Public Personnel Management

**Challenge Stressors, Work Engagement and Affective Commitment among Chinese Public Servants**

For

Peer

Review

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| Keywords: | Challenge stressor, work engagement, perceived organizational support, core self-evaluations, moderated moderated (three-way) mediation |
| Abstract: | Drawing on the transactional theory of stress and the person-situation interactionist perspective, we theorize that the indirect effect of challenge stressors on affective commitment through work engagement is moderated by the joint effects of core self-evaluations and perceived organizational support. In a sample of 226 Chinese public servants, we tested a new moderated moderated (three-way) mediation model using structural equation modelling. Our results show that challenge stressors positively influence work engagement, which has a significant positive effect on affective commitment. Moreover, the indirect effect of challenge stressors is maximized when both perceived organizational support and core self-evaluations are high. |
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# 4 Challenge Stressors, Work Engagement and Affective Commitment among

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# 6 Chinese Public Servants

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12 **Abstract**

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14 Drawing on the transactional theory of stress and the person-situation interactionist perspective,

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17 we theorize that the indirect effect of challenge stressors on affective commitment through work

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19 engagement is moderated by the joint effects of core self-evaluations and perceived

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22 organizational support. In a sample of 226 Chinese public servants, we tested a new moderated

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25 moderated (three-way) mediation model using structural equation modelling. Our results show that challenge

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27 stressors positively influence work engagement, which has a significant positive effect on

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30 affective commitment. Moreover, the indirect effect of challenge stressors is maximized when

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32 both perceived organizational support and core self-evaluations are high.

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36 **Keywords**

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39 challenge stressor, work engagement, perceived organizational support, core self-evaluations,

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42 moderated moderated (three-way) mediation

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# 4 Introduction

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7 Due to the increasing complexity of public affairs, work-related stress is now a common problem

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9 for government departments and their staff. It has become a key topic for theoretical studies,

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11 however there is little research analyzing the effects of work-related stress

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， public service motivation as well as the

， job satisfaction of public servants

on the health

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14 various strategies for relieving their stress (De Simone, Cicotto, Pinna, & Giustiniano, 2016; Liu,

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16 Yang, & Ju, 2014). Further, the research on work-related stress performed by public

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18 administration scholars is insufficient in comparison to the research performed on the same

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20 topic by business and psychology researchers. Particularly when attempting to define the

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1. relationship between work-related stress and working outcomes, previous studies have failed to
2. reach a consensus. Similar results are common in other research fields, one example being the

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25 frequently contradictory findings of studies exploring the relationship between work-related

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27 stress and job engagement and those that focus on the relationship between physical and mental

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29 health and attitude toward work (Bakker, Emmerik, & Euwema, 2006; Beehr, Glaser, Canali, &

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31 Wallwey, 2001). One of the reasons for this situation is that researchers have ignored the

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1. environmental factors that contribute to work-related stress. In other words, they have failed to
2. deeply explore or classify the sources of work-related stress as well as the mechanisms that

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36 influence it.

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38 Some studies have indicated that stress can be divided into two types, namely, good stress

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40 and bad stress, which lead to different results (Lepine, Podsakoff, & Lepine, 2005). Furthermore,

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42 job demands (job stress) had been divided into challenge stressors and hindrance stressors.

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1. Challenge stressors such as workload and job responsibility, are positive forms of stress that
2. promote individual development and goal achievement. Hindrance stressors, such as role

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47 ambiguity and role conflict, are negative forms of stress that obstruct individual development and

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49 job satisfaction (Podsakoff, Lepine, & Lepine, 2007). Using this differentiating method,

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51 Cavanaugh, Boswell, Roehling, & Boudreau (2000) were the first to prove that challenge

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53 stressors had a positive effect on job satisfaction, while hindrance stressors had a negative effect

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55 on job satisfaction. Since then, this argument has been confirmed by many researchers, including

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4 Crawford, Lepine, & Rich (2010), who discovered through meta-analysis that, when challenge

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1. stressors and hindrance stressors are not differentiated in the traditional JD-R model,
2. undifferentiated job demands can have a significant negative effect on work engagement. When

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9 differentiated, challenge stressors can have a significant positive effect on work engagement,

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11 while hindrance stressors can have a significant negative effect on work engagement.

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13 Some researchers have tried to use a transactional model to explain why challenge stressors

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15 have a positive effect and have demonstrated that challenge stressors generate a positive effect

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1. on work engagement mainly by triggering positive emotions (Crawford et al., 2010; Webster,
2. Beehr, & Love, 2011). From a person-situation interactional perspective, some scholars believe

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20 that the effect of challenge stressors on work engagement is influenced by personality traits and

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22 situational factors. In the present study, the former variable is measured through core

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24 self-evaluations (CSEs), while the latter is measured using perceived organizational support

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26 (POS). Many studies have discovered that POS can regulate the effect of challenge stressors on

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1. work engagement by providing a significant buffering effect (Pomaki, DeLongis, Frey, Short, &
2. Woehrle, 2010; Witt & Carlson, 2006; Zacher & Winter, 2011). In other studies, however, POS

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31 has also presented a reverse buffering effect (Casper, Harris, Taylor-Bianco, & Wayne, 2011; Jill

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33 & Margaret, 2001; Stamper & Johlke, 2003; Wallace, 2005). Thus previous studies have been

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35 unable to generate a consensus.

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37 Different from incorporating both challenge stressors and hindrance stressors to relieving

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1. work-related stress in previous studies, the current study focuses on challenge stressors, and
2. specifically on how to harness this positive form of stress. Few previous studies have established

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42 a relationship between challenge stressors and affective commitment. Instead, most of them have

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44 investigated the direct effect of challenge stressors on work engagement and the direct effect of

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46 work engagement on affective commitment(Hu, Schaufeli, & Taris, 2011;Inoue, Kawakami, Tsutsumi, Shimazu, Miyaki, Takahashi ···, & Totsuzaki, 2014). This study has developed a mediating model that

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48 analyses the extent to which challenge stressors can have an indirect effect on affective

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1. commitment through work engagement. More importantly, to counteract the inconsistent
2. buffering effect of POS in previous research, this study has introduced CSE as a secondary

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53 moderator to explore whether the two-way interaction effect of POS can be regulated by CSE

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55 (moderated moderation (Hayes, 2013)) to create a three-way interaction effect, which could

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4 enhance the stability of the model and the persuasiveness of its conclusions. On the basis of the

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1. above considerations, we have established a new model. As far as we know, no previous studies
2. have worked with a moderated moderated mediation model (Hayes, 2018) comparable to ours.

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9 Therefore, this study provides a new opportunity to understand the relationship between affective

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11 commitment and the challenge stressors and work engagement of public servants.

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13 In addition, this study provides a basis for government personnel managers to deal more

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15 effectively with challenge stressors. In our opinion, government personnel managers should offer

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1. challenge stressors to public servants to promote positive attitudes and should encourage them to
2. interpret job pressure in a positive light. Organizational support should be provided as needed to

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20 help public servants to experience work engagement and affective commitment (Hargrove,

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22 Nelson, & Cooper, 2013).

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# 25 Theory and Hypotheses

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### 28 Challenge-hindrance stressor model

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30 The design of current study is based on challenge-hindrance stressor model, which sheds light on

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32 the formation mechanisms of work engagement. Challenge-hindrance stressor model stems from

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34 job demands-resources model (JD-R model), which posits that every job has characteristics that

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1. may be categorized into either job demands or job resources (Demerouti, Bakker, Nachreiner, &
2. Schaufeli, 2001). In addition, JD-R model assumes two distinct psychological processes

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39 (Schaufeli & Bakker, 2004). First, job demands exhaust the employees’ energy stores through an

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41 energy depletion process of overtaxing and burnout. Second, through the motivational process,

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43 job resources help employees to deal effectively with high job demands and foster work

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45 engagement. However, the JD-R model fails to distinguish challenge stressors from hindrance

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1. stressors. According to previous studies that have used the JD-R model (Schaufeli & Bakker,
2. 2004), job demands do not predict work engagement. Yet this finding on job demands and work

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50 engagement has been disputed with the advent of the challenge-hindrance stressor model (Min,

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52 Kim, & Lee, 2015).

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Unlike the overly parsimonious JD-R model, the challenge-hindrance stressor model (Cavanaugh et al.,

2000) differentiates job demands into challenging demands and threatening demands. Challenge stressors are

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1. stressful demands that have the potential to promote mastery, personal growth, or future gains
2. and that thereby produce desirable outcomes. Hindrance stressors are stressful demands that have

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9 the potential to thwart personal growth, learning and goal attainment, and that thereby create

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11 undesirable outcomes. Typical challenge stressors include demands such as heavy workload,

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13 time pressure and heightened job responsibility, while typical hindrance stressors include

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15 demands such as role ambiguity, role conflict and organizational politics. Demands that

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1. employees tend to interpret as challenges are positively related to work engagement, and
2. demands that employees tend to interpret as hindrances are negatively associated with work

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20 engagement (Crawford et al., 2010).

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### 23 Transactional theory of stress and person-situation interactionist perspective

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26 The challenge-hindrance framework is rooted in the transactional theory of stress, which

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1. focuses on the psychological mechanisms of appraisal and coping that make up the stress process
2. in an individual (Pearsall, Ellis, Stein, & Stein, 2009). In the transactional theory of stress

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31 (Lazarus & Folkman, 1984), psychological stress is defined as ‘a particular relationship between

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33 the person and the environment that is appraised by the person as taxing or exceeding his or her

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35 resources and endangering his or her well-being’ (Lazarus & Folkman, 1984, p. 19). This

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37 definition points to the fact that, although there are objective conditions that can be considered

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1. stressors, individuals vary in the degree and type of their reaction to identical stressors
2. (Camacho, Hassanein, & Head, 2018). The critical factor in the mediation of each individual’s

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42 stress response is that person’s interpretation of the situation, or cognitive appraisal. Cognitive

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44 appraisal as the intervening process between the stressor and the individual’s reaction can be

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46 understood as ‘the process of categorizing an encounter, and its various facets, with respect to its

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48 significance for well-being’ (Lazarus & Folkman, 1984, p. 31). Challenge appraisal, one of three

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1. types of primary cognitive appraisal, focuses on the potential for gain or growth and can be
2. accompanied by pleasurable emotions such as eagerness, excitement and exhilaration. In the

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53 same vein, challenge stressors, because they tend to be appraised as having the potential to

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55 promote personal growth or gains, tend to trigger positive emotions (Crawford et al. 2010).

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4 Therefore, individuals are more willing to invest themselves in response to challenge stressors.

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1. As such, the transactional theory of stress offers a suitable framework to suggest the positive
2. relationship between challenge stressors and work engagement.

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9 The person-situation interactionist model (Tett & Burnett, 2003) posits that the motivations

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11 for individual behavior are affected by the interaction of individual personality traits and

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13 situational factors, with respect not only to effect size but also to direction. According to the

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15 interactionism paradigm, the person and the situation are inextricably interwoven. Namely,

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1. personal factors and situational factors are not mutually exclusive but rather interact to determine

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1. each individual’s behavior (Ruiz-Palomino & Linuesa-Langreo, 2018). As Liao, Yang, Wang,

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20 Drown, & Shi (2013) suggested, individuals with different personality traits may appraise and

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22 react to similar situations (e.g. low level of POS) in different ways. Following the interactionist

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24 model, CSE (a personal factor) could serve as a boundary condition under which POS (a

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26 situational factor) moderates the effect of challenge stressors on work engagement.

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### 29 The mediating role of work engagement on the relationship between challenge stressors and

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### 31 affective commitment

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33 Although previous studies have cited various definitions of ‘challenge stressors’, generally

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35 speaking, current studies tend to evaluate challenge stressors in terms of work overload and job

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37 responsibility (e.g. Karatepe, Beirami, Bouzari, & Safavi, 2014). This study only chooses ‘job

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1. responsibility’ to measure challenging stressors on account of the ‘insignificance’ of the relationship between
2. work overload and work engagement in a previous meta-analysis (Cole, Walter, Bedeian, &

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42 O’Boyle, 2012). In addition to this reason, one study has indicated that workload can be

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44 appraised primarily as either a challenge or a hindrance, but job responsibility tends to be seen

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46 only as a challenge (Webster et al., 2011). As a matter of fact, some researchers evaluated

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48 challenge stressors from a one-dimensional perspective according to their research needs (e.g.

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1. Lin & Ling , 2018; Pearsall, et al., 2009; Widmer et al., 2012). Therefore, it appeared reasonable
2. for this study to evaluate challenge stressors in terms of job responsibility

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53 Job responsibility means the amount of responsibility an employee has on the job. It is

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55 thought to promote learning and development due to its challenging character and has been

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4 identified as a motivational factor in work engagement (Karatepe et al., 2014). Engagement is

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1. defined as a positive, fulfilling, work-related state of mind, characterized by vigor, dedication
2. and absorption (Schaufeli, Salanova, González-Romá, & Bakker, 2002). A positive challenge

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9 can stimulate employees to dedicate time and energy to work, thus increasing work engagement

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11 (Macey & Schneider, 2008). Therefore, challenge stressors have a significant positive effect on

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13 work engagement. Employees with a high level of job responsibility are likely to feel that they

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15 can successfully meet this demand by working hard. By doing so, they expect to experience a

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1. sense of personal accomplishment and to receive formal recognition (Crawford et al., 2010).
2. Meta-analyses (Crawford et al., 2010) and many previous studies (Inoue, Kawakami, Tsuno,

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20 Shimazu, Tomioka, & Nakanishi, 2013; Inoue et al., 2014; Karatepe et al., 2014; Mauno, Kinnunen, & Ruokolainen,

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24 2007) have shown this to be the case.

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26 Work engagement triggers many positive results, among them affective commitment.

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1. Affective commitment refers to an employee’s emotional attachment to, identification with, and
2. involvement in, an organization (Allen & Meyer, 1990). Work engagement and affective

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31 commitment have a very strong relationship (Hallberg & Schaufeli, 2006). When performing

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33 duties, people who are dedicated to their work (i.e. who experience high levels of work

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35 engagement) will bring a strong emotional commitment to the organization’s development

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37 opportunities and resources (Hakanen, Bakker, & Schaufeli, 2006; Karatepe & Aga, 2012). In

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1. other words, work engagement will increase affective commitment, as has been confirmed in
2. many previous studies including meta-analyses (Brunetto, Teo, Shacklock, & Farr-Wharton,

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42 2012; Christian, Garza, & Slaughter, 2011; Cole et al., 2012; Hakanen et al., 2006; Hakanen,

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44 Schaufeli, & Ahola, 2008; Hu et al., 2011; Jung & Yoon, 2016; Karatepe, 2011; Karatepe & Aga, 2012; Karatepe et al., 2014; Scrima, Lorito, Parry, & Falgares, 2014).

48 Although previous studies have not fully explored the topic, the relationship between

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1. challenge stressors and affective commitment has attracted the attention of some researchers
2. such as Allen & Meyer (1990), who suggested that job challenge is an antecedent to affective

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53 commitment. As described above, challenge stressors are seen as a factor that promotes personal

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55 service and personal development, thus generating positive emotion and increasing career

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4 affective commitment (Podsakoff et al., 2007). When endowed with higher positions and more

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1. responsibility, employees tend to dedicate more time and energy to coping with challenge
2. stressors (Crawford et al., 2010). When such passion yields personal achievement, employees

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9 show higher levels of engagement at work, further enhancing their affective commitment to the

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11 organization (Karatepe et al., 2014). Recent meta-analyses (Podsakoff et al., 2007) and

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13 individual studies (González-Morales & Neves, 2015) have confirmed that challenge stressors

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15 increase affective commitment. Considering the above three aspects, we propose the following

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17 hypothesis:

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19 **Hypothesis 1(H1)**: Work engagement mediates the relationship between challenge stressor

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21 and affective commitment such that challenge stressors positively influence work

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23 engagement and work engagement positively affects affective commitment.

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### 26 The joint moderating effects of POS and CSE

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28 POS reflects “global beliefs concerning the extent to which the organization values their

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30 contributions and cares about well-being” (Rhoades & Eisenberger, 2002, p. 698). Studies have

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32 shown that employees with high POS have positive expectations going into organizational

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34 assessments of their contributions and shortcomings. They seem less afraid of job responsibility

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1. and usually show higher levels of work engagement (Rich, Lepine, & Crawford, 2010). In
2. contrast, employees with low POS usually try to protect themselves by reducing work

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39 engagement because they fear job responsibility. According to the norm of reciprocity, if a

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41 person is supported by an organization, he or she will pay back the organization by increasing his

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43 or her work engagement. In meta-analyses of social support (Christian et al., 2011; Nahrgang,

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45 Morgeson, & Hofmann, 2011) and co-worker support (Cole et al., 2012), both social support and

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1. co-worker support can increase work engagement. Thus, high levels of POS will make
2. employees believe that the organization is on their side, which will evoke a feeling of trust,

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50 organizational identification and long-term obligation, inspiring employees to make greater

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52 efforts to achieve not only personal but also organizational goals (Witt & Carlson, 2006).

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54 Hence we have reason to think that high levels of POS will have a positive moderating effect

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56 on the impact of challenge stressors on work engagement. In fact, POS has been shown to have

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4 such an effect in related studies; for example, POS positively moderates the effect of

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1. family-work conflict on job performance (Witt & Carlson, 2006), the effect of workload on
2. turnover intention (Pomaki et al., 2010), and the effect of emotional dissonance on job

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9 satisfaction (Abraham, 1998). When the outcome variable was work engagement, POS positively

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11 moderated the effect of strain (Zacher & Winter, 2011) and job demands (Taipale, Selander,

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13 Anttila, & Nätti, 2011) on work engagement. Yet other studies have found that the moderating

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effect of POS is not always shown as predicted, which means the reverse buffering effect; that is,

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1. POS positively moderates the positive effect of job demands on work-family conflict (Wallace,

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1. 2005), positively moderates the positive effect of role conflict on emotional exhaustion (Kickul

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& Posig, 2001), positively moderates the positive effect of family-work conflict on continuance

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organizational commitment (Casper et al., 2011), and negatively moderates the negative effect of

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24 role conflict on job satisfaction (Stamper & Johlke, 2003).

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26 In analyzing why the moderating effects of POS are thus inconsistent, some researchers have

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1. argued that there may be other critical moderators (Stetz, Stetz, & Bliese, 2006). This suggestion
2. served as crucial inspiration for the analysis in this study. We have therefore introduced a

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31 personal moderator—the CSE—using a person-situation interactional perspective to explain the

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33 inconsistent moderating effects of the situational moderator—POS—as a way of making the

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35 model more stable. According to Judge, Erez, Bono, & Thoresen (2003), the CSE is a

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37 multidimensional, higher-order construct consisting of four traits: (1) self-esteem, (2) generalized

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1. self-efficacy, (3) emotional stability and (4) locus of control. People with high CSE scores have
2. higher adaptability, self-efficacy and self-confidence; they usually have a rich store of resources

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42 and are good at executing and understanding job requirements (Rich et al., 2010). Many studies

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44 have focused on the moderating effect of CSE on POS, as evidenced by the two-way interactions

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46 between social support and locus of control (Voils, Steffens, Flint, & Bosworth, 2005) and

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48 between social support and self-esteem (Kong, Zhao, & You, 2013). Based on this, some

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1. researchers have conducted further studies to validate the three-way interactions between
2. ostracism × POS × self-esteem (Teng & Chen, 2012), job challenge × POS × locus of control

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53 (Noor, 1995), stressors × POS × self-efficacy (Stetz et al., 2006) and job

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55 satisfaction × POS × self-efficacy (Chen & Scannapieco, 2010). Some researchers have validated

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4 the interaction effect between POS and CSE directly (Selvarajan, Singh, & Cloninger, 2016).

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1. The above studies provide a theoretical basis for introducing CSE into a POS moderating model.
2. For convenience, this study considers the four dimensions of the CSE as a whole to further

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9 analyze its interaction effect on POS. When individuals with high scores on the CSE components

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11 (e.g. self-efficacy) feel that they are receiving organizational support, they are likely to view this

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13 support as a positive interaction (Stetz et al., 2006). Therefore, POS augments the positive effects

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15 of challenge stressors on work engagement. By contrast, when individuals with low CSE

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1. component scores experience organizational support, they are likely to view this support as
2. pressure. In this case, POS will weaken the relationship between challenge stressors and work

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20 engagement, causing CSE to decrease the two-way interaction effect of POS on the relationship

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22 between challenge stressors and work engagement. Based on the above analysis, we have

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24 therefore proposed the following hypothesis:

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26 **Hypothesis 2(H2):** There is a three-way interaction between challenge stressors, POS and

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28 CSE in predicting work engagement. Specifically, for high-CSE individuals, POS

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30 strengthens the relationship between challenge stressors and work engagement, whereas for

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32 low-CSE individuals, POS weakens the relationship between challenge stressors and work

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34 engagement.

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### 37 Moderated mediation and moderated moderated mediation

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39 The relationship between challenge stressors and work engagement can be analyzed in relation to

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41 both two-way interactions and three-way interactions. In this study, after including affective

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43 commitment as the final outcome variable, we have established an integrated model that

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45 combines the mediation and moderation models. Specifically, we have analyzed moderated

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1. mediation by combining two-way interaction and mediation. We have also analyzed moderated
2. moderated mediation by combining three-way interaction and mediation. Moderated mediation

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50 means that POS strengthens the indirect effect of challenge stressors, while moderated

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52 moderated mediation indicates that the moderated mediation effect is stronger for public servants

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54 with high CSE. In addition, this study predicts that the indirect effect will be maximized when

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56 both POS and CSE are high. Based on the above analysis, we have proposed the following

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4 hypothesis:

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6 **Hypothesis 3(H3):** The positive indirect effect of challenge stressors on affective

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8 commitment through work engagement is moderated by POS. In particular, the moderation of

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10 the indirect effect of challenge stressors by POS is stronger in individuals with higher CSE.

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12 Figure 1 shows our conceptual model, in which all variables are latent constructs. The model

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14 suggests that the indirect effect of challenge stressors on affective commitment via work

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16 engagement is jointly moderated by POS and CSE.

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34 **Figure 1. The first-stage moderated moderated mediation model**

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# 38 Research Background

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41 The proportion of Chinese public servants among the total population, estimated at 0.55%, is

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43 smaller than that of many other nations (Liu, Tang, & Yang, 2015). Compared with Western

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45 public servants, Chinese public servants face more complicated work assignments at more junior

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47 stages of their careers. For instance, Tax Bureau officials may be responsible not only for

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49 poverty alleviation but also for environmental protection. As all of these tasks are required of

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1. them by law, officials usually experience high levels of work-related stress. Converting this
2. pressure into motivation is a relatively tough problem. In the academic arena, although public

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54 management researchers recognized the importance of studying stress several decades ago

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4 (Simon & Nice, 1997; West & West, 1989) and accordingly have conducted many

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1. experience-based research projects, this issue has not received enough attention, and further
2. study is required (Liu, et al., 2014). There has still been no exhaustive study on work-related

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9 stress. In China, hindrance stressors are an obvious negative factor, though their existence has

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11 been denied by senior government officials several times. Challenge stressors, meanwhile,

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13 remain a mystery—there is still no definite answer as to how they affect the behavior of public

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15 servants. Although research in other fields has shown that challenge stressors have a complicated

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1. effect on the outcome variable, as outcomes are influenced by many factors, the question of
2. whether such complicated effects are experienced by public servants in China remains to be

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20 answered.

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23 **Method**

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### 26 Participants

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29 In 2016, the Standing Committee of the National People's Congress authorized the China State Council to carry out a pilot

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31 project on the parallel policy governing public servants’ positions and job grades in Shandong

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1. Province, Hubei Province, and Sichuan Province. The aim of this project was to generate
2. enthusiasm among public servants and to eliminate the negative effects caused by high levels of

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36 work-related stress and impediments to promotion. To enhance the real-time performance and

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38 specificity of the present study, we chose Shandong Province, one of the pilot areas, for this

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40 investigation. The researchers distributed questionnaires in three provincial cities, each of which had

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42 undertaken a reorganization of its public servants relatively early: J city, T city and D city. These

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1. cities are ranked as having high, moderate and low levels of social and economic development,
2. respectively. A total of 270 questionnaires were distributed to public servants in the three cities

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47 and 240 questionnaires were returned (response rate = 88%). Two hundred twenty-six

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49 questionnaires turned out to be usable. Among the participants, 55.8 per cent were female; the

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51 average age was 31.46 years (SD = 4.57); and the average job tenure was 5.33 years (SD = 2.48).

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54 ***Measurement***

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4 Responses to all the questionnaire items were scored on a seven-point Likert scale ranging from

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1. 1 = strongly disagree to 7 = strongly agree.
2. *Challenge stressors.* We adopted four items from Karatepe et al. (2014) to measure public

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9 servants’ challenge stressors, as manifested in terms of job responsibility. One representative

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11 item was ‘I feel a very high degree of personal responsibility for the work I do in this job’. The

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13 Cronbach’s alpha estimate was 0.88.

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15 *POS.* Six items were selected from Eisenberger, Armeli, Rexwinkel, Lynch, & Rhoades

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1. (2001) to assess POS. One sample item was ‘This organization is willing to help me if I need a
2. special favor’. The Cronbach’s alpha for this scale was 0.96.

19

20 *CSE.* We used the twelve-item CSES (Core Self-Evaluations Scale: Judge et al., 2003) to

21

22 assess the positive self-concept (CSE) of each public servant. Judge et al. (2003) have suggested

23

24 that CSES items may indicate a unidimensional factor, given that the more parsimonious

25

26 single-factor model does not differ significantly from the four-factor model. An item from this

27

28 scale is ‘I am capable of coping with most of my problems’. The Cronbach’s alpha for the CSES

29 was 0.98.

30

31 *Work engagement.* Work engagement was assessed using the shortened version of the

32

33 Utrecht Work Engagement Scale (Schaufeli, Bakker, & Salanova, 2006). This scale consisted of

34

35 nine items, including: ‘At my work, I feel bursting with energy’. The Cronbach’s alpha was 0.97.

36

37 *Affective commitment.* Eight items taken from Allen & Meyer (1990) were used to measure

38

1. affective commitment. The two other commitment types (continuance and normative) were
2. excluded from the analysis because they were irrelevant to the reciprocity norm (Marques,

41

42 Chambel, & Pinto, 2015). A sample item was ‘I would be very happy to spend the rest of my

43

44 career with this organization’. The Cronbach’s alpha for this eight-item scale was 0.97.

45

46 *Control variables.* Following Van Dyne and Pierce (2004), we controlled for the

47

48 demographics of gender, age and job tenure of the participants in all analyses.

49

50

# 51 Analysis and Results

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53 The data were examined to ensure that the assumptions of multivariate normality were met. The

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55 testing results show that both multivariate skewness (*p* = .19) and kurtosis (*p* = .26) were

1 MODERATED MODERATED MEDIATION EFFECT 14

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4 insignificant, implying that there was no violation of the multivariate normality assumption.

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1. Multivariate normally distributed data mean that each variable in the data has a univariate normal
2. distribution and each pair of variables has a bivariate normal distribution (Wang & Wang, 2012).

8

9

### 10 Descriptive statistics

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13 Table 1 presents the means, standard deviations and correlations. As expected, challenge

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15 stressors were positively correlated with work engagement (*r* = .59, *p* < .01), POS (*r* = .57,

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1. *p* < .01), CSE (*r* = .48, *p* < .01) and affective commitment (*r* = .41, *p* < .01). Work engagement
2. was positively correlated with affective commitment (*r* = .74, *p* < .01).

19

20

21

22 **Table 1: Descriptive statistics and correlations**

23

24

25 Variable Mean SD 1 2 3 4 5 6 7

26

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Gender | 1.56 | .49 |  |  |  |  |
| Age | 31.46 | 4.57 | −.03 |  |  |
| Tenure | 5.33 | 2.48 | .02 | .71\*\* |  |
| CS | 4.22 | 1.29 | .06 | .09 | .09 |
| WE | 3.85 | 1.67 | −.01 | .19\*\* | .21\*\* | .59\*\* |  |  |  |
| POS | 3.89 | 1.52 | −.07 | .16\* | .16\* | .57\*\* | .81\*\* |  |  |
| CSE | 3.77 | 1.66 | −.11 | .14\* | .14\* | .48\*\* | .67\*\* | .83\*\* |  |
| AC | 3.41 | 1.64 | .08 | .18\*\* | .12 | .41\*\* | .74\*\* | .63\*\* | .46\*\* |

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42 *Note*: *N*=226; SD = standard deviation; Gender: male=1, female=2; CS = challenge stressor; WE

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44 = work engagement; POS = perceived organizational support; CSE = core self-evaluations; AC =

45 affective commitment.

46

47

### 48 Confirmatory factor analysis

49

50

51 We conducted a confirmatory factor analysis using Mplus 7.4, and compared a four-factor model

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1. (combining POS and CSE) with a five-factor model because the correlation between POS and
2. CSE was relatively high. The five-factor measurement model had a better goodness of fit

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4 (χ2 = 1,182.58, degree of freedom (*df* ) = 692, *p* < .001; root mean square error of approximation

5

1. (RMSEA) = 0.05; comparative fit index (CFI) = 0.96; Tucker-Lewis index (TLI) = 0.96; and
2. standardised root mean square residual (SRMR) = 0.03) than the four-factor model

8

9 (χ2 = 1,865.03, *df* = 696, *p* < .001; RMSEA = 0.09; CFI = 0.91; TLI = 0.90; SRMR = 0.06). The

10

11 difference between the two models was statistically significant (*Δ*χ2 = 682.45, *Δdf* = 4; *p* < .001),

12

13 indicating that POS and CSE were distinctive constructs. All the composite reliabilities were

14

15 greater than 0.80 and the average variance extracted scores were above 0.60. The correlation

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1. coefficients among the constructs were less than 0.9, suggesting that discriminant validity was
2. satisfied (Kline, 2016). Furthermore, the average variance extracted estimates from any two

19

20 constructs were higher than their squared interconstruct correlation estimates, thus providing

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22 clear evidence of discriminant validity (Fornell & Larcker, 1981).

23

24

### 25 Common method bias

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27

1. With regard to our research design, our self-reported data were collected from a single source at
2. one point in time, so common method bias (CMB) may be a concern (Podsakoff, MacKenzie,

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31 Lee, & Podsakoff, 2003). Although CMB cannot inflate (but does deflate) interaction effect

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33 (Podsakoff, MacKenzie, & Podsakoff, 2012), which is the central issue of this research, we

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35 evaluated whether CMB might be a threat to the underlying data. We employed two statistical

36

37 post-hoc techniques to assess whether variance in our data could be attributed to a single factor.

38

1. First, we conducted a confirmatory factor analysis to test model fit difference between the
2. one-factor model and a multifactor model (Craighead, Ketchen, Dunn, & Hult, 2011). The

41

42 one-factor model (χ2 = 5,829.22, *df* = 702, *p* < .001) fit significantly worse than the multifactor

43

44 model (χ2 = 1,182.58, *df* = 692, *p* < .001), implying that CMB does not pose a serious threat (*Δ*χ2

45

46 =4,646.64, *Δdf* = 10, *p* < .001). Second, we ran a confirmatory factor analysis controlling for the

47

48 effects of a single unmeasured latent method factor (Podsakoff et al., 2003), allowing all

49

1. indicators in the measurement model to load on an unmeasured method factor as well as their
2. respective factors. The common latent factor accounted for 12% of the total variance, which is

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53 well below the 25% threshold (Williams, Cote, & Buckley, 1989). Thus CMB is not a problem in

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55 the present case.

1 MODERATED MODERATED MEDIATION EFFECT 16

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### 4 Indirect effect of challenge stressors

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6 The proposed mediation model fit the data well

(χ2 = 408.11, *df* = 243, *p* < .001; RMSEA = 0.05;

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8 CFI = 0.97; TLI = 0.97; SRMR = 0.03). Challenge stressors were significantly and positively

9

10 related to work engagement (*a* = 0.74, *p* < .001). Work engagement, in turn, had significant and

11

1. positive effects on affective commitment (*b* = 0.77, *p* < .001). We constructed a 99%
2. bias-corrected bootstrap confidence interval for the indirect effect (*ab* = 0.57), based on 10,000

14

15 bootstrap samples. As this confidence interval (0.39–0.81) does not contain and is entirely above

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17 zero, the indirect effect is significant and positive (Hayes, 2013). Sobel test results also indicate

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19 that the standardized indirect effect is significant (*ab* = 0.57, *p* < .001). Thus Hypothesis 1 is

20

21 supported.

22

23

### 24 Moderated moderation (three-way interaction)

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26 Klein & Moosbrugger (2000) developed the latent moderated structural equations (LMS)

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28 approach to estimate latent variable interactions; this was implemented in Mplus. Unlike other

29

30 traditional product indicator approaches (Marsh, Wen, & Hau, 2004), “LMS uses the raw data of

31

32 indicator variables directly for estimation, and *does not require the forming of any products of*

33

34 *indicator variables*” (Klein & Moosbrugger, 2000, p. 467). Of all methods, ‘the LMS method

35

1. may be the most precise because it estimates the degree of non-normality’ (Kline, 2016, p. 443).
2. The moderated moderation model was tested using Mplus. The results of the moderated

38

39 moderation analysis (Table 2) show that both the two-way interaction effect (challenge

40

41 stressor\*POS, *β* = 0.23, *p* < .01) and the three-way interaction effect (challenge

42

43 stressor × POS × CSE, *β* = 0.12, *p* < .01) were significant. We probed a three-way interaction to

44

45 identify whether POS moderated the effect of challenge stressors on work engagement,

46

1. conditional on the specific values of CSE. This conditional moderation of challenge stressors by
2. POS estimated the conditional effect of the challenge stressor\*POS interaction at a given value

49

50 of CSE. When CSE was equal to two standard deviations below the mean (*β* = −0.17, *p* = .204)

51

52 or equal to one standard deviation below the mean (*β* = .03, *p* = .723), the conditional moderation

53

54 of challenge stressors by POS was insignificant. By contrast, when CSE was equal to the mean

55

56 (*β* = 0.23, *p* < .01), equal to one standard deviation above the mean (*β* = 0.43, *p* < .001), or equal

1 MODERATED MODERATED MEDIATION EFFECT 17

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4 to two standard deviations above the mean (*β* = 0.63, *p* < .001), the conditional moderation of

5

1. challenge stressors by POS was positively significant. Our findings also revealed that the
2. conditional effect of the challenge stressor\*POS interaction became larger as CSE increased.

8

9 Since the moderating effect of POS is insignificant when CSE is low, Hypothesis 2 is partially

10

11 supported.

12

13

14

## 15 Table 2. Results of moderated moderation

16

17 Variables *Estimate S.E. T value P value*

18

19 Gender .006

.133

.038

.017

.133

20

21 Age -.020

22

23 Tenure .102

24

25 CS .006

26

27 POS -.020

28

29 CSE .102

30

31 CS\*POS .146

32

33 CS\*CSE .794

34

.093

.123

.038

.017

eeww

.045

-1.200

.230

.964

2.722

.006

.045

.964

-1.200

.230

2.722

.006

1.195

vi

.232

8.503

.000

35 POS\*CSE -.137 .072 -1.907 .057

36 CS\*POS\*CSE .229 .077 2.970 .003

37

38 Conditional moderation of challenge stressors by POS

39

40 values of CSE *Estimate S.E. T value P value*

41

42 mean-2SD -.170

.204

.134

43

44

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| mean-1SD | .030 | .084 | .354 | .723 |
|  |  |  |  |  |
| mean | .229 | .077 | 2.970 | .003 |
|  |  |  |  |  |
| Mean + 1SD | .428 | .121 | 3.554 | .000 |
|  |  |  |  |  |
| Mean + 2SD | .628 | .181 | 3.466 | .001 |
|  |  |  |  |  |

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-1.270

1. *Note*: *N* = 226; S.E. = standard error; Gender: male=1, female=2; CS = challenge stressor; POS =
2. perceived organizational support; CSE = core self-evaluations; SD = standard deviation.

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1 MODERATED MODERATED MEDIATION EFFECT 18

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### 4 Moderated mediation and moderated moderated mediation

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6 Before our moderated moderated mediation analysis, we tested the moderated mediation model.

7

8 A test that determined the statistical significance of the index of moderated mediation served as a

9

10 formal test of moderated mediation (Hayes, 2015). The results indicated that the index of

11

1. moderated mediation was positive and significant (index = 0.135, *p* < .001), implying that the
2. indirect effect of challenge stressors on affective commitment through work engagement was

14

15 positively moderated by POS. Following Cheung & Lau (2017), we used a three-step procedure

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17 to test moderated moderated mediation in the LMS approach using Mplus. In Step 1, the model

18

19 was estimated without the interaction terms (baseline model). As the baseline model fitted the

20

21 data well (χ2 = 1,186.67, *df* = 694, *p* < .001; RMSEA = 0.05; CFI = 0.96; TLI = 0.96;

22

1. SRMR = 0.03) and all the factor loadings were significant, we were able to proceed to the next
2. step. In Step 2, the model was estimated with latent interaction terms (Figure 1). Table 3 shows

25

26 the results of the moderated moderated mediation analysis. As in moderated mediation, an

27

28 inferential test for the index of moderated moderated mediation can be used as a formal test of

29

30 moderated moderated mediation (Hayes, 2018). The index of moderated moderated mediation

31

32 (*a7b* in Table 3) was positive and significant (*a7b* = 0.096, *p* < .01), leading to the conclusion that

33

1. the moderation of the indirect effect by POS is positively moderated by CSE. This moderated
2. moderated mediation effect is still significant after controlling for covariates (gender, age and

36

37 tenure). In Step 3, we can probe this moderation of moderated mediation by choosing specific

38

39 values of CSE, using the index of conditional moderated mediation (in Table 3). The results

40

41 show that when CSE was equal to the mean minus two standard deviations (index = −0.137,

42

43 *p* = .191) or when it was equal to the mean minus one standard deviation (index = 0.022,

44

1. *p* = .732), the moderation of the indirect effect of challenge stressor by POS was insignificant.
2. When CSE was equal to the mean (index = 0.182, *p* < .01), equal to the mean plus one standard

47

48 deviation (index = 0.341, *p* < .01) or equal to the mean plus two standard deviations

49

50 (index = 0.501, *p* < .01), the moderated mediation effect was positive and significant. Thus

51

52 Hypothesis 3 is supported. In Figure 2, we plotted the relationship between POS and the indirect

53

54 effect of challenge stressor at three levels of CSE. The slope of each line corresponds to the

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56 respective index of conditional moderated mediation in Table 3.

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## 27 Figure 2. A visual depiction of the indirect effect of challenge stressors on affective

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## 30 commitment via work engagement as a function of POS and CSE

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## 35 Table 3: Results of moderated moderated mediation

36

37 Mediator variable model: DV = work engagement

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39

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  Variables | *Estimate* | *S.E.* | *T value* | *P value* |
| Gender | .003 | .133 | .021 | .983 |
| Age | -.021 | .017 | -1.231 | .218 |
| Tenure | .103 | .038 | 2.750 | .006 |
| CS | .144 | .122 | 1.174 | .240 |
| POS | .801 | .093 | 8.611 | .000 |
| CSE | -.145 | .072 | -2.030 | .042 |
| CS\*POS | .233 | .077 | 3.034 | .002 |
| CS\*CSE | .007 | .073 | .101 | .919 |

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7 Dependent variable model: DV = affective commitment

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|  |
| --- |
| 1 MODERATED MODERATED MEDIATION EFFECT 2023 |
| 4 | POS\*CSE | .027 | .045 | .588 | .556 |
| 5 |  |  |  |  |  |
| 6 | CS\*POS\*CSE(*a7*) | .123 | .042 | 2.974 | .003 |

9 Gender .289 .152 1.906 .057

11 Age .054 .026 2.075 .038

10

12

13 Tenure −.092 .045 -2.050 .040

14

15 WE(*b*) .779 .066 11.775 .000

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16

17 CS −.093 .060 −1.551 .121

18

19 Index of moderated moderated mediation

20

21 index *Estimate S.E. T value P value*

22

23 *a7b* .096 .034 2.849 .004

24

25 Index of conditional moderated mediation

26

27 values of CSE *Estimate S.E. T value P value*

28

29 mean-2SD −.137 .105 −1.306 .191

30 mean-1SD .022 .065 .342 .732

31

32 mean .182 .062 2.951 .003

33

34 mean+1SD .341 .098 3.472 .001

35

36 mean+2SD .501 .148 3.388 .001

37

38 Note: N = 226; S.E. = standard error; DV = dependent variable; Gender: male = 1, female = 2;

39

40 WE = work engagement; CS = challenge stressor; POS = perceived organisational support; CSE

41 = core self-evaluations; AC = affective commitment; SD = standard deviation.

42

43

44

45 **Discussion**

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48 Our study tested the assumption that the indirect effect of challenge stressors on affective

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1. commitment through work engagement was jointly moderated by POS and CSE, based on a
2. sample of 226 public servants in China. The significant moderated moderated mediation effect

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53 adds new and interesting theoretical and practical implications to the literature.

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1 MODERATED MODERATED MEDIATION EFFECT 21

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### 4 Theoretical implications

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6 This analysis has sought to respond to recent calls for a differentiated job demands-resources

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8 model (Crawford et al., 2010) that can predict work engagement by distinguishing challenge

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10 stressors from hindrance stressors, consistent with the notion that all stressors are not created

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1. equal. Our findings show that work engagement mediates the effect of challenge stressor on
2. affective commitment. This result suggests that public servants who are immersed in their work

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15 and who display heightened affective commitment appraise challenge stressors as situations with

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17 potential to promote mastery, personal growth or future gains. This finding is consistent with the

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19 transactional theory of stress (Lazarus & Folkman, 1984), in which the individual’s cognitive

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21 appraisal of the situation is essential. This study is a first attempt at understanding the nature of

22

1. the mechanism by which challenge stressors are related to positive outcomes, an issue that
2. Cavanaugh et al. (2000) did not address. Following Min et al. (2015) contention that the

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26 challenge-hindrance stressor model overlooks individual characteristics, we introduced a

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1. personal factor assessed in terms of CSE. This step is also supported by the work of Noor (1995,

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1. p. 268), who explained that “the inconsistent finding regarding the moderating effect of social

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32 support is too simplistic to capture the presence of more complex relationships between existing

33

1. Variables”, implying the necessity of introducing individual differences into the model. From a
2. person-situation interactionist perspective, we have tested a moderated moderation model in

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37 which the effect of challenge stressors on work engagement is jointly moderated by POS (a

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39 situational factor) and CSE (a personal factor). A significant two-way interaction effect between

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41 challenge stressors and POS means that high POS augments the effect of challenge stressors on

42

43 work engagement. A significant three-way interaction effect was found in which both POS and

44

1. CSE moderated the relationship between challenge stressors and work engagement. Overall, the
2. impact of challenge stressors on work engagement is very salient in situations with high POS and

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48 high CSE. This result is in line with a person-situation interactionist perspective. The significant

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50 three-way interaction effect supports the premise that the presence of both POS and CSE is a sine

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52 qua non for the enhancement of public servants’ work engagement. In addition, this research

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54 sheds light on our newly integrated model in which the moderation of the indirect effect of

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56 challenge stressors by POS is dependent upon CSE. In other words, the results of our moderated

1 MODERATED MODERATED MEDIATION EFFECT 22

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4 moderated mediation model suggest that the indirect effect of a challenge stressor is not equal for

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1. all public servants, but is differentially affected by public servants’ differing levels of POS and
2. CSE. These findings help underscore the importance of treating both POS and CSE as moderators

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9 in exploring the indirect effect of challenge stressors on affective commitment via work

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11 engagement among public servants. The above conclusion not only helps researchers to understand the

 mechanism of the effect of challenge stressor on affective commitment in the Chinese context, but also

 shows that the process of challenge stressor producing positive effects is complicated. This deepens the

 research on challenge stressor and [responds](http://www.baidu.com/link?url=2QPIR5ea9SDiHL1VrA4SqNSHgTbl0Dpt6bI4WbPGrAt6n5hUw0ZIX-VhDtx907EF7BcFF994scH7CPZrFtTPSPV7lsSwK-4q_s31VwEpxFO" \t "_blank) to the question on whether the challenge stressor can bring

 positive effects(Mazzola ＆ Disselhorst, 2019).

### 14

###  Practical implications

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1. Public organizations should implement human resources practices that increase perceptions of
2. organizational support among public servants by providing financial aid, paid leave and

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20 educational programs (Zacher & Winter, 2011). Since CSE accelerates the extent to which the

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22 indirect effect of challenge stressors on affective commitment via work engagement is moderated

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24 by POS, managers of public organizations considering interventions to enhance work

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26 engagement and affective commitment by increasing organizational support should also consider

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1. the CSEs of public servants. The results of our study suggest that managers should be cautious in
2. implementing intervention strategies, because POS can make a situation more stressful for public

30

31 servants with low CSE, at least in the short term. Providing organizational support may be a

32

33 “situation of short-term pain for long-term gain” (Stetz et al., 2006, p. 55). High-CSE public

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35 servants believe in their capabilities, worth and ability to control their lives. They therefore tend

36

37 to view situations (e.g. POS) more positively than low-CSE individuals do. This perspective can

38

1. help strengthen the moderating effect of POS between challenge stressors and work engagement
2. for high-CSE individuals. Thus the presence of individuals with high CSEs is essential in

41

42 public-service sectors.

43

44 One practical way forward for managers is to consider CSE as part of a set of criteria for

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46 recruiting public servants. In other words, public organizations should select candidates who

47

48 already possess high-CSE traits (Harris, Harvey, & Kacmar, 2009; Jiang & Gu, 2015; Kittinger,

49

1. Walker, Cope, & Wuensch, 2009; Lee & Ok, 2015; Liang & Gong, 2013). Srivastava, John,
2. Gosling, & Potter (2003) have referred to the soft plaster hypothesis, by which they mean that

52

53 “personality is like plaster that has not fully hardened”, that is, that individuals’ personality traits

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55 can change during their employment. Likewise, although CSE is a fairly stable trait, its stability

1 MODERATED MODERATED MEDIATION EFFECT 23

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4 appears to be somewhat lower than previously believed, and not entirely resistant to change

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1. (Judge, Bono, & Locke, 2000). Against the backdrop of these empirical results, managers should
2. facilitate public servants’ learning in ways that contribute to developing their CSE. In particular,

8

9 considering the deleterious effect of POS on public servants with low CSE, managers can assign

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11 skilled mentors and provide training and counselling to strengthen these employees’ CSE.

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13

### 14 Limitations and future research

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For Peer Review

1. Despite the theoretical and practical implications of our findings, this study has certain
2. limitations, which should be addressed in future research. Firstly, since the results of the present

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20 study were obtained using self-reported questionnaires, there is the possibility of CMB

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22 (Podsakoff et al., 2003). However, according to Evans (1985), CMB reduces the chance of

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24 detecting a significant interaction, since the effect of such a bias is to inflate the main effects at

25

26 the cost of failing to detect interaction effects. CMB cannot create artificial interactions; rather, it

27

1. often attenuates true interactions. Thus CMB is not a major threat as long as significant
2. interactions have been found (Bowling, Wang, & Li, 2012; De Jonge, Mulder, & Nijhuis, 1999;

30

31 Jung & Takeuchi, 2014; Wall, Jackson, Mullarkey, & Parker, 1996). Secondly, the current study

32

33 used a cross-sectional design; accordingly, we cannot assess real causal relationships. Future

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35 research using more rigorous research designs, such as longitudinal or experimental designs, will

36

37 be needed to facilitate causal inferences. A final suggestion for future research is to explore other

38

1. variables that may moderate the relationship between challenge stressors and work engagement.
2. Some variables that may serve as moderators include emotional intelligence (Gao, Shi, Niu, &

41

42 Wang, 2013), transformational leadership (Kim, Liden, C., & Kim, 2015) and proactive

43

44 personality (Li, Zhong, Chen, Xie, & Mao, 2014). Despite these limitations, our findings provide

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46 evidence of the importance of POS and CSE, as the indirect effect of challenge stressors hinges

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48 upon these two moderators.

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50

51 **Conclusion**

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54 Based on a sample of 226 Chinese public servants, we have tested a moderated moderated

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1 MODERATED MODERATED MEDIATION EFFECT 24

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4 mediation model in which the indirect effect of challenge stressors on affective commitment

5

1. through work engagement is jointly moderated by POS and CSE. Our findings reveal that the
2. indirect effect is at its highest when both POS and CSE are high and at its lowest when both POS

8

9 and CSE are low. This study also highlights the importance of distinguishing between challenge

10

11 and hindrance stressors, since not all stressors are equally bad and not all lead to a reduction in

12

13 work engagement and affective commitment. The central message that emerges from these

14

15 findings is that public organizations should foster a supportive workplace culture and consider

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1. the CSEs of public servants as they strive to enhance work engagement and affective
2. commitment to the organization. Hopefully these findings will provide new insights and lead to

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20 future research that will explore strategies to improve employee attitudes and job performance.

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22

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