



Core self-evaluation and work engagement: employee strengths use as a mediator and role overload as a moderator

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Abstract

Although core self-evaluation (CSE) has been found to be positively linked with work engagement, we have little knowledge about why and when this relationship occurs. This study sought to investigate the mediating effect of employee strengths use (ESU) and the moderating effect of role overload on the relationship of CSE with work engagement. A two-wave design was applied to collect data from a sample of 344 employees from one energy company in China. Results showed that ESU acts as a mediator between CSE and work engagement, and role overload lessens the direct linkage between ESU and work engagement and the indirect association between CSE and work engagement via ESU. This study advances our understanding of the process mechanisms underlying the relationship between CSE and work engagement, and reveals the boundary condition under which CSE has a stronger association with work engagement via ESU.

Keywords Core self-evaluation · Employee strengths use · Role overload · Work engagement

Introduction

In the past few decades, core self-evaluation (CSE), a critical type of personality traits, has attracted the interest of many researchers (e.g., Bipp et al., 2019). CSE has been defined as an individual's basic evaluation of their own worth and ability (Judge et al., 2005), which consists of generalized self-efficacy, self-esteem, locus of control, and emotional stability (Judge et al., 1998). A great deal of research has demonstrated CSE to be effective in improving career exploration (Zhu et al., 2021), entrepreneurial orientation (Stewart et al., 2021), and organizational citizenship behavior (Joo & Jo, 2017). Furthermore, employees high in CSE are more likely to experience a low level of emotional

exhaustion (Anand & Mishra, 2021) and execute less counterproductive work behaviors (Debusscher et al., 2016).

More importantly, because work engagement has a significant implication for employees and employer organizations (Wood et al., 2020), researchers have begun to investigate the linkage between CSE and work engagement (Bakker, 2022; Tisu et al., 2020). A host of studies suggest that CSE is a significant elicitor of work engagement (e.g., Bipp et al., 2019; Tims & Akkermans, 2017; Yan et al., 2018). However, relatively little is known about why and when CSE is associated with work engagement. Unpacking the “black box” of the relationship between CSE and work engagement is important because it allows us to adopt more accurate approaches to maximize employees' work engagement.

Extant few studies have attempted to reveal the mechanisms underlying the relationship between CSE and work engagement from the perspective of resources. For example, Yan et al. (2018) found that CSE could make individuals obtain more emotional resources, thereby leading to higher levels of work engagement; the work of Bipp et al. (2019) demonstrated that CSE could promote work engagement through seeking structural and social resources. Surprisingly, although conservation of resources (COR) theory points out that personal characteristic resources such as CSE enables individuals to achieve more emotional, social, and behavioral resources, which in turn, stimulate individuals to

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perform well (Bipp et al., 2019; Chen & Fellenz, 2020; Xanthopoulou et al., 2009), existing research on the relationship between CSE and work engagement neglected the important role of behavioral resource in explaining why CSE is associated with work engagement. Such gap is problematic because personality traits always influence behaviors of individuals and then produce various positive outcomes (Conard, 2006; Lubbers et al., 2010). Thus, the first purpose of this study is to consider employee strengths use (ESU) as a mediator between CSE and work engagement.

ESU involves various proactive behaviors that employees execute to capitalize on their own strengths at work (Van Woerkom et al., 2016a). Research on COR theory showed that CSE as an important characteristic resource could spur individuals' positive behaviors (i.e., behavioral resources) and then produce positive outcomes such as work engagement (Tims & Akkermans, 2017). Since ESU has been regarded as a type of behavioral resources (Chu et al., 2022) and ESU has a close relationship with CSE (Ding & Lin, 2020) and work engagement (Bakker & van Wingerden, 2021), it is reasonable to believe that ESU mediates the relationship between CSE and work engagement.

In addition, COR theory also suggests that individuals who are confronted with loss of resources or experience the potential resources loss tend to reduce the investment of existing resources so as to avoid the further resources loss (Halbesleben et al., 2014). In today's rapidly changing work environments, role overload is ubiquitous and has attracted many researchers' attention (Alfes et al., 2018; Brown et al., 2005). Role overload as a barrier to work engagement (Freeney & Tiernan, 2009) is closely associated with loss of resources (Montani & Dagenais-Desmarais, 2018) primarily because employees need to utilize existing resources to deal with role overload. More importantly, compared with loss of relatively fixed resources such as characteristic resources, individuals are more sensitive to loss of relatively changing resources such as behavioral resources (Ding et al., 2022). A recent empirical study has found that role overload could attenuate the positive effect of ESU (Ding et al., 2023). Thus, based on the above theoretical arguments, we believe that role overload can lower the positive relationship between ESU and work engagement because when employees have a high level of role overload, they will conserve extant behavioral resources rather than transform these resources into work engagement. The second purpose of this study is to examine the moderating effect of role overload. Because CSE may influence ESU and then enhances work engagement, we also posited that role overload could moderate the mediational effect of ESU on the relationship between CSE and work engagement.

Taken together, we aim to make two important theoretical contributions. For one thing, this study contributes to

enriching our understanding of why CSE is linked with work engagement by considering the mediating effect of ESU as a critical behavioral resource on the CSE-work engagement linkage. For another, this study contributes to a better understanding of boundary condition under which CSE has a stronger positive relationship with work engagement by revealing the moderating effect of role overload on the relationships between CSE, ESU, and work engagement.

Theory and hypotheses development

CSE and work engagement: ESU as a mediator

Work engagement refers to “a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” (Schaufeli et al., 2002, p. 74). Engaged employees perform better (Bakker & Demerouti, 2008; Sonnentag, 2003), experience higher positive affect (Rothbard, 2001), and show higher levels of commitment to their organizations (Demerouti et al., 2001). Given the importance of work engagement to employees and organizations, researchers have directed their interest toward antecedents to work engagement (Tims et al., 2011; Xanthopoulou et al., 2009), especially individual characteristics' influence on work engagement. For instance, a large number of studies have shown that proactive personality (Bakker et al., 2012), big five personality traits (Akhtar et al., 2015), and regulatory focus (Jason & SN, 2021) contribute to improved work engagement.

CSE as a higher order personality trait comprising self-esteem, general self-efficacy, emotional stability, and locus of control (Johnson et al., 2008) has also been found to be positively related to work engagement (Hentrich et al., 2017). Although CSE consists of four dimensions, a large majority of research regarded CSE as a whole rather than investigated each dimension (e.g., Chiang et al., 2014; Simsek et al., 2010). This study also treated CSE as a whole and considered its effectiveness. COR theory provides an important rationale for the relationship between CSE and work engagement. Specifically, research on COR theory suggested that various resources such as job resources, characteristic resources, and social resources are the foundation of work engagement (e.g., Hobfoll et al., 2018; Xanthopoulou et al., 2009; Weigl et al., 2010). CSE can be treated as a critical characteristic resource because it contributes to task attainment (Kacmar et al., 2009), reduces job demands such as job stress (Brunborg, 2008), and promotes personal growth and development (Wang et al., 2022). Further, high-CSE employees pay more attention to the work-related positive information (Chang et al., 2012), have higher levels of self-efficacy (Johnson et al., 2008), and proactively embed

themselves into work task (Okorie et al., 2023), which in turn, leads to greater work engagement.

Although the positive relationship between CSE and work engagement has received support from a growing body of empirical research (e.g., Hentrich et al., 2017; Tims & Akkermans, 2017), we have relatively little knowledge about the mechanisms underlying the relationship between CSE and work engagement. This study first considered the mediating effect of ESU on the linkage between CSE and work engagement. ESU has been defined as “the initiative that employees may take to use their strengths at work” (Van Woerkom et al., 2016a, p. 962), it is a crucial type of proactive behaviors (Botha & Mostert, 2014). ESU is able to make employees feel more authentic self (Govindji & Linley, 2007), positive affect (Wood et al., 2011), and confidence in attaining work goals (Van Woerkom et al., 2016b). In particular, ESU is rather effective in boosting work engagement (Meyers & Van Woerkom, 2017) in that employees playing to their strengths at work are apt to consider their work as meaningful (Littman-Ovadia et al., 2017), which in turn motivates employees to engage more at work (Jung & Yoon, 2016; Steger et al., 2013).

In addition to consequences of ESU, some researchers have also explored the antecedents to ESU. Extant literature has shown that ESU can be triggered by strengths knowledge (Govindji & Linley, 2007), perceived organizational support for strengths use (Van Woerkom et al., 2016b), and autonomy support (Kong & Ho, 2016). More importantly, a recent empirical study indicated that CSE is a significant facilitator of ESU, mainly because employees high in CSE are more readily to experience greater positive affect and to perform higher emotional intelligence, such emotional resources drive employees to work on their strengths (Ding & Lin, 2020). The positive relationship of CSE with ESU can be explained by COR theory suggesting that individuals with more resources are more readily to achieve more other resources (Brotheridge & Lee, 2002; Halbesleben et al., 2014) in that both CSE and ESU can be regarded as personal resources (Stander & Mostert, 2013; Yuan et al., 2014).

Based on the above findings, this study further postulates that ESU plays a mediating role in the CSE-work engagement linkage. According to COR theory, one type of resources can produce other types of resources (gain spiral of resources) which are conducive to enhanced work engagement (Hakanen et al., 2008; Liu et al., 2023; Xanthopoulou et al., 2009). As demonstrated earlier, CSE is a specific form of characteristic resources (Hsieh et al., 2019) and ESU is a specific form of behavioural resources (Bakker et al., 2019; Tisu & Virgă, 2022). Accordingly, ESU may mediate the positive relationship of CSE with work engagement. More specifically, employees high in CSE will experience higher levels of positive affect due to their sensitivity to positive

aspects of work or work environments, which in turn promotes employees to utilize their strengths at work (Ding & Lin, 2020). When employees work on their strengths, they will treat their work as meaningful (Littman-Ovadia et al., 2017) that in turn, stimulates them to engage more in work (Jung & Yoon, 2016; Steger et al., 2013). Taken together, we postulate:

H1. ESU mediates the relationship between CSE and work engagement.

The moderating effect of role overload

Prior research showed that the positive relationship of CSE with work engagement might be contingent on situational factors (e.g., Yoo & Lee, 2019). Our study highlighted the moderating role of role overload in the relationship between CSE, ESU and work engagement. Role overload refers to the “situations in which employees feel that there are too many responsibilities or activities expected of them in light of the time available, their abilities, and other constraints” (Bolino & Turnley, 2005, p. 741), it is ubiquitous (Kahn et al., 1964), especially in today’s rapidly changing work environment (Alfes et al., 2018). Generally, role overload occurs when available resources of employees are inadequate to tackle role demands (Brown et al., 2005). Role overload has been demonstrated to be detrimental to job performance (Jones et al., 2007). More importantly, employees who experience higher role overload might have stronger feelings of loss of resources (Bacharach et al., 1990; Matthews et al., 2014).

COR theory suggested that employees have the tendency to gain, maintain, and protect their valuable resources and prevent loss of resources (Halbesleben et al., 2014). Especially, when employees perceive loss of resources, they will decrease the investment of remaining resources to impede the further loss of resources (Schmitt et al., 2016). More importantly, compared with loss of relatively fixed resources such as characteristic resources, individuals are more sensitive to loss of relatively changing resources such as behavioral resources (Ding et al., 2022). Given that ESU can be treated as a specific form of behavioral resources (Van Woerkom et al., 2016b), following the above theoretical logic, employees might decrease the investment of ESU resource in work when they experience higher role overload, which in turn results in lower levels of work engagement. That is, role overload can attenuate the positive relationship of ESU with work engagement.

From the perspective of situational constraints theory (Peters & O’Connor, 1980), role overload can be conceptualized as situational constraint factor because it belongs to job hindrance demands (Yuan et al., 2015) and is detrimental to job performance (Jones et al., 2007). Situational

constraints theory suggested that situational constraints can prevent employees from translating their valuable resources into positive outcomes (Griffin et al., 2000). Accordingly, it is reasonable to believe that role overload can prevent employees from translating their strengths use resource into work engagement. In sum, we posit:

H2. Role overload attenuates the positive relationship between ESU and work engagement in such a way that the positive relationship is weaker when role overload is high than low.

According to the above discussion, we have hypothesized that ESU mediates the relationship between CSE and work engagement, and role overload lessens the relationship between ESU and work engagement. By integrating the two hypotheses, we can further propose a moderated mediation model (Edwards & Lambert, 2007), that is, role overload also moderates the mediating effect of ESU on the CSE-work engagement linkage. Specifically, CSE as a type of characteristic resources can lead to increased ESU as a concrete form of behavioral resources. Because employees are more sensitive to loss of behavioral resources compared with loss of characteristic resources, when role overload is high, employees are more prone to conserve behavioral resources rather than translate ESU into work engagement. Therefore, the following hypothesis is formulated:

H3. Role overload can attenuate the indirect relationship of CSE with work engagement via ESU, such that the indirect relationship is stronger when role overload is low rather than high.

The hypothesized model was displayed in Fig. 1.

Method

Participants and procedure

In today's rapidly changing China, innovation-driven development has been the theme of the new era. Especially for energy companies, there is a greater need for sustainable development through innovation. Since work engagement is a quite important driving force of employee innovation (Park et al., 2014), this study was conducted in one energy company in China so as to find out the way of stimulating

employee work engagement. We invited 480 employees to participate in the research. Convenience sampling and self-administrated questionnaires were deployed to collect data at two points in time, separated by one month interval. Experienced research assistants conducted the process of data collection and promised that all information related to participants would be treated as confidential strictly. Participants did not gain any economic incentive.

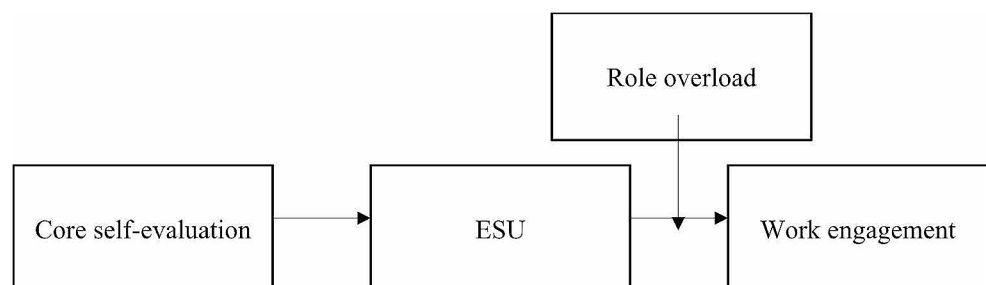
After obtaining informed consent from participants and the company, research assistants first instructed participants to complete questionnaire concerning demographic variables, CSE scale, strengths use scale, and role overload (Time 1). We received 436 questionnaires in this stage (90.83% response rate). At Time 2, 379 of 436 participants completed work engagement scales (84.86% response rate). Finally, 344 valid paired data were obtained. Among 344 participants, 47.40% were female, and 52.60% were male. Most of participants had bachelor's degree (95.10%). 75.90% have worked in the present companies for more than 5 years. Participants' age ranged from 18 to 55 years old and the mean age of participants was 34.76 (SD = 7.00); 5.99% were between 18 and 25 years old, 51.42% were between 26 and 35 years old, 34.70% were between 36 and 45 years old, and 7.89% were between 46 and 55 years old.

Measures

We asked the participants to assess all items of key variables on a 5-point Likert scale (from 1 = strongly disagree to 5 = strongly agree). Since scales used by this study were developed in English, they were translated into Chinese edition following the translation and back translation process (Brislin, 1970). Specifically, two assistant professors in the field of organizational psychology first translated English items into Chinese items. Second, a professional translator and another assistant professor in the field of organizational psychology translated these Chinese items into English items so as to ensure item equivalence.

CSE. CSE was evaluated using a 12-item scale of Judge et al. (2003). An example item was "I am capable of coping with most of my problems". The Cronbach's α of this scale was 0.83.

Fig. 1 The proposed research model



ESU. We adopted 5 items from Strengths Use and Deficit Correction questionnaire of Van Woerkom et al. (2016a) to assess ESU. An example item was “In my job, I make the most of my strong points”. The Cronbach’s α of this scale was 0.94.

Role Overload. Role overload was rated using a 3-item scale developed by Bolino and Turnley (2005). An example item was “The amount of work I am expected to do is too great”. The Cronbach’s α of this scale was 0.88.

Work Engagement. Work engagement was evaluated using a 9-item Utrecht Work Engagement Scale (UWES) developed by Schaufeli et al. (2006). An example item was “When I get up in the morning, I feel like going to work”. The Cronbach’s α of this scale was 0.94.

Control Variables. In accordance with prior research (Ding & Lin, 2020), gender and organizational tenure were considered as control variables. Gender was coded as follows: 1 = men, 2 = women. Organizational tenure was coded as follows: 1 = one year and below, 2 = 2–3 years, 3 = 4–5 years, 4 = 6–7 years, 5 = 8–10 years, 6 = 11–20 years, 7 = more than 20 years.

Data analysis

To examine our claims, we carried out the following processes. First, confirmatory factor analysis (CFA) in AMOS 23.0 was applied to examine the discriminant validity of focal variables. Second, a single unmeasured latent factor method was utilized to test the common method variance (CMV). Third, means and standard deviations of all research variables and correlations between them were computed in SPSS 22.0. Fourth, multiple regression analyses were applied to examine *H1* and *H2*; PROCESS [Model 4] in SPSS 22.0 was used to further examine the mediating effect of ESU; PROCESS [Model 1] were used to further examine the moderating effect of role overload. Subsequently, PROCESS [Model 14] was employed to examine the *H3*. Furthermore, we utilized 95% bias-corrected confidence interval (5000 draws) to determine the significance of direct, indirect, and conditional effects.

Results

Discriminant validity

CFA was employed to examine the discriminant validity of CSE, ESU, role overload, and work engagement. In order to decrease inflated measurement errors resulting from multiple items of the latent construct (Nasser-Abu Alhija & Wisenbaker, 2006), we formed three randomized item parcels for CSE, and three item parcels for work engagement based on its three dimensions. All items of ESU and role overload were regarded as indicators of corresponding theoretical constructs. As displayed in Table 1, the results of CFA indicated that the four-factor measurement model exerted the best fit to the data compared to alternative models. Thus, there is a significant discriminant validity among focal variables.

CMV

Since self-report questionnaires were applied to collect data, it is necessary to examine CMV of research data. Following suggestion of Podsakoff et al. (2003), a single unmeasured latent factor method was adopted to test the CMV. We created a latent common method factor and loaded this factor on all item parcels and items of focal variables. Analytical results showed that the five factors model exhibits a good fit to the data ($\chi^2=156.48$, $df=70$, $\chi^2/df=2.24$, $RMSEA=0.06$, $CFI=0.98$, $TLI=0.97$, $GFI=0.94$), but the common method factor merely accounted for 13.18% of variance, less than 25.00% (Williams et al., 1989). As such, there was no serious CMV in this study.

Descriptive statistics

Means, standard deviations and correlations of all research variables were reported in Table 2.

Hypotheses testing

H1 assumed that ESU mediates the relationship between CSE and work engagement. As reported in Model 5 in Table 3, the coefficient of ESU (mediator) was 0.30,

Table 1 Results of CFAs: comparison of measurement models

Models	χ^2	df	χ^2/df	RMSEA	CFI	TLI	GFI
Four-factor model	163.34	71	2.30	0.06	0.98	0.97	0.94
Three-factor model ^a	679.31	74	9.18	0.15	0.84	0.80	0.78
Two-factor model ^b	1231.32	76	16.20	0.21	0.69	0.63	0.67
One factor model ^c	2042.04	77	26.52	0.27	0.48	0.39	0.57

Notes^aCSE and strengths use merged

^b CSE, strengths use and role overload merged

^call merged in one factor

Table 2 Means, standard deviations and correlations

Variable	M	SD	1	2	3	4	5
1. Gender	1.47	0.50	-				
2. Tenure	4.72	1.75	-0.05	-			
3. CSE	3.43	0.55	-0.06	0.06	-		
4. ESU	4.13	0.64	-0.13*	0.00	0.48**	-	
5. Role overload	3.58	0.76	0.04	0.14*	0.02	0.00	-
6. Work engagement	3.80	0.65	-0.07	-0.07	0.19**	0.33**	0.01

Notes * $p < 0.05$

** $p < 0.01$

Table 3 Results of multiple regression analyses

	ESU		Work engagement			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Gender	-0.13*	-0.10*	-0.07	-0.06	-0.03	-0.02
Tenure	-0.00	-0.03	-0.07	-0.08	-0.08	-0.08
CSE		0.47***		0.19***	0.05	
ESU					0.30***	0.31***
Role overload						0.06
ESU × Role overload						-0.22***
R ²	0.02	0.24	0.01	0.05	0.11	0.16
Adjusted R ²	0.01	0.23	0.00	0.04	0.10	0.15
F	2.72	34.92***	1.68	5.38**	10.84***	12.74***

Notes * $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

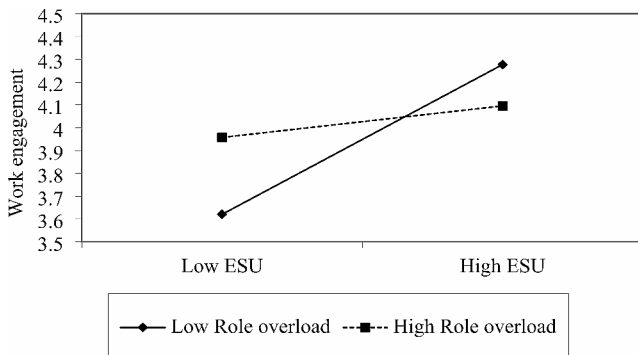


Fig. 2 The moderating effect of role overload on the relationship between ESU and work engagement

$p < 0.001$. It is important to note that the coefficient of CSE was not significant ($\beta = 0.05, p > 0.05$). Results of PROCESS [Model 4] analysis also showed that the indirect relationship of CSE with work engagement via ESU was significant (effect = 0.16, CI: [0.09, 0.25]), whereas the direct relationship of CSE with work engagement was not significant (effect = 0.06, CI: [-0.08, 0.19]). Thus, we can conclude that ESU fully mediates the CSE and work engagement relation, providing support for *H1*.

H2 postulated that role overload negatively moderates the association of ESU with work engagement. To examine this hypothesis, the interaction term of ESU and role

overload was created by using their centered values. According to Model 6 in Table 3, the interactive effect of ESU and role overload on work engagement was significant ($\beta = -0.22, p < 0.001$). Results of PROCESS [Model 1] analysis also indicated that the interaction term between ESU and role overload is significant ($\beta = -0.13, CI: [-0.19, -0.07]$). Therefore, *H2* received support. In addition, to further interpret the moderation results, we depicted the slopes for the relationship between ESU and work engagement at high (mean + SD) and low (mean - SD) level of role overload. Figure 2 suggested that ESU has stronger relationship with work engagement when role overload is low (effect = 0.33, SE = 0.04, $t = 7.65, p < 0.001, CI: [0.24, 0.41]$) but not when role overload is high (effect = 0.07, SE = 0.05, $t = 1.55, p > 0.05, CI: [-0.02, 0.16]$).

H3 posited that role overload moderates the indirect relationship of CSE with work engagement through ESU. As reported in Table 4, index of moderated mediation was -0.15 (SE = 0.04, CI: [-0.24, -0.06]), the mediating effect of ESU on the relationship between CSE and work engagement was stronger when role overload is low (effect = 0.27, SE = 0.05, CI: [0.18, 0.38]) but not when role overload is high (effect = 0.04, SE = 0.05, CI: [-0.06, 0.15]). As such, *H3* was supported.

Table 4 Results of moderated mediation analysis

Conditional indirect effects of CSE on work engagement at values of the moderator				
Role overload	Effect	SE	LLCI	ULCI
M – 1SD	0.27	0.05	0.18	0.38
M	0.15	0.04	0.09	0.24
M + 1SD	0.04	0.05	-0.06	0.15
<i>Index of moderated mediation</i>				
	Index	SE	LLCI	ULCI
ESU	-0.15	0.04	-0.24	-0.06

Notes Bootstrap sample size = 5000

LL, lower limit

UL, upper limit

CI, confidence interval

Discussion

This study of 344 employees working in an energy company in China examined the roles of strengths use and role overload in the CSE-work engagement linkage. As predicted, all hypotheses received support. Specifically, ESU mediates the positive relationship of CSE with work engagement, and role overload attenuates the direct relationship of ESU with work engagement and the indirect relationship between CSE and work engagement via ESU.

Theoretical implications

The main theoretical contribution of this study is twofold. For one thing, this study contributes to a better understanding why CSE is associated with work engagement by revealing the mediating effect of ESU on the relationship between CSE and work engagement from the perspective of COR theory. As demonstrated earlier, although several studies have found that CSE has a direct relationship with work engagement (Tims & Akkermans, 2017; Yan et al., 2018), relatively little literature investigated the process mechanisms accounting for the relationship between CSE and work engagement. Based on COR theory (Hobfoll et al., 2018), we tested the mediating effect of ESU on this relationship, and found that ESU fully mediates the CSE and work engagement relation. Specifically, research on COR theory showed that one type of resources can produce other types of resources which are conducive to enhanced work engagement (Hakanen et al., 2008; Liu et al., 2023; Xanthopoulou et al., 2009). Since CSE and ESU, respectively, can be treated as a specific form of characteristic resources (Hsieh et al., 2019) and a specific form of behavioural resources (Bakker et al., 2019; Tisu & Virgă, 2022), ESU acts as a mediator between CSE and work engagement. Although previous research has identified the mediating effect of career adaptability on the CSE-work engagement

linkage from the perspective of career construction theory (Yoo & Lee, 2019) and the mediating effect of emotional intelligence on this linkage from the affective events theory (Yan et al., 2018), this study is the first to reveal the mediating effect of ESU on this linkage from the perspective of COR theory. Thus, our finding extends our understanding of the relationship between CSE and work engagement.

For another, this study advances our understanding of the boundary condition of the relationship between CSE and work engagement by revealing the negatively moderating effect of role overload on the direct relationship of ESU with work engagement and the indirect relationship of CSE with work engagement via ESU. Our result about the negatively moderating effect of role overload is consistent with prior research demonstrating that role overload can lessen the impact personal resources have on positive outcomes (Brown et al., 2005). Importantly, this study treated ESU as behavioural resource (Ding & Lin, 2020; Venz et al., 2018) and confirmed that the effect of ESU is contingent on role overload. According to COR theory (Schmitt et al., 2016), when employees perceive loss of resources due higher role overload, they will be less likely to invest behavioural resource (i.e., ESU) in work to impede the further loss of resources, which in turn results in decreased work engagement. Furthermore, building on situational constraints theory (Griffin et al., 2000), role overload as a situational constraint factor prevents employees from translating their resources (i.e., ESU) into positive outcome (i.e., work engagement). This finding extends previous research on ESU by revealing the boundary condition of the effect of ESU in that a large number of extant studies mainly focused on antecedents and outcomes of ESU (Miglianico et al., 2020), very little research investigated when ESU is more effective in affecting employees. Additionally, we also found that role overload lessens the mediational effect of ESU on the relationship between CSE and work engagement, which helps us find out the way of optimizing the indirect relationship of CSE with work engagement via ESU. Although extant literature showed that the relationship of CSE with work engagement depends on various situational factors such as perceived organizational constraints, feedback level, and perceived leader effectiveness (Chang et al., 2012), this study is the first to investigate the attenuating effect of role overload on the indirect relationship between CSE and work engagement via ESU from the perspective of COR theory, which contributes to a better understanding when CSE will have a stronger relationship with work engagement.

Practical implications

This study has also several practical implications. First, the result of the mediating effect of ESU on the linkage

between CSE and work engagement means that motivating employees to utilize their strengths at work is also a promising strategy to facilitate work engagement. We suggest that organizations design and implement strengths-based human resource practices (Van Woerkom & Meyers, 2015) or promote employees with a high level of strengths mindset (Ding & Liu, 2022) to be leaders so as to boost ESU. For example, Aguinis et al. (2012) developed nine recommendations of implementing strengths-based performance feedback; Ding and Liu (2022) developed a 12-item scale to measure individual strengths mindset. Moreover, numerous studies have indicated that strengths intervention is also an effective way of spurring ESU (e.g., Harzer & Ruch, 2016; Meyers & Van Woerkom, 2017). For example, organizations can conduct strengths intervention to enhance ESU by following the intervention project of Meyers and Van Woerkom (2017).

Second, when organizations attempt to improve employee work engagement through CSE and ESU, reducing employees' perceptions of role overload is conducive to enhancing the effectiveness of CSE and ESU in eliciting work engagement. Previous research has found that related-job feedback, task identity, formal communication, and realistic job preview are effective in lowering role overload (Bacharach et al., 1990). The work of Gurbuz et al. (2013) also showed that perceived organizational support is conducive to decreased role overload.

Limitations and directions for future research

This study has several limitations. First, we used a single source to gather data. Such approach may yield CMV. Although CMV testing demonstrated that CMV of this study did not pose a serious threat to our results, we also encourage researchers to adopt multi-source approach to collect to so as to enhance the robustness of our results. Second, while we adopted a two-wave research design in the process of data collection, CSE and strengths use constructs were collected at the same time point, which will prevent us from making causal inference about the mediating effect of strengths use. Future research should try to conduct experiment study to replicate our findings. Third, we utilized a sample of Chinese employees to examine our predictions, which limits the cross-cultural applicability of our results because the culture difference between China and Western countries might lead to the difference in employees' perceptions of CSE, strengths use, role overload and work engagement (Ding & Lin, 2020). Thus, future research should examine our findings in a wide variety of cultural contexts. Finally, we only used samples from one energy company to examine our hypotheses, which may limit the external validity of our results. We encourage researchers to replicate

our findings by adopting various samples from different organizations in future research.

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Declarations

Conflict of interest The authors declare that there is no conflict of interest.

References

- Aguinis, H., Gottfredson, R. K., & Joo, H. (2012). Delivering effective performance feedback: The strengths-based approach. *Business Horizons*, 55(2), 105–111.
- Akhtar, R., Boustani, L., Tsivrikos, D., & Chamorro-Premuzic, T. (2015). The engageable personality: Personality and trait EI as predictors of work engagement. *Personality and Individual Differences*, 73, 44–49.
- Alfes, K., Shantz, A. D., & Ritz, A. (2018). A multilevel examination of the relationship between role overload and employee subjective health: The buffering effect of support climates. *Human Resource Management*, 57(2), 659–673.
- Anand, P., & Mishra, S. K. (2021). Linking core self-evaluation and emotional exhaustion with workplace loneliness: Does high LMX make the consequence worse? *The International Journal of Human Resource Management*, 32(10), 2124–2149.
- Bacharach, S. B., Bamberger, P., & Conley, S. C. (1990). Work processes, role conflict, and role overload: The case of nurses and engineers in the public sector. *Work and Occupations*, 17(2), 199–228.
- Bakker, A. B. (2022). The social psychology of work engagement: State of the field. *Career Development International*, 27(1), 36–53.
- Bakker, A. B., & Demerouti, E. (2008). Towards a model of work engagement. *Career Development International*, 13(3), 209–223.
- Bakker, A. B., & van Wingerden, J. (2021). Do personal resources and strengths use increase work engagement? The effects of a training intervention. *Journal of Occupational Health Psychology*, 26(1), 20–30.
- Bakker, A. B., Tims, M., & Derks, D. (2012). Proactive personality and job performance: The role of job crafting and work engagement. *Human Relations*, 65(10), 1359–1378.
- Bakker, A. B., Hetland, J., Olsen, O. K., & Espevik, R. (2019). Daily strengths use and employee well-being: The moderating role of personality. *Journal of Occupational and Organizational Psychology*, 92(1), 144–168.
- Bipp, T., Kleingeld, A., & Ebert, T. (2019). Core self-evaluations as a personal resource at work for motivation and health. *Personality and Individual Differences*, 151, 109556.
- Bolino, M. C., & Turnley, W. H. (2005). The personal costs of citizenship behavior: The relationship between individual initiative and role overload, job stress, and work-family conflict. *Journal of Applied Psychology*, 90(4), 740–748.

- Botha, C., & Mostert, K. (2014). A structural model of job resources, organisational and individual strengths use and work engagement. *SA Journal of Industrial Psychology, 40*(1), 1–11.
- Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology, 1*(3), 185–216.
- Brotheridge, C. M., & Lee, R. T. (2002). Testing a conservation of resources model of the dynamics of emotional labor. *Journal of Occupational Health Psychology, 7*(1), 57–67.
- Brown, S. P., Jones, E., & Leigh, T. W. (2005). The attenuating effect of role overload on relationships linking self-efficacy and goal level to work performance. *Journal of Applied Psychology, 90*(5), 972–979.
- Brunborg, G. S. (2008). Core self-evaluations: A predictor variable for job stress. *European Psychologist, 13*(2), 96–102.
- Chang, C. H., Ferris, D. L., Johnson, R. E., Rosen, C. C., & Tan, J. A. (2012). Core self-evaluations: A review and evaluation of the literature. *Journal of Management, 38*(1), 81–128.
- Chen, I. S., & Fellenz, M. R. (2020). Personal resources and personal demands for work engagement: Evidence from employees in the service industry. *International Journal of Hospitality Management, 90*, 102600.
- Chiang, Y. H., Hsu, C. C., & Hung, K. P. (2014). Core self-evaluation and workplace creativity. *Journal of Business Research, 67*(7), 1405–1413.
- Chu, X., Zhang, L., & Li, M. (2022). Nurses' strengths use and turnover intention: The roles of job crafting and self-efficacy. *Journal of Advanced Nursing, 78*(7), 2075–2084.
- Conard, M. A. (2006). Aptitude is not enough: How personality and behavior predict academic performance. *Journal of Research in Personality, 40*(3), 339–346.
- Debusscher, J., Hofmans, J., & De Fruyt, F. (2016). The effect of state core self-evaluations on task performance, organizational citizenship behaviour, and counterproductive work behaviour. *European Journal of Work and Organizational Psychology, 25*(2), 301–315.
- Demerouti, E., Bakker, A. B., De Jonge, J., Janssen, P. P., & Schaufeli, W. B. (2001). Burnout and engagement at work as a function of demands and control. *Scandinavian Journal of Work Environment & Health, 27*, 279–286.
- Ding, H., & Lin, X. (2020). Exploring the relationship between core self-evaluation and strengths use: The perspective of emotion. *Personality and Individual Differences, 157*, 109804.
- Ding, H., & Liu, J. (2022). Paying close attention to strengths mindset: The relationship of employee strengths mindset with job performance. *Current Psychology, 1–12*.
- Ding, H., Yu, E., & Li, Y. (2022). Exploring the relationship between core self-evaluation and employee innovative behaviour: The role of emotional factors. *Journal of Psychology in Africa, 32*(5), 474–479.
- Ding, H., Yu, E., & Liu, J. (2023). Professional commitment matters! Linking employee strengths use to organizational citizenship behavior. *Current Psychology, 1–11*.
- Edwards, J. R., & Lambert, L. S. (2007). Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological Methods, 12*(1), 1–22.
- Freeney, Y. M., & Tiernan, J. (2009). Exploration of the facilitators of and barriers to work engagement in nursing. *International Journal of Nursing Studies, 46*(12), 1557–1565.
- Govindji, R., & Linley, P. A. (2007). Strengths use, self-concordance and well-being: Implications for strengths coaching and coaching psychologists. *International Coaching Psychology Review, 2*(2), 143–153.
- Griffin, M., Neal, A., & Neale, M. (2000). The contribution of task performance and contextual performance to effectiveness: Investigating the role of situational constraints. *Applied Psychology, 49*(3), 517–533.
- Gurbuz, S., Turunc, O., & Celik, M. (2013). The impact of perceived organizational support on work–family conflict: Does role overload have a mediating role? *Economic and Industrial Democracy, 34*(1), 145–160.
- Hakanen, J. J., Perhoniemi, R., & Toppinen-Tanner, S. (2008). Positive gain spirals at work: From job resources to work engagement, personal initiative and work-unit innovativeness. *Journal of Vocational Behavior, 73*(1), 78–91.
- Halbesleben, J. R., Neveu, J. P., Paustian-Underdahl, S. C., & Westman, M. (2014). Getting to the COR understanding the role of resources in conservation of resources theory. *Journal of Management, 40*(5), 1334–1364.
- Harzer, C., & Ruch, W. (2016). Your strengths are calling: Preliminary results of a web-based strengths intervention to increase calling. *Journal of Happiness Studies, 17*, 2237–2256.
- Hentrich, S., Zimmer, A., Sosnowsky-Waschek, N., Gregersen, S., & Petermann, F. (2017). The role of core self-evaluations in explaining depression and work engagement among managers. *Current Psychology, 36*, 516–529.
- Hobfoll, S. E., Halbesleben, J., Neveu, J. P., & Westman, M. (2018). Conservation of resources in the organizational context: The reality of resources and their consequences. *Annual Review of Organizational Psychology and Organizational Behavior, 5*, 103–128.
- Hsieh, H. H., Wang, Y. C., & Huang, J. T. (2019). Core self-evaluations, perceived organizational support, and work-related well-being: Testing a moderated mediation model. *Personnel Review, 48*(3), 659–671.
- Jason, V., & SN, G. (2021). Regulatory focus and innovative work behavior: The role of work engagement. *Current Psychology, 40*, 2791–2803.
- Johnson, R. E., Rosen, C. C., & Levy, P. E. (2008). Getting to the core of core self-evaluation: A review and recommendations. *Journal of Organizational Behavior, 29*(3), 391–413.
- Jones, E., Chonko, L., Rangarajan, D., & Roberts, J. (2007). The role of overload on job attitudes, turnover intentions, and salesperson performance. *Journal of Business Research, 60*(7), 663–671.
- Joo, B. K., & Jo, S. J. (2017). The effects of perceived authentic leadership and core self-evaluations on organizational citizenship behavior: The role of psychological empowerment as a partial mediator. *Leadership & Organization Development Journal, 38*(3), 463–481.
- Judge, T. A., Erez, A., & Bono, J. E. (1998). The power of being positive: The relation between positive self-concept and job performance. *Human Performance, 11*(2–3), 167–187.
- Judge, T. A., Erez, A., Bono, J. E., & Thoresen, C. J. (2003). The core self-evaluations scale: Development of a measure. *Personnel Psychology, 56*(2), 303–331.
- Judge, J., Bono, T. A., Erez, J. E., A., & Locke, E. A. (2005). Core self-evaluations and job and life satisfaction: The role of self-concordance and goal attainment. *Journal of Applied Psychology, 90*(2), 257–268.
- Jung, H. S., & Yoon, H. H. (2016). What does work meaning to hospitality employees? The effects of meaningful work on employees' organizational commitment: The mediating role of job engagement. *International Journal of Hospitality Management, 53*, 59–68.
- Kacmar, K. M., Collins, B. J., Harris, K. J., & Judge, T. A. (2009). Core self-evaluations and job performance: The role of the perceived work environment. *Journal of Applied Psychology, 94*(6), 1572–1580.
- Kahn, R. L., Wolfe, D., Quinn, R., & Snoek, J. D. (1964). *Organizational stress: Studies in role conflict and ambiguity*. Wiley.
- Kong, D. T., & Ho, V. T. (2016). A self-determination perspective of strengths use at work: Examining its determinant and performance implications. *The Journal of Positive Psychology, 11*(1), 15–25.

- Littman-Ovadia, H., Lavy, S., & Boiman-Meshita, M. (2017). When theory and research collide: Examining correlates of signature strengths use at work. *Journal of Happiness Studies, 18*, 527–548.
- Liu, H., Song, Z., Xu, Y., Xu, X. A., & Li, J. (2023). Exploring explanatory mechanisms of adjustment-specific resources underlying the relationship between leader–member exchange and work engagement: A lens of conservation of resources theory. *Sustainability, 15*(2), 1561.
- Lubbers, M. J., Van Der Werf, M. P., Kuyper, H., & Hendriks, A. J. (2010). Does homework behavior mediate the relation between personality and academic performance? *Learning and Individual Differences, 20*(3), 203–208.
- Matthews, R. A., Winkel, D. E., & Wayne, J. H. (2014). A longitudinal examination of role overload and work–family conflict: The mediating role of interdomain transitions. *Journal of Organizational Behavior, 35*(1), 72–91.
- Meyers, M. C., & van Woerkom, M. (2017). Effects of a strengths intervention on general and work-related well-being: The mediating role of positive affect. *Journal of Happiness Studies, 18*, 671–689.
- Miglianico, M., Dubreuil, P., Miquelon, P., Bakker, A. B., & Martin-Krumm, C. (2020). Strength use in the workplace: A literature review. *Journal of Happiness Studies, 21*, 737–764.
- Montani, F., & Dagenais-Desmarais, V. (2018). Unravelling the relationship between role overload and organizational citizenship behaviour: A test of mediating and moderating effects. *European Management Journal, 36*(6), 757–768.
- Nasser-Abu Alhija, F., & Wisenbaker, J. (2006). A Monte Carlo study investigating the impact of item parceling strategies on parameter estimates and their standard errors in CFA. *Structural Equation Modeling, 13*(2), 204–228.
- Okorie, C. O., Nwankwo, F. M., Iwuala, H. O., Agudiegwu, M. O., Nnadi, S. O., Nkwede, J. O., & Chigbata, E. S. (2023). Core self-evaluations and job embeddedness: Influences on career adaptability and work engagement in Nigerian public sector employees. *Journal of Psychology in Africa, 33*(2), 150–157.
- Park, Y. K., Song, J. H., Yoon, S. W., & Kim, J. (2014). Learning organization and innovative behavior: The mediating effect of work engagement. *European Journal of Training and Development, 38*(1/2), 75–94.
- Peters, L. H., & O'Connor, E. J. (1980). Situational constraints and work outcomes: The influences of a frequently overlooked construct. *Academy of Management Review, 5*(3), 391–397.
- 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*(5), 879–903.
- Rothbard, N. P. (2001). Enriching or depleting? The dynamics of engagement in work and family roles. *Administrative Science Quarterly, 46*(4), 655–684.
- Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies, 3*, 71–92.
- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement, 66*(4), 701–716.
- Schmitt, A., Den Hartog, D. N., & Belschak, F. D. (2016). Transformational leadership and proactive work behaviour: A moderated mediation model including work engagement and job strain. *Journal of Occupational and Organizational Psychology, 89*(3), 588–610.
- Simsek, Z., Heavey, C., & Veiga, J. J. F. (2010). The impact of CEO core self-evaluation on the firm's entrepreneurial orientation. *Strategic Management Journal, 31*(1), 110–119.
- Sonnentag, S. (2003). Recovery, work engagement, and proactive behavior: A new look at the interface between nonwork and work. *Journal of Applied Psychology, 88*(3), 518–528.
- Stander, F. W., & Mostert, K. (2013). Assessing the organisational and individual strengths use and deficit improvement amongst sport coaches. *SA Journal of Industrial Psychology, 39*(2), 1–13.
- Steger, M. F., Littman-Ovadia, H., Miller, M., Menger, L., & Rothmann, S. (2013). Engaging in work even when it is meaningless: Positive affective disposition and meaningful work interact in relation to work engagement. *Journal of Career Assessment, 21*(2), 348–361.
- Stewart, W. H. Jr., Peake, W. O., & Ingram, A. E. (2021). The interplay of core self-evaluation and entrepreneurial self-efficacy in predicting entrepreneurial orientation. *Journal of Small Business Management, 1*–29.
- Tims, M., & Akkermans, J. (2017). Core self-evaluations and work engagement: Testing a perception, action, and development path. *PLoS One, 12*(8), e0182745.
- Tims, M., Bakker, A. B., & Xanthopoulou, D. (2011). Do transformational leaders enhance their followers' daily work engagement? *The Leadership Quarterly, 22*(1), 121–131.
- Tisu, L., & Virgă, D. (2022). Proactive vitality management, work-home enrichment, and performance: A two-wave cross-lagged study on entrepreneurs. *Frontiers in Psychology, 13*, 761958.
- Tisu, L., Lupșă, D., Virgă, D., & Rusu, A. (2020). Personality characteristics, job performance and mental health: The mediating role of work engagement. *Personality and Individual Differences, 153*, 109644.
- Van Woerkom, M., & Meyers, M. C. (2015). My strengths count! Effects of a strengths-based psychological climate on positive affect and job performance. *Human Resource Management, 54*(1), 81–103.
- Van Woerkom, M., Mostert, K., Els, C., Bakker, A. B., De Beer, L., & Rothmann, S. Jr. (2016a). Strengths use and deficit correction in organizations: Development and validation of a questionnaire. *European Journal of Work and Organizational Psychology, 25*(6), 960–975.
- Van Woerkom, M., Oerlemans, W., & Bakker, A. B. (2016b). Strengths use and work engagement: A weekly diary study. *European Journal of Work and Organizational Psychology, 25*(3), 384–397.
- Venz, L., Pundt, A., & Sonnentag, S. (2018). What matters for work engagement? A diary study on resources and the benefits of selective optimization with compensation for state work engagement. *Journal of Organizational Behavior, 39*(1), 26–38.
- Wang, Q., Huang, M., Hong, S., Zhang, H., & Wang, Q. (2022). Core self-evaluation and career growth of Chinese graduates: Career concern and curiosity as mediators. *Social Behavior and Personality: An International Journal, 50*(10), 1–15.
- Weigl, M., Hornung, S., Parker, S. K., Petru, R., Glaser, J., & Angerer, P. (2010). Work engagement accumulation of task, social, personal resources: A three-wave structural equation model. *Journal of Vocational Behavior, 77*(1), 140–153.
- Williams, L. J., Cote, J. A., & Buckley, M. R. (1989). Lack of method variance in self-reported affect and perceptions at work: Reality or artifact? *Journal of Applied Psychology, 74*(3), 462–468.
- Wood, A. M., Linley, P. A., Maltby, J., Kashdan, T. B., & Hurling, R. (2011). Using personal and psychological strengths leads to increases in well-being over time: A longitudinal study and the development of the strengths use questionnaire. *Personality and Individual Differences, 50*(1), 15–19.
- Wood, J., Oh, J., Park, J., & Kim, W. (2020). The relationship between work engagement and work–life balance in organizations: A review of the empirical research. *Human Resource Development Review, 19*(3), 240–262.
- Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2009). Reciprocal relationships between job resources, personal

- resources, and work engagement. *Journal of Vocational Behavior*, 74(3), 235–244.
- Yan, X., Yang, K., Su, J., Luo, Z., & Wen, Z. (2018). Mediating role of emotional intelligence on the associations between core self-evaluations and job satisfaction, work engagement as indices of work-related well-being. *Current Psychology*, 37, 552–558.
- Yoo, K., & Lee, K. H. (2019). Core self-evaluation and work engagement: Moderated mediation model of career adaptability and job insecurity. *Frontiers in Psychology*, 10, 2093.
- Yuan, Z., Li, Y., & Lin, J. (2014). Linking challenge and hindrance stress to safety performance: The moderating effect of core self-evaluation. *Personality and Individual Differences*, 68, 154–159.
- Yuan, Z., Li, Y., & Tetrick, L. E. (2015). Job hindrances, job resources, and safety performance: The mediating role of job engagement. *Applied Ergonomics*, 51, 163–171.
- Zhu, H., Zhang, H., Tu, A., & Zhang, S. (2021). The mediating roles of core self-evaluation and career exploration in the association between proactive personality and job search clarity. *Frontiers in Psychology*, 12, 609050.

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