

A double-edged sword: The moderating role of conscientiousness in the relationships between work stressors, psychological strain, and job performance

WEIPENG LIN^{1,2}, JINGJING MA², LEI WANG^{2*} AND MO WANG³

¹Department of Human Resource Management, Business School, Nankai University, Tianjin, China

²Department of Psychology, Peking University, Beijing, China

³Department of Management, University of Florida, Gainesville, Florida, U.S.A.

Summary

Although conscientiousness was commonly viewed as a type of personal resource to help individuals reduce strain or mitigate the impacts of stressors, empirical research demonstrated mixed results. Based on the personal resource allocation perspective, we posited that rather than functioning as personal resource per se, conscientiousness may act as a key factor influencing how individuals allocate their personal resources. The current study examined the moderating roles of conscientiousness in the relationships that work stressors (i.e., challenge stressors and hindrance stressors) have with employee psychological strain and job performance by using multi-source, time-lagged data collected from 250 employees working at two companies. The results showed that both challenge stressors and hindrance stressors were positively related to psychological strain. Conscientiousness moderated the relationships between both stressors and psychological strain, such that the positive relationships were stronger for individuals with high conscientiousness. Conscientiousness also moderated the relationship between challenge stressors and performance, such that the relationship was positive for individuals with high conscientiousness but negative for those with low conscientiousness. Altogether, the findings suggest that conscientiousness acts as a double-edged sword that both promotes performance and exacerbates the stress reaction of employees when they are confronted with stressful situations. Copyright © 2014 John Wiley & Sons, Ltd.

Keywords: challenge stressors; hindrance stressors; psychological strain; performance; conscientiousness; personal resource; resource allocation

Introduction

Conscientiousness, a component of the five-factor personality model (Costa & McCrae, 1988; Costa & McCrae, 1992), describes the extent to which individuals are dutiful, hard working, persevering, and self-disciplined and tend to strive for achievement (Barrick & Mount, 1991). Because it has been shown to be a strong and universally valid predictor of a variety of significant outcomes in the work context, such as job performance (Barrick & Mount, 1991; Mount, Barrick, & Strauss, 1999), job attitudes (Erdheim, Wang, & Zickar, 2006; Judge, Heller, & Mount, 2002), and organizational citizenship behavior (Hackett & Lapiere, 2007), conscientiousness is arguably the most important factor among personality traits (Barrick, Mount, & Strauss, 1993; Roberts, Chernyshenko, Stark, & Goldberg, 2005).

In the stress literature, conscientiousness is also one of the most salient trait factors affecting how individuals react to work stressors. Under the conservation of resources framework (Hobfoll, 1989, 2001), researchers generally deem conscientiousness as a type of personal resource that may help individuals resist the deleterious effects of stress

*Correspondence to: Lei Wang, Department of Psychology, Peking University, Beijing 100871, China. E-mail: leiwang@pku.edu.cn

(e.g., Perry, Witt, Penney, & Atwater, 2010; Zellars, Perrewé, Hochwarter, & Anderson, 2006). However, existing research has demonstrated inconsistent findings regarding the view that conscientiousness is a type of personal resource (e.g., Armon, Shirom, & Melamed, 2012; Grant & Langan-Fox, 2007; Nandkeolyar, Shaffer, Li, Ekkirala, & Bagger, 2014; Zellars et al., 2006). For example, although Nandkeolyar and colleagues (2014) found that conscientiousness mitigates the negative relationship between abusive supervision and employee performance, Grant and Langan-Fox (2007) found that the negative relationship between role conflict and job satisfaction is stronger for employees with higher levels of conscientiousness. These results suggest that the extra effort invested by conscientious individuals in their jobs may lead to depletion of resources and thus these individuals may suffer more from strain. In other words, conscientiousness may not serve as a type of personal resource *per se* to help individuals resist the detrimental effects of work stressors. Rather, based on the personal resource allocation perspective (Grawitch, Barber, & Justice, 2010), conscientiousness may instead influence how and where individuals allocate their personal resources, which in turn influences how individuals react to work stressors.

According to the personal resource allocation framework (Grawitch et al., 2010), the amount of personal resources is finite. Whether individuals are capable of handling stressful situations depends on how effectively they allocate their personal resources. In addition, the personal resource allocation framework also posits that personality would influence the resource allocation processes. Based on these arguments, we inferred that individuals with high levels of conscientiousness, who have a predisposition to set higher goals and strive for achievement (Barrick & Mount, 1991; Barrick et al., 1993), would be more willing to direct personal resources to meet performance requirements as their top priority. This would imply that under stressful work contexts, conscientious individuals may direct personal resources primarily into fulfilling their high performance standard, leaving them with insufficient resources to mitigate the impact of work stressors on their psychological strain.

In sum, conscientiousness should serve as a guide for individuals to direct their resource allocations (rather than the resource *per se*). According to this argument, this allocation strategy would have significant impact on performance and psychological strain simultaneously when employees encounter work stressors. In the current research, we sought to examine both performance and psychological strain as outcomes in a single model so as to see whether conscientious individuals' maintenance of high performance standards comes at the expense of increased psychological strain when facing stressors. Indeed, to the best of our knowledge, no empirical research has examined the moderating effects of conscientiousness on the relationships that stressors have with performance and psychological strain simultaneously, which limits our understanding of the role that conscientiousness plays in the work stress context.

In order to provide a clearer picture of how conscientiousness influences the stressors-reaction process, the current research examined the moderating role of conscientiousness on the relationships between different types of work stressors and outcomes. Specifically, we employed the two-dimension model of work stressors (i.e., challenge and hindrance stressors) proposed by Cavanaugh, Boswell, Roehling, and Boudreau (2000) and focused on both job performance and psychological strain at the same time. Based on the personal resource allocation framework (Grawitch et al., 2010), we proposed that, on one hand, conscientiousness would strengthen the positive relationship between challenge stressors and job performance, but mitigate the negative relationship between hindrance stressors and performance. On the other hand, conscientiousness would exacerbate the positive relationships between both stressors and psychological strain (Figure 1).

In making these predictions, we provide several important contributions to the personality and work stress literature. First, although conscientiousness is commonly viewed as a type of personal resource that helps individuals deal with stressful events, the inconsistent results of previous research suggest that, rather than a type of resource *per se*, conscientiousness is instead a key factor that impacts the allocation of personal resources. Our research supports this argument by showing how individuals with different levels of conscientiousness reacted differently to work stressors in terms of their performance and psychological strain, which provides new insight to understanding the role of conscientiousness in the stress literature.

Second, we present a more nuanced model of the effects of conscientiousness by considering how individual conscientiousness interacts with work stressors to impact outcomes. In addition, we demonstrate that the same personality trait can either facilitate the favorable effects or exacerbate the adverse effects of work stressors, depending on

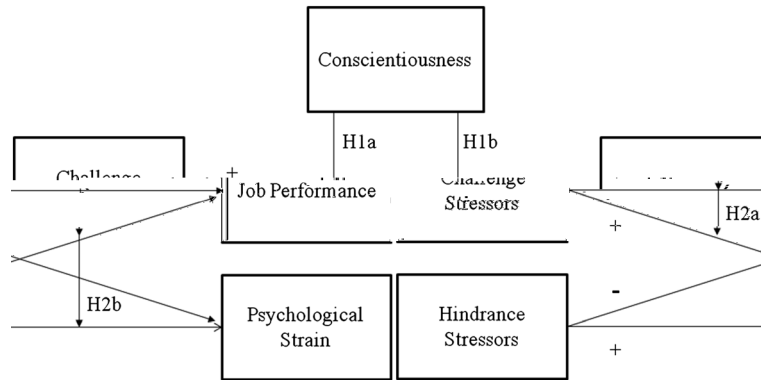


Figure 1. Expected theoretical relationships

the outcome under consideration (e.g., performance or psychological strain). It is the first attempt to demonstrate the double-edged effect of conscientiousness in a single model and highlights the need to consider not only the work environment and individual differences, but the outcomes as well.

Challenge stressors, hindrance stressors, and outcomes

There has been a tradition in the literature (e.g., Selye, 1974) to distinguish between “good” stress (eustress) and “bad” stress (distress). Similarly, it has been suggested that there may be merits in distinguishing among forms of stressors in workplaces (Jex, 1998), considering that stressors in workplaces have been demonstrated to be differentially associated with affective and behavioral responses (e.g., Beehr, Glaser, Canali, & Wallwey, 2001; Dwyer & Ganster, 1991; Fritz & Sonnentag, 2009; Ivancevich, Matteson, & Preston, 1982; Jex & Yankelevich, 2008; Shultz, Wang, & Olson, 2010; Stamper & Johlke, 2003).

Cavanaugh and colleagues (2000) proposed a two-dimensional work stressor framework (i.e., challenge–hindrance stressors) and demonstrated that relationships between stressors and work outcomes depend on the nature of different stressors. In their study, Cavanaugh et al. surveyed managers’ work stress using items selected from several measurements (Caplan, Cobb, French, Harrison, & Pinneau, 1975; Ivancevich & Matteson, 1983; Sandman, 1992). Results of factor analysis showed that items can be categorized into two factors. The first factor consisted of items such as workload, time pressure, and responsibility and was named challenge stressors because these items reflected stressors that help to facilitate goal achievement and personal growth. The second factor consisted of items such as role ambiguity, role conflict, and organizational politics and was named hindrance stressors because these items reflected stressors that threaten goal achievement. Subsequent analysis in Cavanaugh et al.’s study, as well as a growing body of research, supports the two-dimensional framework of challenge–hindrance stressors, which all together suggest that challenge stressors lead to desirable work attitudes or behaviors such as job satisfaction (Beehr et al., 2001; Podsakoff, LePine, & LePine, 2007; Webster, Beehr, & Love, 2011), affective organizational commitment (Boswell, Olson-Buchanan, & LePine, 2004; Podsakoff et al., 2007), and work self-efficacy (Webster, Beehr, & Christiansen, 2010), while hindrance stressors result in undesirable ones such as turnover intention (Boswell et al., 2004; Podsakoff et al., 2007; Webster et al., 2011) and withdrawal (Podsakoff et al., 2007).

Not surprisingly, therefore, challenge and hindrance stressors have also been demonstrated to have obverse relations with employee task performance. In agreement with Cavanaugh et al. (2000), empirical studies (e.g., LePine, LePine, & Jackson, 2004; LePine, Podsakoff, & LePine, 2005; Pearsall, Ellis, & Stain, 2009; Wallace, Edwards, Arnold, Frazier, & Finch, 2009) as well as meta-analysis (LePine et al., 2005) have consistently identified a positive relationship between challenge stressors and performance but a negative one between hindrance stressors

and performance. It is argued that because individuals believe that they are more able to meet the challenge work demands and valued outcomes will occur after they cope with them, challenge stressors evoke a higher level of motivation (LePine et al., 2004; LePine et al., 2005), thus leading to more engagement and better performance. In contrast, hindrance stressors reduce performance because these stressors are situational constraints that make it difficult for employees to accomplish job tasks (Cavanaugh et al., 2000). Besides, given that individuals are more likely to believe that no reasonable level of effort is adequate to deal with hindrance work demands, they tend to have a lower level of motivation. Thus, hindrance stressors are supposed to reduce performance (LePine et al., 2004; LePine et al., 2005).

Despite the different relationships between challenge and hindrance stressors with attitudinal and behavioral outcomes, research reveals that both of these stressors are positively associated with psychological strain (e.g., Boswell et al., 2004; Lee & Ashforth, 1996; LePine et al., 2004; LePine et al., 2005; Podsakoff et al., 2007; Webster et al., 2011). This argument is based on research suggesting that all stressful job demands are subject to the same psychological process (i.e., appraisal and coping), which requires emotional and cognitive effort (Cooper, Dewe, & O'Driscoll, 2001; Lazarus & Folkman, 1984) and thus results in forms of strain such as anxiety, fatigue, and exhaustion

2002), and are hard working (Barrick et al., 1993; Renn, Allen, & Huning, 2011). Accordingly, highly conscientious individuals very much value achievement-related conditions, such as a sense of accomplishment (Raja, Johns, & Ntalianis, 2004), and tend to spend effort to conquer the work-related problems that they encounter (Wang & Erdheim, 2007; Watson, Clark, & Harkness, 1994). Thus, when experiencing challenge stressors that are beneficial to achievement, highly conscientious individuals would allocate more resources (e.g., spending more time and energy) they have into dealing with these stressors, in order to meet the performance requirements and gain

Hypothesis 2a: Conscientiousness moderates the relationship between challenge stressors and psychological strain, such that the positive relationship between challenge stressors and psychological strain is stronger for more conscientious employees.

Similarly, as for the hindrance stressors, highly conscientious employees would allocate more resources to deal with them in order to offset their negative influence on performance. Spending too much time and energy on work would bring about a depletion of personal resources; thus, this allocation strategy would lead to more psychological strain as hindrance stressors increase. While those with lower conscientiousness are less motivated about work, they are even prone to psychologically detach from their jobs (Sonnentag & Fritz, 2007). So, they would be less concerned about whether their job duties are hindered by situational factors and would allocate fewer resources into work. Thus, they would suffer from less strain as hindrance stressors increase. This argument is consistent with previous research showing that conscientiousness strengthens the negative effect of role conflict on job satisfaction

management and consulting firms. In this combined sample, 51.20 percent were male, and the average age of the respondents was 25.74 years ($SD = 4.24$); 0.4 percent did not receive a junior high school diploma, 41.6 percent completed junior high school education, 8.0 percent had a high school diploma, and 50.0 percent had an associate degree or above; and the average job tenure of the respondents was 1.47 years ($SD = 1.69$).

Measures

The measures for challenge–hindrance stressors and conscientiousness were originally published in English. We followed the conventional procedure of translation–back translation (Brislin, 1980) to translate them into Chinese. First, a Chinese graduate student who majored in English translated all the English scales into Chinese. Then, another graduate student who majored in English and was blind to the original questionnaire translated them back to English. Finally, the two English versions of all the scales were compared with each other to review any arising inconsistencies. A high level of agreement (94.7 percent) was achieved in back-translated items. Minor discrepancies between the original and back-translated versions were solved through discussion between the translators and a professor of psychology.

Challenge and hindrance stressors

Challenge and hindrance stressors were measured with Cavanaugh et al.'s (2000) 11-item scale. Employees were asked to indicate the extent to which the statements produced stress at work on a scale ranging from 1 (no stress) to 5 (a great deal of stress). Challenge items (six items; Cronbach's $\alpha = .93$) included "Time pressure I experience" and "The number of projects and or assignments I have," while hindrance items (five items; Cronbach's $\alpha = .83$) included "The degree to which politics rather than performance affects organizational decisions" and "The amount of red tape I need to get through to get my job done."

Conscientiousness

We measured conscientiousness using the Mini-Markers developed by Saucier (1994) (Cronbach's $\alpha = .71$ in the current research for the conscientiousness). Mini-Markers is a shortened version of Goldberg's unipolar Big-Five Markers (Goldberg, 1992), which has been demonstrated to have strong correlations (ranging from .54 to .70) with the NEO Five-Factor Inventory (Mooradian & Nezlek, 1996). It consists of 40 adjective markers. The Conscientiousness scale contains eight adjective markers (four positive adjectives such as "Practical" and four negative adjectives [reversed coded] such as "Sloppy"). Respondents rated each marker using a Likert scale ranging from 1 (extremely inaccurate) to 5 (extremely accurate).

Psychological strain

We used the 12-item version of the General Health Questionnaire (GHQ-12) revised by Wang and Lin (2011) to assess employees' psychological strain (Cronbach's $\alpha = .89$ in the current research). The GHQ-12 was originally developed by Goldberg and Williams (1988) and has been widely used as a screening measure for general psychological strain (e.g., Lin, Wang, & Chen, 2013). Respondents were asked to rate their agreement on a 7-point scale (1 = strongly disagree, 7 = strongly agree). An example item is "I'm unhappy and depressed." Higher scores represent higher psychological strain after we reversed the scores.

Job performance

Employees' job performance was rated by their supervisors using a four-item scale taken from Farh and Cheng (1997) (Cronbach's $\alpha = .96$ in the current research). Supervisors were asked to rate their agreement on a 7-point scale (1 = strongly disagree, 7 = strongly agree). An example item is "This employee makes a significant contribution to the overall performance of our work unit."

Participants' demographic characteristics, including gender, age, education, and job tenure were controlled because previous studies suggested that these status variables might influence individuals' perceptions of work stressors, psychological strain, and performance (e.g., Ang, Van Dyne, & Begley, 2003; Cavanaugh et al., 2000; Ely, 2004; Lobel & St. Clair, 1992; Perrewé et al., 2004; Vigoda, 2002; Wallace et al., 2009). In order to control company difference, we also included company type as a dummy variable coded "1" for the restaurant management company and "2" for the consulting firm in the regression analysis.

The means, standard deviations, and correlations among the vat6(n)12.14.4(a2.6(itm(d)0(e)15.0(s)-715.3(ar)16.6(e)-226.p(r)0(17 psychological strare s.

Table 1. Descriptive statistics for study variables.

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
1. Gender	1.49	0.50	—									
2. Age	25.74	4.24	-.02	—								
3. Education	3.52	1.43	.30**	.42**	—							
4. Job tenure	1.47	1.69	-.02	.37**	.10	—						
5. Company type	1.46	0.50	.28**	.45**	.91**	.14*	—					
6. Challenge stressors	2.82	1.16	.08	.31**	.62**	.15*	.68**	(.93)				
7. Hindrance stressors	2.77	1.04	.06	.01	.11	-.01	.12	.30**	(.83)			
8. Conscientiousness	3.94	0.54	-.07	.28**	.17**	.14*	.13*	.00	-.25**	(.71)		
9. Job performance	4.99	1.33	-.05	.13*	.04	.26**	.03	.08	-.17**	.17**	(.96)	
10. Psychological strain	2.56	0.98	-.09	-.09	-.11	.00	-.11	.12	.25**	-.29**	.07	(.89)

Note: Gender was coded "1" for men and "2" for women. Education was coded "1" for "no degree," "2" for "high school diploma," "3" for "associate degree," "4" for "bachelor degree," "5" for "master degree," and "6" for "doctor degree." Company type was coded "1" for restaurant management company and "2" for consulting firm. Values in parentheses on the diagonal are Cronbach's alpha coefficients.

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

the outcome of psychological strain, the individual level variance was .96, whereas the between-group variance was .01. The chi-square test indicated that the between-group variance was not significant, $\chi^2(25) = 29.95$, $p > .10$. The intra-class correlation for psychological strain was .01, indicating that only 1 percent of the variance existed between groups.

After accounting for supervisory effects, the control variables explained 5.5 percent and 0.2 percent of the within-group variance in job performance and psychological strain, respectively. The addition of the main effects of stressors and conscientiousness explained incremental 0.8 percent and 15.3 percent of the within-group variance in job performance and psychological strain, respectively. Finally, the addition of the interaction effects between stressors and conscientiousness explained additional 6.8 percent and 4.2 percent of the within-group variance in job performance and psychological strain, respectively. Consequently, the final model explained 13.1 percent and 19.7 percent of the within-group variance in job performance and psychological strain, respectively. The results of the final model are presented in Table 2.

Results showed that after controlling for the between-group effects, both challenge and hindrance stressors were positively related to psychological strain ($\gamma = .19$, $p < .01$, and $\gamma = .15$, $p < .05$, respectively), meaning that the more stressors (either challenge or hindrance) employees perceived, the worse their psychological status was. However, neither challenge stressors nor hindrance stressors were significantly related to job performance ($\gamma = .01$, $p > .10$ and $\gamma = -.07$, $p > .10$, respectively). Table 2 also shows that conscientiousness moderated the relationship between challenge stressors and job performance as expected ($\gamma = .49$, $p < .05$), such that the positive relationship between challenge stressors and job performance was stronger for employees with high conscientiousness (Figure 2). However, the relationship between hindrance stressors and performance was not moderated by conscientiousness ($\gamma = -.05$, $p > .10$).

In addition, conscientiousness significantly moderated each of the relationships between work stressors and psychological strain in the predicted direction (challenge stressors, $\gamma = .22$, $p < .01$; and hindrance stressors, $\gamma = .20$, $p < .01$). These results demonstrated that positive relationships between work stressors and employee psychological strain were stronger for employees high, rather than low, in conscientiousness (Figures 3 and 4). We also used the online calculator for probing interactions developed by Preacher, Curran, and Bauer (2006) to estimate simple slopes, which describe the relationships between work stressors and outcomes at varying levels of conscientiousness. Specifically, high conscientiousness was designated as 1SD above the mean, average conscientiousness was the mean, and low conscientiousness was 1SD below the mean. For the relationship between challenge stressors and

Table 2. Hierarchical linear modeling results for predictor of supervisor-rated performance and psychological strain.

	Job performance	Psychological strain
Intercept	5.20** (0.17)	2.62** (0.07)
Sex	0.02 (0.17)	−0.09 (0.13)
Age	0.02 (0.02)	0.00 (0.02)
Education	0.22** (0.09)	0.03 (0.09)
Job tenure	0.12** (0.04)	0.00 (0.03)
Company type	−1.05** (0.39)	0.54 (0.33)
Challenge stressors	0.01 (0.08)	0.19** (0.08)
Hindrance stressors	−0.07 (0.05)	0.15* (0.08)
Conscientiousness	0.16 (0.28)	−0.46** (0.15)
Challenge stressors × conscientiousness	0.49* (0.24)	0.22** (0.08)
Hindrance stressors × conscientiousness	−0.05 (0.17)	0.20** (0.09)
Level 1 variance component	1.13	0.77
Level 2 variance component	0.33	0.02
χ^2 (df = 25)	136.25**	27.58

Note: Gender was coded “1” for men and “2” for women. Education was coded “1” for “no degree,” “2” for “high school diploma,” “3” for “associate degree,” “4” for “bachelor degree,” “5” for “master degree,” and “6” for “doctor degree.” Company type was coded “1” for restaurant management company and “2” for consulting firm.

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

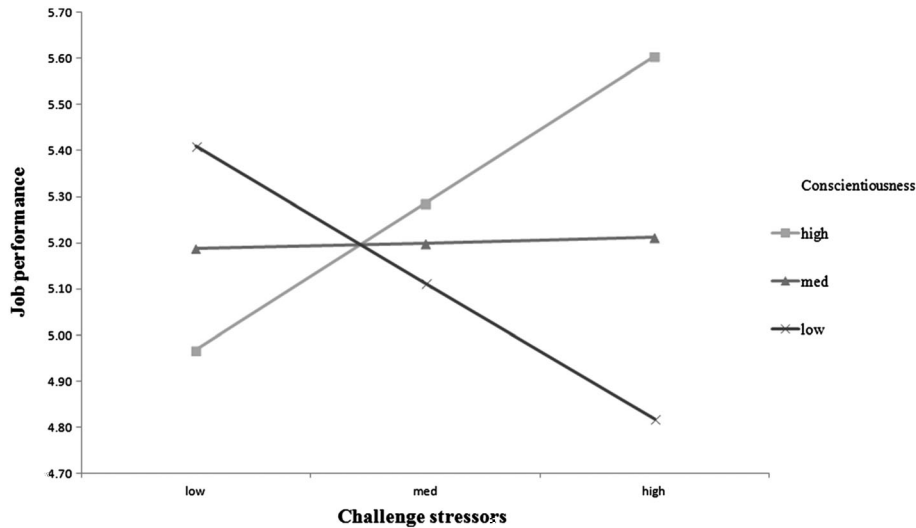


Figure 2. Interaction between challenge stressors and conscientiousness on employee job performance

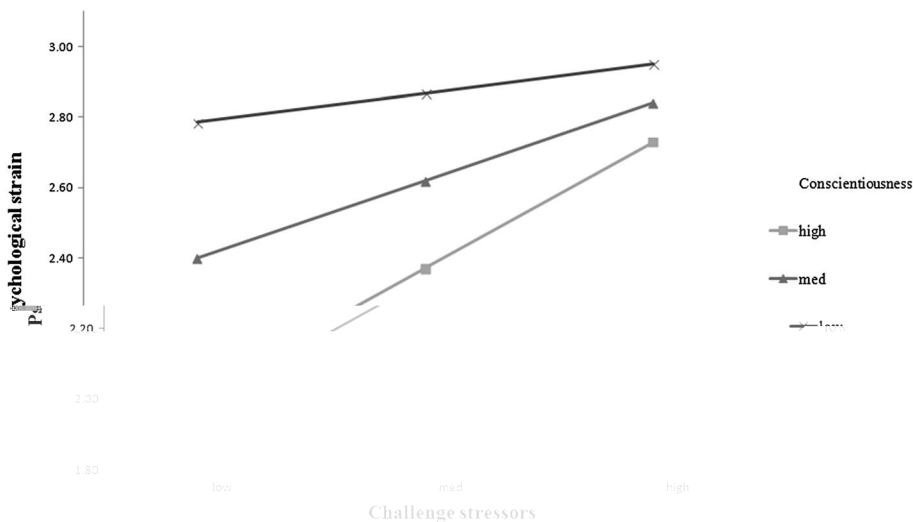


Figure 3. Interaction between challenge stressors and conscientiousness on employee psychological strain

job performance, the slope was significantly positive for individuals with high conscientiousness (simple slope = .27, $p < .01$) but significantly negative for individuals with low conscientiousness (simple slope = $-.25$, $p < .01$). For individuals with average conscientiousness, the slope was not significant (simple slope = .01, $p > .10$). For the relationship between challenge stressors and psychological strain, the slopes were significantly positive for individuals with high conscientiousness (simple slope = .31, $p < .01$), with average conscientiousness (simple slope = .19, $p < .01$), and with low conscientiousness (simple slope = .07, $p < .01$). For the relationship between hindrance stressors and psychological strain, the slopes were significantly positive for individuals with high conscientiousness (simple slope = .26, $p < .01$) and with average conscientiousness (simple slope = .15, $p < .01$), but it was not significant for individuals with low conscientiousness (simple slope = .04, $p > .10$). These results provided support for Hypotheses 1a, 2a, and 2b.

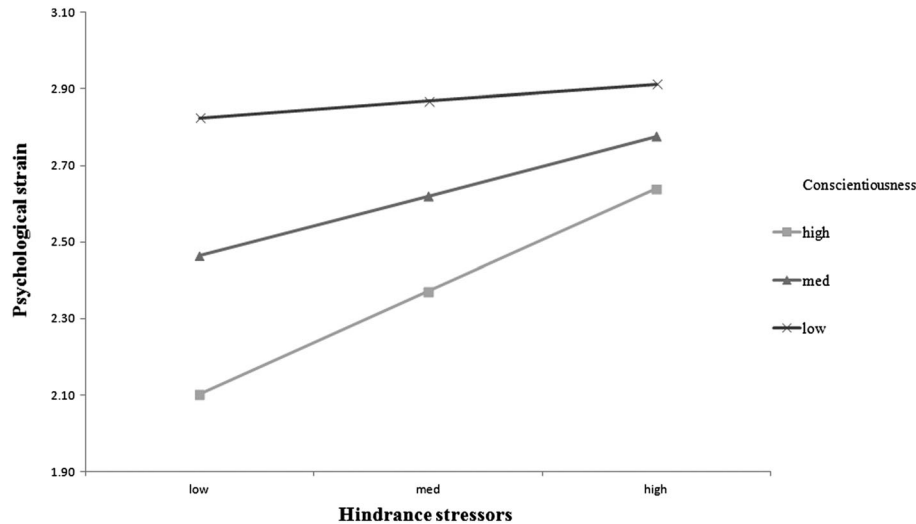


Figure 4. Interaction between hindrance stressors and conscientiousness on employee psychological strain

Discussion

The goal of the current research was to expand literature on stress by examining the degree to which a particular variable of personality trait, conscientiousness, moderated the relationships that work stressors had with employee psychological strain and job performance. Using time-lagged and multi-source data, our results demonstrate the double-edged sword effect of conscientiousness, which suggests that, rather than acting as a type of personal resource, conscientiousness might serve as a guide for individuals to direct their resource allocations.

The current research showed the moderating effects of conscientiousness, such that the relationships that both work stressors (i.e., challenge and hindrance) had with employee psychological strain were stronger for those high in conscientiousness. In addition, the relationship between challenge stressors and performance was positive for individuals with high conscientiousness but negative for those with low conscientiousness. From the personal resource allocation perspective, this may be due to that the highly conscientious individuals are more willing to channel their personal resources towards maintaining their performance standards, leading to insufficient resources to resist the increase of their psychological strain. It is worth noting that although conscientious individuals had lower levels of psychological strain on average due to the negative relationship between conscientiousness and psychological strain (Table 2), their levels of psychological strain increased dramatically when the levels of stressors increased. This result suggests that the well-being of highly conscientious individuals fluctuate more dramatically than that of those with low conscientiousness, reflecting the dark side of conscientiousness because previous research has shown that such increase in strain would cause severe outcomes such as higher risk of suffering from depression (e.g., Stansfeld, Shipley, Head, & Fuhrer, 2012; Wang, Schmitz, Dewa, & Stansfeld, 2009). Therefore, our findings demonstrate the double-edged sword effect of conscientiousness.

Of note, we expected the moderating effect of conscientiousness in the relationship between hindrance stressors and performance, such that hindrance stressors would be more detrimental to performance for employees low, rather than high, on conscientiousness. However, no support was found for this hypothesis. A possible explanation is that hindrance stressors, such as role ambiguity and organizational politics, are somewhat out of the control of the employees. So, even for employees with high levels of conscientiousness, hindrance stressors are difficult for them to deal with. Although they tend to spend more effort trying to deal with these stressors and maintain their level of performance, they just cannot successfully meet the demands of the hindrance stressors. Thus, hindrance stressors

would directly reduce performance because they make it difficult for employees to accomplish job tasks (Lepine et al., 2005). Therefore, conscientiousness failed to mitigate the relationship between hindrance stressors and performance.

Theoretical implications

The current research makes several contributions to the existing body of literature. First, conscientiousness is commonly viewed as a type of personal resource that is beneficial for individuals. However, previous research has not supported this argument consistently, as it has been found that there are some situations where conscientiousness would act as a catalyst that exacerbates individuals' stress reactions. Therefore, rather than viewing conscientiousness as a type of personal resource, we argue that conscientiousness helps directing individuals' resource allocations based on the personal resource allocation perspective (Grawitch et al., 2010). Specifically, we posit that conscientiousness channels resources towards dealing with work stressors so as to meet performance requirements or even to help the individual strive for greater achievement. As a result, highly conscientious individuals may be left with insufficient resources to mitigate the negative impact of work stressors on their psychological well-being. Consistent with these arguments, our results showed that although conscientiousness would facilitate individuals' job performance under stressful situations that were perceived as challenging, it would also exacerbate individuals' psychological strain at the same time. As such, the current research not only provides a novel approach to address some conflicting findings from the current stress literature but also highlights a new perspective to understand the role that conscientiousness plays in the work context. To the best of our knowledge, it is also the first time that the double-edged sword effect of conscientiousness has been demonstrated in the same model, which significantly contributes to the domain of personality research.

Second, the personal resource allocation perspective (Grawitch et al., 2010) posits that how individuals deal with demands depends on how effectively they allocate their finite personal resources, and personality would influence the resource allocation processes. Although it is a well-argued perspective, little work has been carried out to test the validity of the personal resource allocation perspective. In the current research, we provide support for this perspective by revealing the double-edged sword effect of conscientiousness in that when faced with stressors, highly conscientious individuals may be inclined to maintain their superior levels of job performance at the risk of turbulence in their psychological well-being.

Third, although previous findings suggest that challenging work demands promote work performance (e.g., LePine et al., 2004; LePine et al., 2005; Pearsall et al., 2009; Wallace et al., 2009), our findings show that this is not always the case. By examining the moderating effects of conscientiousness on the relationship between challenge stressors and performance, our research found that challenge stressors promote job performance for high conscientiousness employees but damage performance for those low in conscientiousness. These findings extend the stress literature by clarifying the boundary conditions of the challenge stressors–performance relationship, which highlights the importance of considering individual differences in the stress management area.

Finally, our findings are consistent with the person–environment interaction perspective in understanding psychological and behavioral reactions to stressful situations (Endler & Magnusson, 1976). The person–environment interaction perspective suggests that personality (e.g., conscientiousness) interacts with situations (e.g., challenge/hindrance stressors) in determining attitudes and behaviors. Based on this perspective and the extent that individuals differ in resource allocation strategy, personality should influence how individuals allocate their resources and how they react psychologically and behaviorally (e.g., psychological strain and performance) to the stressful work settings.

Practical implications

The current research also provides some guidance for managerial practice. First, given that hindrance stressors were positively related to employees' psychological strain, organizations should make every effort to reduce the

occurrence of hindering work environments. For example, organizations could help employees to clarify their work roles and deal with employee relations in a more harmonious way.

Second, our results showed that the relationship between challenge stressors and performance was positive for highly conscientious individuals but negative for low-conscientious ones. These results suggest that it is crucial for organizations or supervisors to consider the personality traits of employees when assigning tasks, workloads, or responsibilities. For conscientious employees, providing challenge work demands may promote their performance. In contrast, organizations should provide more support and guidance for low conscientiousness employees to meet the performance requirements when they are facing heavy and challenging work demands.

Third, although our results showed that employees with high conscientiousness would perform better when confronted with challenge stressors, we should note that they are more psychologically vulnerable in terms of the increase in psychological strain under either type of stressful work situations (i.e., challenge or hindrance stressors). Thus, organizations should pay more attention to the health status of employees who are high in conscientiousness and provide them with additional resources to help reduce the potential impairment of well-being. For example, Employee Assistance Programs could be developed to help conscientious employees psychologically detach from work during off-job time and obtain better recovery of their personal resources.

Limitations and directions for future research

Several limitations and directions for future studies should be addressed. First, the cross-sectional nature of the data collection may induce common method variance issue and prevent us from making any causal inference. However, this does not constitute as a major threat to the interpretation of our findings for three reasons. First, we collected our data in two phases (2 weeks apart) from both employees and their direct supervisors. The use of time-lagged design and measures from different sources helps mitigate the concern for potential common method bias (Podsakoff et al., 2003). Moreover, job performance and psychological strain data were collected after we assessed work stressors, which also aligns with the temporal order of our proposed model. Second, our research focuses on the moderating effects of conscientiousness. According to Schaubroeck and Jones (2000), common method variance is unlikely to result in statistical interactions, which are the main focus of this study. Third, evidence from both longitudinal (e.g., Sonnentag & Frese, 2012) and experimental studies (e.g., Perrewé & Ganster, 1989) suggests that work stressors have casual impacts on strain. In their review of longitudinal research regarding the relationship between work stressors and strain, Sonnentag and Frese (2012) found that empirical evidence supporting a causal effect of stressors on strain is substantial. Moreover, Perrewé and Ganster (1989) found that manipulated work demands resulted in lower job satisfaction. All these reasons weaken the concerns regarding the issue of cross-sectional data. Nevertheless, future research should attempt to use a longitudinal design to confirm the moderating effects of conscientiousness on the stressor–strain relationship. For instance, it would be interesting to examine whether conscientiousness would play the role of a double-edged sword in a long term. It might be the case that increased psychological strain would gradually deplete resources and render employees less able to invest themselves in their work, thus reduce employees' performance in the long run. On the other hand, it is also possible that superior performance in the long run elevates individuals' personal resources, thereby buffering them against the negative effects of stressors on psychological strain. Longitudinal data are needed in future research to shed more light on how conscientiousness affects stressors–strains relationships over time.

Another limitation of this study is that the research focused exclusively on samples of employees from two particular companies. Further replication of this study should be conducted in a variety of other populations. Third, for the brevity and simplicity of our measure in the organizational setting, in the current study, we used the Mini-Markers Scale (Saucier, 1994) that allows only a total score for conscientiousness. Future research could consider using personality scales that allow an assessment of different facets of conscientiousness.

More research could also focus on the mechanisms underlying the double-edged sword effect of conscientiousness. According to the personal resource allocation framework (Grawitch et al., 2010), the amount of resources that

employees direct into dealing with stressors in the workplace can influence their performance and perceived strain. Here, we did not directly test this mechanism, and future studies can extend the current findings by examining whether factors regarding to resource allocation in the workplace, such as strategies of time and energy input, act as proximal components and thus explain why conscientiousness strengthens both the relationships between stressors and psychological strain and the relationship between challenge stressor and performance. Besides, future research could investigate whether external resources, such as support from supervisors and colleagues, would affect employees' resource allocation processes, thus making those highly conscientious employees less vulnerable to work stressors in terms of their psychological well-being. By considering external and internal resources simultaneously, future research can be expected to draw a more complete picture of how employees react to stressors in the workplace.

Another prospective future direction is exploring the influence of other personal characteristics on the relationships between challenge/hindrance stressors and their consequences. Specifically, future research can consider certain personal characteristics that will buffer the negative impact of hindrance stressors. Our research suggests that challenge stressors are conditionally "good," but hindrance stressors are unconditionally "bad." Could there be some personal characteristics that make hindrance stressors less "bad"? For example, because hindrance stressors often trigger strong feelings of uncertainty (Zapf, Seifert, Schmutte, Mertini, & Holz, 2001), future research may examine whether employees low in uncertainty avoidance orientation (Hofstede, 2001) would be less vulnerable to hindrance stressors. These future studies, along with the current research, will serve as a beginning to gain a more comprehensive understanding of how individual differences influence the challenge/hindrance stressors–consequences relationships.

Acknowledgements

This work is supported by NSFC Grant #91224008 and Grant #91324201 and Key Projects in the National Science & Technology Pillar Program of China (No. 2009BAI77B04) to Dr. Lei Wang.

Author biographies

Weipeng Lin has a PhD in I/O Psychology in the Department of Psychology at Peking University under the supervision of Professor Lei Wang and is an assistant professor in the Department of Human Resource Management at Nankai University. His research focuses on stress management, occupational health, leadership, and performance. **Jingjing Ma** graduated from the Department of Psychology at Peking University with an MSc in I/O Psychology. Her research interests include stress management, leadership, and creativity. She is now studying in the PhD Program in I/O Psychology in Michigan State University.

Dr. Lei Wang is a professor of psychology and Clifton Chair Professor of Leadership in the Department of Psychology at Peking University. His research interests include employee evaluation, leadership, motivation, team management, work stress, and innovation. He is also the chair for China National Committee for Post-Graduate Education in Applied Psychology.

Mo Wang is a professor in the Department of Management at the University of Florida. He received his PhD in Industrial–Organizational Psychology and Developmental Psychology from Bowling Green State University. His research interests include dyadic work relationship adjustment, maladaptive coping at the workplace, and advanced quantitative research methods.

References

- Ang, S., Van Dyne, L., & Begley, T. M. (2003). The employment relationships of foreign workers versus local employees: A field study of organizational justice, job satisfaction, performance, and OCB. *Journal of Organizational Behavior*, 24, 561–583.
- Armon, G., Shirom, A., & Melamed, S. (2012). The big five personality factors as predictors of changes across time in burnout and its facets. *Journal of Personality*, 80, 403–427.
- Barrick, M. R., & Mount, M. K. (1991). The big five personality dimensions and job performance: A meta-analysis. *Personnel Psychology*, 44, 1–26.
- Barrick, M. R., Mount, M. K., & Strauss, J. P. (1993). Conscientiousness and performance of sales representatives: Test of the mediatin

- Hobfoll, S. E. (2001). The influence of culture, community and the nested-self in the stress process: Advancing conservation of resources theory. *Applied Psychology: An International Review*, 50, 337–396.
- Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations*. Thousand Oaks, CA: Sage.
- Ivancevich, J. M., & Matteson, M. T. (1983). *Stress diagnostic survey*. Houston, TX: Stress Research Systems.
- Ivancevich, J. M., Matteson, M. T., & Preston, C. (1982). Occupational stress, type A behavior, and physical well being. *Academy of Management Journal*, 25, 373–391.
- Jex, S. M. (1998). *Stress and job performance: Theory, research, and implications for managerial practice*. Thousand Oaks, CA: Sage.
- Jex, S. M., & Yankelevich, M. (2008). Work stress. In J. Barling & C. L. Cooper (Eds.), *The Sage Handbook of Organizational Behavior* (pp. 498–518). London: Sage.
- Jöreskog, K., & Sörbom, D. (2006). LISREL (version 8.80). Chicago: Scientific Software International.
- Judge, T. A., Heller, D., & Mount, M. K. (2002). Five-factor model of personality and job satisfaction: A meta-analysis. *Journal of Applied Psychology*, 87, 530–541.
- Judge, T. A., & Ilies, R. (2002). Relationship of personality to performance motivation: A meta-analytic review. *Journal of Applied Psychology*, 87, 797–807.
- Klein, K. J., & Kozlowski, S. W. (2000). *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions*. San Francisco: Jossey-Bass.
- 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.
- Lee, D. G., Kelly, K. R., & Edwards, J. K. (2006). A closer look at the relationships among trait procrastination, neuroticism, and conscientiousness. *Personality and Individual Differences*, 40, 27–37.
- LePine, J. A., LePine, M. A., & Jackson, C. L. (2004). Challenge and hindrance stress: Relationship with exhaustion, motivation to learn, and learning performance. *Journal of Applied Psychology*, 89, 883–891.
- LePine, J. A., Podsakoff, N. P., & LePine, M. A. (2005). A meta-analytic test of the challenge stressor–hindrance stressor framework: An explanation for inconsistent relationships among stressors and performance. *Academy of Management Journal*, 48, 764–775.
- Lin, W., Wang, L., & Chen, S. (2013). Abusive supervision and employee well-being: The moderating effect of power distance orientation. *Applied Psychology: An International Review*, 62, 308–329.
- Lobel, S. A., & St. Clair, L. (1992). Effects of family responsibilities, gender, and career identity salience on performance outcomes. *Academy of Management Journal*, 35, 1057–1069.
- Meyer, R. D., Dalal, R. S., & Bonaccio, S. (2009). A meta-analytic investigation into the moderating effects of situational strength on the conscientiousness–performance relationship. *Journal of Organizational Behavior*, 30, 1077–1102.
- Moon, H. (2001). The two faces of conscientiousness: Duty and achievement striving in escalation of commitment dilemmas. *Journal of Applied Psychology*, 86, 533–540.
- Mooradian, T. A., & Nezlek, J. B. (1996). Comparing the NEO-FFI and Saucier's Mini-Markers as measures of the big five. *Personality and Individual Differences*, 21, 213–215.
- Mount, M. K., Barrick, M. R., & Strauss, J. P. (1999). The joint relationship of conscientiousness and ability with performance: Test of the interaction hypothesis. *Journal of Management*, 25, 707–721.
- Nandkeolyar, A. K., Shaffer, J. A., Li, A., Ekkirala, S., & Bagger, J. (2014). Surviving an abusive supervisor: The joint roles of conscientiousness and coping strategies. *Journal of Applied Psychology*, 99, 138–150. doi: 10.1037/a0034262
- Pearsall, M. J., Ellis, A. P. J., & Stain, J. H. (2009). Coping with challenge and hindrance stressors in teams: Behavioral, cognitive, and affective outcomes. *Organizational Behavior and Human Decision Processes*, 109, 18–28.
- Perrewé, P. L., & Ganster, D. C. (1989). The impact of job demands and behavioral control on experienced job stress. *Journal of Organizational Behavior*, 10, 213–229.
- Perrewé, P. L., Zellars, K. L., Ferris, G. R., Rossi, A. M., Kacmar, C. J., & Ralston, D. A. (2004). Neutralizing job stressors: Political skill as an antidote to the dysfunctional consequences of role conflict. *Academy of Management Journal*, 47, 141–152.
- Perry, S. J., Witt, L., Penney, L. M., & Atwater, L. (2010). The downside of goal-focused leadership: The role of personality in subordinate exhaustion. *Journal of Applied Psychology*, 95, 1145–1153.
- Podsakoff, N. P., LePine, J. A., & LePine, M. A. (2007). Differential challenge stressor–hindrance stressor relationships with job attitudes, turnover intentions, turnover, and withdrawal behavior: A meta-analysis. *Journal of Applied Psychology*, 92, 438–454.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88, 879–903.
- Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interactions in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics*, 31, 437–448.
- Rabinovich, A., Morton, T., & Postmes, T. (2010). Time perspective and attitude–behavior consistency in future-oriented behaviors. *British Journal of Social Psychology*, 49, 69–89.

- Raja, U., Johns, G., & Ntalianis, F. (2004). The impact of personality on psychological contracts. *Academy of Management Journal*, 47, 350–367.
- Raudenbush, S., Bryk, A., & Congdon, R. (2007). *HLM 6.08: Hierarchical linear and nonlinear modeling*. Lincolnwood, IL: Scientific Software International.
- Renn, R. W., Allen, D. G., & Huning, T. M. (2011). Empirical examination of the individual-level personality-based theory of self-management failure. *Journal of Organizational Behavior*, 32, 25–43.
- Roberts, B. W., Chernyshenko, O. S., Stark, S., & Goldberg, L. R. (2005). The structure of conscientiousness: An empirical investigation based on seven major personality questionnaires. *Personnel Psychology*, 58, 103–139.
- Sandman, B. A. (1992). The measurement of job stress: Development of the job stress index. In C. J. Cranny, P. C. Smith, & E. F. Stone (Eds.), *Job satisfaction: How people feel about their jobs and how it affects their performance* (pp. 241–254). New York: Lexington Books.
- Saucier, G. (1994). Mini-markers: A brief version of Goldberg's unipolar Big-Five markers. *Journal of Personality Assessment*, 63, 506–516.
- Schaubroeck, J., Cotton, J. L., & Jennings, K. R. (1989). Antecedents and consequences of role stress: A covariance structure analysis. *Journal of Organizational Behavior*, 10, 35–58.
- Schaubroeck, J., & Jones, J. R. (2000). Antecedents of workplace emotional labor dimensions and moderators of their effects on physical symptoms. *Journal of Organizational Behavior*, 21, 163–183.
- Selye, H. (1974). *Stress without distress*. Philadelphia: Lippincott.
- Shi, J., Lin, H., Wang, L., & Wang, M. (2009). Linking the Big Five personality constructs to organizational justice. *Social Behavior and Personality*, 37, 209–222.
- Shultz, K., Wang, M., & Olson, D. (2010). Role overload and underload in relation to occupational stress and health. *Stress and Health*, 26, 99–111.
- Sonnentag, S., & Frese, M. (2012). Stress in organizations. In N. W. Schmitt & S. Highhouse (Eds.), *Handbook of psychology*. Volume 12: Industrial and organizational psychology (2nd ed., pp. 560–592). Hoboken: Wiley.
- Sonnentag, S., & Fritz, C. (2007). The recovery experience questionnaire: Development and validation of a measure for assessing recuperation and unwinding from work. *Journal of Occupational Health Psychology*, 12, 204–221.
- Stamper, C. L., & Johlke, M. C. (2003). The impact of perceived organizational support on the relationship between boundary spanner role stress and work outcomes. *Journal of Management*, 29, 569–588.
- Stansfeld, S. A., Shipley, M. J., Head, J., & Fuhrer, R. (2012). Repeated job strain and the risk of depression: Longitudinal analyses from the Whitehall II Study. *American Journal of Public Health*, 102, 2360–2366.
- Taylor, S. G., Bedeian, A. G., & Kluemper, D. H. (2012). Linking workplace incivility to citizenship performance: The combined effects of affective commitment and conscientiousness. *Journal of Organizational Behavior*, 33, 878–893.
- Vigoda, E. (2002). Stress-related aftermaths to workplace politics: The relationships among politics, job distress, and aggressive behavior in organizations. *Journal of Organizational Behavior*, 23, 571–591.
- Wallace, J. C., Edwards, B. D., Arnold, T., Frazier, M. L., & Finch, D. M. (2009). Work stressors, role-based performance, and the moderating influence of organizational support. *Journal of Applied Psychology*, 94, 254–262.
- Wang, M., & Erdheim, J. (2007). Does the five-factor model of personality relate to goal orientation? *Personality and Individual Differences*, 43, 1493–1505.
- Wang, M., Liao, H., Zhan, Y., & Shi, J. (2011). Daily customer mistreatment and employee sabotage against customers: Examining emotion and res.3(u)d8ce perspectives. *Academy of Management Journal*, 54, 312–334.
- Wang, L., & Lin, W. (2011). Wording effects and the dimensionality of the General Health Questionnaire (GHQ-12). *Personality and Individual Differences*, 50, 1056–1061.
- Wang, J., Schmitz, N., Dewa, C., & Stansfeld, S. (2009). Changes in perceived job strain and the risk of major depression: Results from a population-based longitudinal study. *American Journal of Epidemiology*, 169, 1085–1091.
- Watson, D., Clark, L. A., & Harkness, A. R. (1994). Structures of personality and their relevance to psychopathology. *Journal of Abnormal Psychology*, 103, 18–31.
- Webster, J. R., Beehr, T. A., & Christiansen, N. D. (2010). Toward a better understanding of the effects of hindrance and challenge stressors on work behavior. *Journal of Vocational Behavior*, 76, 68–77.
- Webster, J. R., Beehr, T. A., & Love, K. (2011). Extending the challenge–hindrance model of occupational stress: The role of appraisal. *Journal of Vocational Behavior*, 79, 505–516.
- Witt, L. A., & Carlson, D. S. (2006). The work–family interface and job performance: Moderating effects of conscientiousness and perceived organizational support. *Journal of Occupational Health Psychology*, 11, 343–357.
- Yang, J., & Diefendorff, J. M. (2009). The relations of daily counterproductive workplace behavior with emotions, situational antecedents, and personality moderators: A diary study in Hong Kong. *Personnel Psychology*, 62, 259–295.
- Zapf, D., Seifert, C., Schmutte, B., Mertini, H., & Holz, M. (2001). Emotion work and job stressors and their effects on burnout. *Psychology and Health*, 16, 527–545.
- Zellars, K. L., Perrewé, P. L., Hochwarter, W. A., & Anderson, K. S. (2006). The interactive effects of positive affect and conscientiousness on strain. *Journal of Occupational Health Psychology*, 11, 281–289.