, although a high level of effort will be required, they may be capable of meeting these types of job demands through extra effort.

Self-efficacy is usually positively related to job performance (e.g., Stajkovic & Luthans, 1998), consistent with the notion that individuals who believe that they possess the necessary abilities are more likely to exhibit higher levels of job performance. This is consistent with social learning theory (Bandura, 1986) which suggests people are more motivated to engage in certain behaviors when they perceive they have the means to meet the objective of the demand. Therefore, the present model proposed a positive relation between self-efficacy and performance.

1.2.3. Strains

Strains are a focus of the model by being in the center and because they are the only variables proposed to be related to all stressors and all outcomes. By definition, stressors are supposed to be positively related to strains (as found in Boswell et al., 2004, LePine et al., 2005), and therefore both hindrances and challenges are hypothesized to be positively related to strains. Two major categories of strains were examined: psychological and physical. Both are hypothesized to be negatively related to job performance, and although there has been little research conducted on the link between strains and OCBI, it is hypothesized that strains will be related to fewer OCBI. Logically it is expected that high levels of frustration, a psychological or emotional strain resulting

from work-related stress (e.g., Bennett and Lowe, 2008, Fortunato et al., 1999), will make it less likely that individuals will make extra contributions on behalf of their organization or coworkers. A negative relationship between physical strains and OCBs was expected based on the idea that employees who experience negative physical symptoms may not have the energy or stamina to engage in OCBs.

2. Methods

2.1. Participants and procedure

Participants were employed members of an alumni association from a large university in the Midwestern United States. Contact information was obtained from those members who had graduated from the university with either a Bachelor or Arts or of Sciences or a Master of Business Administration degree between the years 1970 and 2006. An email containing a link to the survey and a 4-digit identification code was sent to 2770 individuals. Once respondents completed the survey, they were asked to provide the contact information for their immediate supervisor and the 4-digit identification code was assigned to them for the study. Supervisors provided ratings of their subordinate's OCBs and job performance, and the 4-digit code provided a means for collating both sources of information. There was a total of 751 individuals who voluntarily responded (for a response rate of 27%), and of those, 205 supplied their supervisor's contact information. This response rate is slightly under that provided in Cook, Heath, and Thompson's (2000) meta-analysis, which reported the average response rate for an online survey was 34.6% ($SD = 15.7\%$). People were ineligible for the study, however, if they were not currently employed (e.g., due to attending graduate school, disability, or temporary unemployment) and failed to reply for this reason. Others may not have received the email, a problem common in electronic surveys as individuals change email addresses more frequently than their home addresses, and expired addresses may continue to exist but are never checked. Thus, the response rate should be taken as a conservative estimate of the voluntary responses. Of the supervisors contacted, 143 responded (for a response rate of 70% of the supervisors contacted). Although where possible, (e.g., preliminary analyses and reliability calculations) we used the full sample, the hypothesis and model testing were conducted on data from those 143 individuals who had complete multi-source data. All participants worked under a different supervisor. To examine the representativeness of the data we conducted t-tests on the studied variables between respondents whose supervisors participated in the study and those whose supervisors did not. No significant mean differences were found.

Respondents were college-educated employees who worked in a variety of professions. Most participants had jobs in the managerial, human resource, marketing, communications, and educational professions. The average age of participants was 39 ($SD = 9.6$), 55% were men and 76% were married. Their ethnic composition was 93% Caucasian and the average organizational tenure was 7 years ($SD = 6.9$, range: less than 1 year to 28 years).

2.2. Measures

Unless otherwise stated, participants responded to each item using a 7-point Likert-type scale ranging from 1 "strongly disagree" to 7 "strongly agree." All items were coded such that a high score represented a high level on the relevant construct.

2.2.1. Stressors

Hindrance and challenge stressors were assessed via Cavanaugh et al.'s (2000) measure with an adaptation to the response scale. The response format used by Cavanaugh et al. (2000) ranged from 1 "produces no stress" to 5 "produces a great deal of stress." However, incorporating the term "stress" in the response scale of the stressor measure can create inflated correlations with strain measures (Jex, Beehr, & Roberts, 1992). Thus, respondents rated each item on a 7-point scale ranging from 1 "strongly disagree" to 7 "strongly agree." The measure consisted of five hindrance-related items and six challenge-related items. An example hindrance-

related item was “It is not clear to me what is expected of me on the job,” and an example challenge-related item included “I have a considerable amount of projects and assignments to accomplish.” Psychometric evidence for both stressor measures have been established in previous studies as well. Empirical evidence supported the two-dimensional factor structure and scale reliabilities. Reliabilities reported were .87 (Cavanaugh et al., 2000) and .90 (Boswell et al., 2004) for the challenge measure, and .75 (Cavanaugh et al., 2000) and .68 (Boswell et al., 2004) for the hindrance measure. The measures were shown to have significant relations with several criteria including job satisfaction and turnover intentions which provide evidence of predictive validity (Cavanaugh et al., 2000, Boswell et al., 2004). The present study found a reliability estimate of .77 for the challenge stressor measure, and an estimate of .70 for the hindrance stressor measure.

2.2.2. Job satisfaction

To assess job satisfaction Cammann, Fichman, Jenkins, and Klesh’s (1979) three-item measure was used. A sample item is “I enjoy my job.” Reliability estimates for it have been acceptable ($\alpha = .88$), and it has been shown to be related to anxiety, frustration, and intent to quit establishing predictive validity (reported in Spector, Dwyer, & Jex, 1988). The reliability estimate of this measure found in the present study was .94.

2.2.3. Work self-efficacy

Self-efficacy was assessed using Jex and Bliese’s (1999) five-item modified version of Jones’s (1986) scale. Participants were asked to respond to statements such as “my current job is well within the scope of my abilities.” Jex and Bliese reported an α of .70, and found this measure to be related to psychological strain, job satisfaction, and organizational commitment showing predictive validity. The reliability estimate of this measure found in the present study was .69.

2.2.4. Strains

Physical strains were measured as physical symptoms, and psychological strains were measured as frustration. Physical symptoms and frustration were among the list of strains combined in the meta-analysis by LePine et al. (2005). Physical symptoms were assessed using an adaptation of Spector and Jex’s (1998) 18-item measure. Respondents rated each item on a 7-point Likert-type scale ranging from 1 “never” to 7 “everyday”. Example items include “eye strain” and “backache.” Previous research using this measure reported good reliability (e.g., .79 in Kinnunen, Geurts, & Mauno, 2004). Validity evidence presented in Spector and Jex (1998) shows that the physical symptoms measure was related to several workplace stressors including organizational constraints and interpersonal conflict. The reliability estimate for this measure found in the present study was .89.

Frustration was measured using a three-item scale (Peters, O’Conner, & Rudolf, 1980), with a sample item being “trying to get my job done is rarely frustrating” (reverse-scored). Reliability estimates found in other studies have been acceptable ($\alpha = .80$), and it has been shown to be related to role conflict and organizational constraints (reported in Spector, Chen, & O’Connell, 2000). The reliability estimate for this measure found in the present study was .72.

2.2.5. Organizational citizenship behaviors

Supervisors made ratings of subordinates’ OCBs which were assessed using measures developed by Williams and Anderson (1991). OCBs were measured with seven items including the sample item, “help others who have heavy workloads.” OCBOs were also measured using seven items, with an example item, “takes undeserved work breaks” (reverse-scored). Each was measured on a 5-point Likert-type scale ranging from “very uncharacteristic of the subordinate” to “very characteristic of the subordinate.” Williams and Anderson (1991) reported a reliability of .88 for OCBs and .75 for OCBOs. They also found that both types of OCBs were related to intrinsic and extrinsic job cognitions (cognitive job satisfaction), and positive arousal (affective job satisfaction). The present study found a reliability estimate of .88 for OCBs and .83 for OCBOs.

2.2.6. Job performance

Supervisors made ratings of subordinates' job performance using Williams and Anderson's (1991) 7-item measure. A sample item is "adequately completes assigned duties." Each was measured on a 5-point Likert-type scale ranging from "very uncharacteristic of the subordinate" to "very characteristic of the subordinate." Williams and Anderson reported a reliability estimate of .91, and provided validity evidence demonstrating significant relationships between this measure of job performance and other similar constructs, OCBI and OCBOs. The reliability estimate calculated for the present study was .83.

2.3. Analyses

Because structural equation modeling is unwieldy with a large number of items (there were over 50 in this study), item parcels were formed to represent the latent factors (see e.g., Bandalos & Finney, 2001). Three parcels for each latent factor were created by aggregating items into composites based on the arbitrary assignment of each item to one of the three. The number of items contained in each parcel depended on the number of items for each scale. For example, the 18-item physical symptoms scale included three parcels consisting of six items per parcel. Thus, 27 item parcels were constructed to represent the nine latent variables in the model.

The data were then analyzed in two steps following Anderson and Gerbing (1988), with the measurement model considered first, followed by a structural model. The measurement model was fit to the covariance matrix of the item composites using confirmatory factor analysis (CFA), with each parcel constrained to load only on the intended factor and the latent factors being allowed to correlate. In the second step, the proposed structural equations model (SEM) in Fig. 1 was tested by imposing constraints on the latent factor correlations using maximum likelihood estimation to estimate the parameters.

The fit of the models was evaluated using several indices, including (a) chi-square statistic, (b) non-normed fit index (NNFI), (c) comparative fit index (CFI), (d) standardized root-mean-square residual (SRMR), and (e) root-mean-square error of approximation (RMSEA). The general rule of thumb for the lower value of acceptable fit for the NNFI and the CFI is .90, and the upper values for acceptable fit for the RMSEA and the SRMR are .08 and .10, respectively (Kline, 2005).

3. Results

Descriptive statistics and correlations for summated composites of the item parcels are presented in Table 1 below the diagonal. A CFA was conducted to test whether the measurement model fit the observed data. The various fit indices provided evidence of a favorable fit $\chi^2 (288, N = 143) = 416.01, p > .05$ (NNFI = .95, CFI = .96, SRMR = .07, and RMSEA = .05). Loadings for the item parcels ranged from .48 to .91 with a mean loading of .77. Factor correlations from the measurement model are provided above the diagonal in Table 1.

Table 1. Mean, standard deviation, and correlation among all variables.

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
<i>Stressors</i>											
(1) Challenge	5.69	0.93	—	.21*	.14	.12	.24**	.49**	.13	.12	-.06
(2) Hindrance	3.33	0.97	.21**	—	-.58**	-.29*	.38**	.57**	.06	-.21*	-.12
<i>Intervening variables</i>											
(3) Job satisfaction	5.60	1.21	.12	-.39**	—	.43**	-.31**	-.34**	.13	.18*	.10
(4) Work self-efficacy	5.75	0.79	.10	-.18*	.39**	—	-.24**	-.34**	.06	.12	.07
(5) Physical Symptoms	2.31	0.79	.21**	.26**	-.28**	-.20**	—	.42**	-.12*	-.28**	-.28**
(6) Frustration	4.61	1.26	.42**	.48**	-.29**	-.28**	.31**	—	.12	.02	.01

<i>Employee Behaviors (Reported by Supervisor)</i>												
(7) OCBI	3.88	0.65	.12	.04	.12	.06	-.12	.10	—	.55**	.45**	
(8) OCBO	4.43	0.46	.08	-.13	.16*	.10	-.24**	-.04	.47**	—	.68**	
(9) Job performance	4.54	0.45	-.06	-.06	.07	.05	-.24**	-.01	.40**	.55**	—	

Note. $N = 143$. Zero order correlations are presented below the diagonal. Correlations corrected for measurement error (r) are presented above the diagonal. All measures were rated on a 7-point Likert-type scale except the OCBI and OCBO measures which were rated using a 5-point scale. Significance tests are one-tailed.

* $p < .05$.

** $p < .01$.

The structural model depicted in Fig. 1 was then tested. The results suggest good fit, $\chi^2 (306, N = 143) = 497.18, p > .05$ (NNFI = .92, CFI = .93, SRMR = .10, and RMSEA = .07). Completely standardized path coefficients for the path model are presented in Table 2. Hindrance and challenge stressors were found to be related to job satisfaction ($\beta = -.74, p < .05$; $\beta = .30, p < .05$, respectively) and work self-efficacy ($\beta = -.55, p < .05$; $\beta = .24, p < .05$) in opposite directions, as expected. Both stressors were positively associated with psychological strain (frustration; $\beta = .62, p < .05$; $\beta = .35, p < .05$), but only the hindrance stressor was significantly related to physical symptoms ($\beta = .48, p < .05$). This suggests that individuals who are reporting challenge stressors are mainly experiencing psychological strain, whereas those reporting hindrance stressors experience both psychological and physical strain.

Table 2. Completely standardized path coefficients for each of the paths represented in the conceptual model.

Construct relationship	Parameter estimates	SE	t
<i>Challenge stressors</i>			
Job satisfaction	.31**	.13	2.97
Work self-efficacy	.24*	.08	2.10
Physical symptoms	.13	.09	1.34
Frustration	.35**	.16	3.153
<i>Hindrance stressors</i>			
Job satisfaction	-.74**	.33	-4.32
Work self-efficacy	-.55**	.17	-3.26
Physical Symptoms	.48**	.18	3.56
Frustration	.62**	.36	4.17
<i>Job satisfaction</i>			
OCBI	.17*	.08	1.75
OCBO	.17*	.04	1.68
<i>Work self-efficacy</i>			
Job performance	.06	.08	.63
<i>Physical symptoms</i>			
OCBI	-.24**	.07	-2.30
OCBO	-.38**	.07	-3.63
Job performance	-.38**	.06	-3.72
<i>Frustration</i>			
OCBI	.32**	.04	2.92
OCBO	.28**	.04	2.55
Job Performance	.19*	.03	1.88

Note. $N = 143$. Significance tests are one-tailed.

* $p < .05$.

** $p < .01$.

The hypothesized relationships between the intervening variables and the behavioral outcomes were only partially supported. Physical symptoms were negatively related to OCBs ($\beta = -.24, p < .05$), OCBOs ($\beta = -.38, p < .05$), and job performance ($\beta = -.38, p < .05$), and although it was hypothesized that frustration would be negatively associated with all three performance domains, positive relationships were found instead ($\beta = .32, p < .05$; $\beta = .28, p < .05$; $\beta = .19, p < .05$). Job satisfaction was positively related to OCBs and OCBOs ($\beta = .17, p < .05$; $\beta = .17, p < .05$) in the expected direction. However, only a small and nonsignificant relationship was found between work self-efficacy and job performance ($\beta = .06, p > .05$).

3.1. Alternative models

We also tested alternative models, to see whether including direct effects between the stressors and outcomes in the model is useful. To the extent that direct paths are substantial and improve fit, it would cast doubt on the mediation effects in the proposed model. On the other hand, if the direct paths are small and inclusion does not improve fit by much, it would support the originally proposed model. Thus, direct paths were tested between each stressor and outcome by freeing the individual parameter in the model. The estimation of each alternative model demonstrated a nonsignificant path from the stressors to each outcome variable, and fit was not improved significantly. Thus, job satisfaction, strains, and efficacy appear to be sufficient in accounting for the linkages between hindrance and challenge stressors and outcome variables.

4. Discussion

The processes by which the recently proposed dual dimensionality of work stressors (hindrance and challenge) may affect specific components of employee reactions has not yet been examined together in a comprehensive empirical analysis. Therefore, this study contributes to the literature by proposing and testing a model through which these workplace stressors are differentially related to OCBs and job performance through the intervening variables of job satisfaction, physical and psychological strains, and work self-efficacy. The *a priori* model was supported, as it fit the data well. Furthermore, alternative models with direct links between stressors and the behavioral outcomes did not improve the fit, providing strong evidence for the mediation in the *a priori model*. A few of the links in the model were not supported, however, and these may also be informative.

The results argue for a complex occupational stress model in which the traditional core of the stress process remains (i.e., environmental stressors lead to individual strains; e.g., Beehr, 1995, O'Driscoll and Dewe, 2001), but strains and other intrapsychic variables lead to organizationally important employee behaviors such as OCBs and job performance. All work stressors do not act in similar ways regarding these potential outcomes. Making the theoretical distinction between types of stressors is important for understanding the differential relationships among stressors, strains, and other important outcomes (Podsakoff et al., 2007).

4.1. Specificity of variables in the model

Consistent with the specific issue of keeping hindrance and challenge stressors distinct, an overall theme that emerged from the present study is the need to clearly specify types of variables within some categories when examining occupational stress. Within the categories of stressors, mediating variables, and work-related outcomes, there are more specific subcategories, some of which are differentially related to other variables in systematic ways. One example regarding the mediators in the model is the distinction between (dis)satisfaction and strains. Job satisfaction is an attitude that is often examined as a potential outcome of occupational stress (e.g., Zivnuska, Kiewitz, Hochwarter, Perrew, & Zellars, 2002), but it is not a substitute for strains. Strains are stronger job reactions that can include overall well-being and health of the worker (e.g., Beehr, 1995). Another

theory suggests that job (dis) satisfaction is composed of internal cognitive and affective states resulting from evaluative responses along a good-bad or positive-negative continuum (Hulin & Judge, 2003). In other words, job satisfaction has a strong cognitive component (Brief & Weiss, 2002), as well as an affective component. Psychological strains, on the other hand, are more immediate (*aversive*) emotional responses to upsetting circumstances. Job (dis)satisfaction also is related to other variables differently from strains, differently even from the psychological strains. For example, job (dis)satisfaction is negatively related to challenge stressors, but psychological strains are positively related to them. Thus, people can be satisfied with some types of stressor situations, even while experiencing psychological strain.

Another important distinction between variables in the model is between physical and psychological strains. Physical and psychological strains do not necessarily have similar relationships to organizational outcomes. The signs of the relationships of the two types of strains with the outcomes were different; physical strains were negatively related to OCBs and job performance, but psychological strains were positively related to these behaviors.

4.2. Modifications to the theoretical model

The data suggest three modifications to the model. First, the coefficient for the relationship between challenge stressors and physical strains was not significant. Meta-analyses of hindrance versus challenge stressors had not distinguished between types of strains (LePine et al., 2005, Podsakoff et al., 2007); yet physical strains and psychological strains are quite different conceptually and are not identical empirically ($r = .32$ in Table 1). The nonsignificant parameter estimate for the link between challenge stressors and physical strains (Table 2) was in the expected direction and the zero-order correlation was significant (Table 1), suggesting there might have been a relationship consistent with the model, but it was too weak to be detected in the present study. Therefore, more evidence is required before there can be confidence in this (lack of) link of the model.

A second alteration to the model is suggested because the link from work self-efficacy to job performance was not significant, and sampling error could not be ruled out for either the structural path or the zero-order correlation. Self-efficacy was measured in the present study as a specific type of motivation variable. It resembles the expectancy component in expectancy theory of motivation (i.e., one expects that he/she can perform successfully if he/she tries) and has been shown linked to performance-type behaviors (Judge and Bono, 2001, Locke et al., 1984). Therefore it makes sense as a motivation variable. In addition, in the discussion of the variables coded as motivation in their meta-analysis, LePine et al. (2005) indicated that the reason motivation could partially mediate between stressors and performance was because it was related to self-efficacy. They noted, however, that "given the nature of the primary research, we were not able to assess the underlying mechanism that links stress and motivation" (p. 770). The present study assessed one potential underlying mechanism by examining work self-efficacy as the specific motivation variable while testing a similar model.

Hindrance and challenge stressors were related to efficacy, negatively and positively respectively. However, the results did not confirm the rather robust relationship between efficacy and performance. The magnitude of the relationship between efficacy and job performance has been shown to be weakest, however, in field studies examining highly complex jobs (meta-analysis by Stajkovic and Luthans (1998)). The college-educated employees in the current sample probably held relatively complex and involved jobs relative to the average employee, which might explain its nonsignificant relationship with performance. Research is needed examining noncomplex jobs to identify boundary conditions for this link of the model.

The final alteration to the *a priori* model was suggested by the signs of the relationships from psychological strain to OCBs and job performance. Although physical strains related negatively to OCBs and job performance as predicted, psychological strain was positively related to them. The strongest of these relationships was with

OCBIs, that is, psychological strain (frustration) was positively related to helping other people in the workplace (OCBI). It may be that employees often face some of the stressors in the workplace together (for example, they might all be in the same boat, facing a deadline leading to frustration), which is an ideal and perhaps necessary time for coworkers to help each other. However, these relationships may be a statistical artifact caused by suppression effects (Conger, 1974). Neither the original nor the corrected correlations of frustration with OCBs and task performance were positive and significant. Therefore, one should be cautious when interpreting these findings.

4.3. Limitations and future research

Like any other study, this study is not without limitations. First, although a theoretically causal model was tested, the nonexperimental and cross-sectional methods limit the strength of inference regarding causality. Causal inference is enhanced somewhat, however, by the strong *a priori* theory the study is based on (i.e., transactional theory of stress by Lazarus & Folkman (1984); and prior theorizing about the nature of the variables by Beehr (1995); and LePine et al. (2005)). Future research that examines the causal impact of the dual dimensionality of stressors on the mediating variables, OCBs, and job performance will be worthwhile; although experimental manipulation of stressors is difficult (e.g., due to ethical considerations), longitudinal designs and quasi-experiments are more possible. Second, although the sample consisted of multi-source data (subordinates and supervisor ratings of those subordinates) the small sample size limits the confidence of the findings. However, the generalizability of the results is strengthened given the diversity among employees in terms of their gender, age, and work setting. Nevertheless, future research should be conducted examining employees from a wide-range of backgrounds to confirm the results of the present study.

Future research should continue to explore the dual dimensionality of occupational stressors. The present results suggest that stressors may not always have detrimental effects on work-related outcomes. It is apparent that to fully understand the complex nature of employee reactions to certain workplace characteristics (e.g., role stressors, time demands), researchers need to examine differences in individual appraisal, cognitions, attributions, and emotions regarding those characteristics (Perrewe & Zellars, 1999). As in the sparse previous occupational research on hindrance and challenge stressors (e.g., LePine et al., 2005, Podsakoff et al., 2007), the present study categorized the stressors into these two categories based on logic and assumptions regarding which stressors are more likely to be appraised as hindrances and which are more likely to be appraised as challenges on average. Even item wording might affect these appraisals, however. For example, a workload item might be appraised as a challenge if it refers to a large amount of work to be done, but if a word such as "deadline" is added (i.e., a large amount of work to be done by a deadline), the deadline might be seen as a hindrance. Such possibilities suggest that future research should examine cognitive appraisals directly.

Cognitive stress theories argue that it is specifically the focal person's perception or appraisal that matters in the stress process. The next step for future research would be to more directly examine individual employees' hindrance versus challenge appraisals of their stressors in order to test the cognitive appraisal link of the dual-stressor theory more directly. Lazarus and Folkman's (1984) integration of appraisal and coping mechanisms into the stress process provides a theoretical base for such examination in occupational stress research. Given the importance of individual's perceptions of the environment, research will also be needed in assessing the validity of measures assessing the cognitive appraisal of workplace stressors.

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