Impact of self-leadership on employee voice behavior: a moderated mediating model

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Abstract

Current studies have focused on exploring the impact of self-leadership on in-role outcomes, while research on extra-role outcomes is limited. Will the self-leadership skills of employees work beyond themselves to transfer the positive state to the organization or their colleagues? This study explores this field and enriches the research on extra-role outcomes of self-leadership. Based on self-determination theory, this research verifies the mechanism of self-leadership on employee voice, with thriving at work as a mediator and job characteristics (expressed as the motivating potential score) as a moderator. Using a three-wave survey of 405 nurses, the results of confirmatory factor analyses show that the data fit of the hypothetical five-factor measurement model is acceptable and we find that (1) self-leadership is positively associated with thriving at work, (2) thriving at work is positively associated with promotive and prohibitive voice, (3) thriving at work mediates the relationship of self-leadership on voice behavior, and (4) job characteristics moderate the relationship between self-leadership and thriving at work, such that this relationship is stronger for employees with a poor job characteristic. Implications of these observations for theory and practice are also discussed.

Keywords Self-leadership · Thriving at work · Employee voice behavior · Job characteristic · Self-determination theory

Introduction

In today's complex and competitive business environment, enterprises cannot adapt to the rapidly changing knowledge economy by relying solely on the traditional top-down management model (Marques-Quinteiro et al., 2019). Instead, it is necessary to stimulate the potential and creativity of employees through inspiring goals and to bring into play the initiative of each employee for the organization to better cope with external changes and competition and show better performance (Inam et al., 2021; Kalra et al., 2021). Self-leadership is a representation of subjective initiative, which refers to the process by which employees achieve performance through self-direction and self-motivation (Manz, 1986, 2015). Since Manz (1986) formally introduced self-leadership, it has received widespread attention from both

the theoretical and practical communities. Existing studies have mainly explored the positive effects of self-leadership; these effects can be broadly classified into three categories: first, the effects on job attitudes, such as positive emotions and job satisfaction (Houghton et al., 2012a, b; Manz et al., 2016; Mueller & Niessen, 2019; Neck & Manz, 1996, 2010; Stewart et al., 2011); second, the effects on work outcomes, such as stress coping, job performance, creative behaviors, team effectiveness, creativity, and career success (Murphy & Ensher, 2001; Prussia et al., 1998; Raabe et al., 2007; Sampl et al., 2017); and third, the effects on personality traits, such as self-efficacy and psychological empowerment (Ganesh et al., 2019; Houghton & Yoho, 2005; Konradt et al., 2009; Megheirkouni, 2018).

As mentioned above, most previous studies have explored the impact of self-leadership on in-role outcomes, with limited research on extra-role outcomes, such as organizational citizenship behaviors and other organizational- or colleague-oriented behaviors. Because individuals with strong self-leadership will strive to achieve their own standard and value through behavioral and cognitive strategies, which will benefit their own self-development and self-effectiveness, such as job performance and career success (Harari et al.,

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2021; Megheirkouni, 2018), will these self-leadership skills work beyond themselves to transfer this positive effect to the organization or their colleagues? This study will explore this topic and enrich the research on extra-role outcomes of self-leadership. Employee voice—a voluntary pro-organization behavior that improves the organization's status quo by putting forward suggestions and identifying problems—is a very important and effective way of communication to adapt to the dynamic environment, as well as a common extra-role behavior in the current organizational environment (Morrison, 2011; Van Dyne & LePine, 1998). Therefore, this research will further verify the positive effects of self-leadership on voice behavior.

In addition, extensive research has argued that self-leadership enhances individual self-efficacy, which then further improves work outcomes (Ganesh et al., 2019; Konradt et al., 2009; Megheirkouni, 2018). The fact is, however, that the behavioral and cognitive strategies of self-leadership can not only improve employees' self-efficacy, that is, the need for competence, but also satisfy the need for autonomy and relatedness, thus stimulating employees' intrinsic motivation to do what they want to do rather than just what they can do (Lim et al., 2018; van Dorssen-Boog et al., 2021). Voice behavior is a voluntary pro-organizational behavior. When employees are in the state of intrinsic work motivation, they prefer to perform extra-role behavior such as voice behavior (Gagne & Deci, 2005; Piccolo & Colquitt, 2006). Therefore, this paper will use self-determination theory to explain the positive effect of self-leadership on voice behavior.

According to self-determination theory (SDT), this study holds that thriving at work, meaning that "individuals feel vitality and learning at work" (Spreitzer et al., 2012), conveys the effect of self-leadership on voice. SDT believes that individuals tend to learn, explore, and be energized when they are in a state of intrinsic motivation (Ryan & Deci, 2017). Therefore, to a certain extent, we can treat thriving at work as a manifestation of intrinsic motivation (Spreitzer & Porath, 2014; van Beek et al., 2012; Wallace et al., 2016; Yang et al., 2021). Thriving as a desirable and

internal psychological state (Spreitzer et al., 2005; Yousaf et al., 2019) can be motivated by personal characteristics, and in turn influence an employee's behavior (Chen et al., 2020). A series of proactive strategies of self-leadership, such as self-observation, can satisfy the three basic needs of employees, thus enhancing intrinsic motivation and showing a high level of vitality and learning (Wang et al., 2021), i.e., thriving at work. Further, based on SDT, this energetic and learning state leads to more energy and willingness to exert extra-role behavior, such as voice behavior (Gagne & Deci, 2005; Piccolo & Colquitt, 2006). Therefore, this study will verify the mediating role of thriving at work.

SDT addresses that personal characteristics and job characteristics jointly affect intrinsic motivation (Ryan & Deci, 2000). Further, Spreitzer et al. (2005) suggested that personal characteristics and work context can affect thriving at work. Therefore, this study will further demonstrate whether the effect of personal characteristics (i.e., self-leadership) on thriving at work is differs with different job characteristics. Both personal and job characteristics promote intrinsic motivation by providing nutriments to satisfy the three basic needs—autonomy, competence, and relatedness; therefore, whether the role of the two on intrinsic motivation is mutually reinforcing or substitutive is to be further verified. Therefore, this paper will examine how job characteristics, as a moderator, influence the effect of self-leadership on thriving at work. The motivating potential score (MPS) is a comprehensive job characteristic factor, which is calculated from five aspects of work characteristic scores. The higher the score, the better it means to meet the intrinsic motivation (Hackman & Oldham, 1976). Therefore, the MPS is chosen to represent the job characteristic in this paper. Figure 1 shows the conceptual model.

This research will explore the underlying process of self-leadership on employee voice, with thriving at work as the mediator and job characteristic (i.e., MPS) as the moderator. The following are the contributions of this study: first, self-leadership positively affects voice behavior via thriving at work, which enriches the study of self-leadership in terms of

Fig. 1 The conceptual model.
Notes: *MPS* motivating potential score
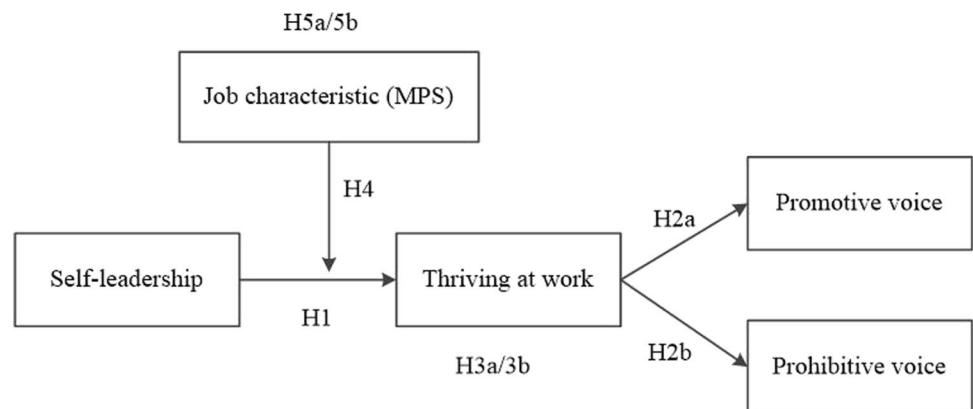
extra-role behavior. Self-leadership is beneficial to not only self but also the organization, demonstrating its spillover effects. Second, using SDT, this paper explains how self-leadership affects voice behavior through thriving at work and makes a more comprehensive analysis of self-leadership, which deepens the understanding of self-leadership. Third, based on SDT, this study finds a boundary condition for the relationship between self-leadership and voice behavior, namely the job characteristic, which adds some knowledge to the mechanism of self-leadership. It also enriches SDT by demonstrating and explaining the role of internal and external factors on intrinsic motivation.

Literature review and hypotheses

Self-leadership

Manz (1983) derived the concept of self-leadership from self-management (Stewart et al., 2019). Self-leadership is a self-directed and self-motivated process, which shapes the employees' behavior in a positive way, thus improving their performance (Manz & Neck, 2004). Scholars believe that self-regulation, self-management, and self-leadership are all concepts under self-influence but with different degrees of control (Neck & Houghton, 2006). Self-regulation has the lowest degree of control, representing a low level of self-influence, just monitoring the external situation and making some corrections when deviating from the goal, accompanied by less awareness. Self-management represents a medium level of self-influence, with behavioral strategies added. Self-leadership adopts behavioral and cognitive strategies in a more positive and comprehensive manner and represents a higher form of self-influence. In terms of control degree, if the external control to internal control is a continuum, the three are in different positions of the continuum. Self-leadership is highest in autonomy and intrinsic motivation (van Dorssen-Boog et al., 2021).

Manz (1992) indicated that self-leadership includes three different but complementary strategies: (1) the behavior-focused strategy, which aims to stimulate and maintain effective behavior and reduce ineffective behavior, (2) natural reward strategy, which aims to find ways to make individuals enjoy the work itself, and (3) constructive thought strategy, which guides employees to face challenges and difficulties in work with a positive attitude (Anderson & Prussia, 1997; Manz, 2015; Houghton et al., 2012a, b) attributed these three strategies to another three factors, namely behavioral awareness and volition (self-observation and self-goal setting), task motivation (visualizing successful performance and self-reward), and constructive cognition (self-talk and evaluating beliefs and assumptions); these are adopted in this paper. The stronger the employee's self-leadership, the higher their autonomous working skills, and such personal characteristic may make the employee thrive better.

Self-leadership and thriving at work

Thriving at work is defined as "the psychological state in which an individual feels vitality and learning while working" (Spreitzer et al., 2005). Vitality refers to energy and enthusiasm in working (Nix et al., 1999; Porath et al., 2012), whereas learning refers to gaining skills and knowledge (Edmondson, 1999). These two dimensions represent the affective and cognitive components of thriving, respectively (Niessen et al., 2012). Only when both are present at work will employees feel thriving; without either one, they will not. Overall, they help employees assess whether they are progressing and moving forward (Kleine et al., 2019). As mentioned above, intrinsic motivation can be expressed as thriving at work; the stronger the intrinsic motivation, the stronger the thriving at work. This intrinsic motivation can be affected by individual factors (Wallace et al., 2016) such as self-leadership.

van Dorssen-Boog et al. (2021) demonstrated that self-leadership can facilitate autonomous motivation (expressed as work engagement) of health care workers, which in turn promotes health and job performance. Lee et al.'s (2018) cross-sectional study suggested that cancer patients with higher self-leadership and action plans were more likely to adhere to exercise programs, and self-leaders were more likely to care about themselves. This study argues that self-leadership involves a set of proactive strategies that can satisfy the needs of employees for autonomy, competence, and relatedness, thus enhancing thriving (Spreitzer & Porath, 2014; Wang et al., 2021; Williams & Deci, 1996; Spreitzer et al., 2005) indicated that employees' agentic behavior (such as positive coping and goal-oriented at work) is key to thriving. Specifically, based on SDT, the sense of autonomy employees get when they set their own goals makes them feel more responsible and take ownership of their work; this in turn keeps them better focused on their goals and open to be in a state of learning in order to acquire new knowledge to achieve the goals (Abid et al., 2018; Geiger, 2013). Self-reward and visualizing successful performance lead employees to set expectations for work results and believe that they will succeed (feel competence), thus increasing employees' aliveness and enthusiasm (i.e., vitality). Self-talk and evaluating belief and assumptions help individuals eliminate dysfunctional thought and remain positive, as well as the autonomy that comes from various autonomous work strategies of self-leadership, which helps maintain relationships (i.e., relatedness), thus making employees more energized (Deci & Ryan, 2000; Hodgins et al., 1996; Ryan & Lynch, 1989). In conclusion, the self-leadership's skillset

enables employees to thrive at work. Hence, we hypothesize the following:

> Hypothesis 1: Self-leadership is positively related to thriving at work.

Thriving at work and employee voice behavior

Voice is a voluntary communication behavior aimed at promoting organizational effectiveness (Singh et al., 2016; Liang et al., 2012) classified voice into promotive voice and prohibitive voice according to its nature. Promotive voice behavior is more aimed at improving the organization's status quo via some new ideas and therefore more acceptable to the stakeholders. Prohibitive voice behavior mainly focuses on improper procedures, rules, or policies existing in work practice, which may cause differences of opinions and worsen interpersonal harmony within the organization (Chamberlin et al., 2017). Both types of voice behavior need to consume extra time and energy, so they are challenging and risky (Song et al., 2019). Most of the previous studies considered voice behavior as cognitive behavior, and the decision on voice behavior should be made after weighing the gains and losses (Li et al., 2020). However, when employees are in a very positive state, they are willing to exert extra-role behaviors such as voice. This view is also be supported by the empirical study of Yousaf et al. (2019), which holds that thriving is a desirable state, and that when employees are thriving at work, they will be motivated by this intrinsic motivation to exert more voice behavior. Therefore, when employees are thriving, they will take the initiative to voice.

More specifically, first, when employees are in a state of thriving, they are in a state of learning. As a result, they are more likely to find some hidden dangers and problems in their work as well as generate ideas and measures for improvement (Wallace et al., 2016); these are conducive to voice behavior. Second, when employees thrive at work, they are full of energy and vitality. Based on SDT, employees in this state are more willing and able to adopt extra-role behavior (Gagne & Deci, 2005) such as voice behavior. Third, based on SDT, employees who experience thriving tend to take more proactive actions to promote continued thriving. Moreover, voice behavior will help them shape the context and gain access to resources, thus contributing to continuous thriving (Fuller et al., 2007; Spreitzer et al., 2005). Therefore, the more thriving the employee, the more voice behavior, including promotive and prohibitive voice, they portray. Based on the above views, we hypothesize the following:

> Hypothesis 2: Thriving at work is positively related to promotive voice (Hypothesis 2a) and prohibitive voice (Hypothesis 2b).

Thriving at work as a mediator

Through the framework of SDT (Ryan & Deci, 2000), thriving at work conveys the effect of self-leadership on voice behavior. The skill sets of self-leadership provide enough fuel for learning and vitality, which in turn promotes voice behavior. Briefly, the behavioral and cognitive strategies of self-leadership greatly help employees to obtain satisfaction of the three basic needs (autonomy, competence, and relatedness), thus motivating them to enter a state of intrinsic motivation and subsequently exhibit high levels of vitality and learning (Spreitzer & Porath, 2014). This positive state of high vitality and learning, in turn, motivates employees to perform more extra-role behavior (Gagne & Deci, 2005; Piccolo & Colquitt, 2006), like promotive and prohibitive voice. Thus, we hypothesize the following:

> Hypothesis 3: Thriving at work mediates the relationship between self-leadership and promotive voice behavior (Hypothesis 3a) and prohibitive voice behavior (Hypothesis 3b).

Job characteristic as a moderator

SDT suggests that individual characteristics and job characteristics jointly influence intrinsic motivation (Deci & Ryan, 1985). Moreover, Spreitzer et al. (2005) argued that both individual personality and work context affect thriving at work. While personal characteristics, such as self-leadership, may make it easier for some employees to feel thriving than others, understanding the characteristics of the work at the same time may contribute more to theoretical development and practice. Therefore, this paper will explore how external factors such as job characteristics and internal factors such as personal characteristics jointly influence the intrinsic motivation, i.e., thriving at work.

The MPS is a comprehensive job characteristic factor, which is a type of work context and is calculated by scoring five job characteristics; the more the MPS, the greater the intrinsic motivation (Hackman & Oldham, 1976; Singh et al., 2016). The five job characteristics are skill variety, task identity, task significance, autonomy, and feedback. The first three characteristics are related to work meaning, autonomy is associated with responsibility, and feedback is related to the knowledge brought by work results (Hackman & Oldham, 1974, 1975). The five job characteristics, as motivators, influence intrinsic motivation through the three psychological states, i.e., meaningfulness, responsibility, and knowledge (Hackman & Oldham, 1976). These five job characteristics also provide nutrients to the basic needs (i.e., autonomy, competence, and relatedness) in SDT, which in turn influence the individual's intrinsic motivation, i.e., thriving at work (van Dorssen-Boog et al., 2021).

These job characteristics meet the basic needs in SDT and promote thriving as follows: first, skill variety, task identity, and task significance enable employees to believe that their work is meaningful and that they are embedded and contributing to the outside word (i.e., relatedness), such as the community, the company, and their colleagues. This makes employees full of energy and vitality (Hackman & Oldham, 1976; Deci & Ryan, 2012). It also encourages them to learn and master more skills so that they can better complete the tasks they consider meaningful (Niessen et al., 2012). Second, with higher autonomy, employees feel more responsible for the success or failure of the task; they will consequently keep learning to ensure that tasks can be achieved (Geiger, 2013). At the same time, according to SDT, job autonomy can increase vitality (Li et al., 2016; Ryan & Deci, 2017). Third, the better the feedback of the job, the more employees know about the results and effects of their work, and they can adjust and maintain their behaviors in time to keep moving forward, which enhances their sense of control (i.e., competence) and thriving (Wang et al., 2021). Taken together, the job characteristics embedded in the MPS enable employees to thrive.

As mentioned earlier, self-leadership also fuels thriving; therefore, both personal and job characteristics may promote thriving at work by providing nutrients for autonomy, competence, and relatedness. According to SDT, employees' intrinsic motivation can be stimulated as long as the three basic psychological needs are met (Deci & Ryan, 2012; Spreitzer & Porath, 2014). When employees are with good job characteristics (high MPS), there are more nutriments to meet these three needs, thus promoting intrinsic motivation. Therefore, intrinsic motivation reduces the reliance on self-leadership skills. That is, when the job characteristic is better, the effect of self-leadership on intrinsic motivation is weaker. Conversely, when employees are with the poor job characteristic (low MPS), the job characteristic does not provide enough nutrients and thus increases the reliance on self-leadership. That is, when the job characteristic is poor, self-leadership has a stronger effect on intrinsic motivation, i.e., thriving at work. This logic is consistent with Black and Deci's (2000) view that the effects of individual autonomy orientation and autonomy-supportive context on intrinsic motivation are mutually substituting. Thus, we hypothesize the following:

Hypothesis 4: Job characteristics (MPS) will moderate the relationship between self-leadership and thriving at work, such that this relationship is stronger for employees with a poor job characteristic (low MPS).

Thus far, we have elaborated the mechanism of self-leadership on voice behavior, in which thriving at work acts as a mediator and the job characteristic (i.e., MPS) plays a moderating role. In summary, when employees are in a high MPS context, the impact of self-leadership on voice behavior through thriving is weaker. On the contrary, when employees are in a low MPS context, self-leadership has a stronger effect on voice via thriving. That is, the job characteristic (i.e., MPS) moderates the mediating effect of self-leadership on voice behavior. Thus, we have the following hypothesis:

Hypothesis 5: The job characteristic (MPS) moderates the mediating relationship between self-leadership and promotive voice (Hypothesis 5a)/prohibitive voice (Hypothesis 5b) via thriving at work, such that this mediating effect is stronger for employees with a poor job characteristic (low MPS).

Methods

Sample and procedures

Nurses from a large general hospital in northwest China were invited to participate in our survey through the professional questionnaire platform Wenjuanxing. Based on Podsakoff et al.'s (2003) suggestions, measuring predictor and criterion variables with temporal separation is an effective technique to control common method biases. Thus, we conducted three surveys at 2-week intervals and collected the following information of participants: the first round for self-leadership, proactive personality, MPS, and demographics (gender, age, tenure, marriage, education, professional title, and department); the second round for thriving at work; and the third round for promotive and prohibitive voice.

Before sending the questionnaire, we explained the survey process to the participants and assured anonymity of the participants. We initially invited 561 nurses to participate in the survey. After three rounds of surveys, we kept the successful matches and excluded the invalid questionnaires. Data from those who participated in only one or two rounds of the survey were excluded. Finally, 405 effective questionnaires were available (response rate = 72.19%). Among them, 96.05% were female, with a mean age of 32.07 years ($SD = 5.58$), and a mean organizational tenure of 9.41 years ($SD = 6.07$). To test response bias, t-tests for independent samples were performed, i.e., mean differences on demographics were assessed between those who responded (stayers, 405) and those who did not respond (leavers, 156) at time 2 and time 3. The two groups were found to differ in age, organizational tenure, gender, education, professional title, surgery, and internal medicine. Thus, referring to previous studies (Mitchell et al., 2001; Murphy et al., 2013; Paterson et al., 2014; vanDorssen-Boog et al., 2021), we used age, organizational tenure, gender, education, professional title, and department as control variables throughout the analyses.

Measures

Because the respondents were from China, all English scales were translated into Chinese using the translation–back translation method (Brislin, 1980). Except for special remarks, all scales are on a five-point Likert scale, with 1 representing strongly disagree and 5 representing strongly agree. All the detailed scales are shown in Appendix.

Self-leadership

We measured self-leadership using Houghton et al. (2012a, b) nine-item scale. A sample item for behavior awareness and volition is "I make a point to keep track of how well I'm doing at work," for task motivation is "I visualize myself successfully performing a task before I do it," and for constructive cognition is "Sometimes I talk to myself (out loud or in my head) to work through difficult situations". Cronbach's α was 0.922.

Motivating potential score

We measured the MPS using the scale developed by Hackman and Oldham (1976). This paper focuses on the moderating effect of job characteristics on the relationship between self-leadership and intrinsic motivation, and job characteristics as a whole (i.e., MPS) are more closely related to intrinsic motivation (Hackman & Oldham, 1976). Therefore, referring to previous studies (Han et al., 2022; Oerlemans & Bakker, 2018; Zaman et al., 2020), this paper discusses job characteristics as a whole. The scale includes five factors of the job characteristic model that reflect a job's MPS. It is calculated using the five indicators via the following formula:

$$MPS = \frac{\text{Skill Variety} + \text{Task Identity} + \text{task Significance}}{3} \times \text{Autonomy} \times \text{Feedback}$$

The items of the scale were from the Job Diagnostic Survey that measured the job characteristic model (Hackman & Oldham, 1974, 1975). A sample item is "The job requires me to use a number of complex or high-level skills". Cronbach's α was 0.711 for the skill variety subset, 0.824 for the task identity subset, 0.828 for the task significance subset, 0.899 for the autonomy subset, and 0.900 for the feedback subset.

Thriving at work

We measured thriving at work using Porath et al.'s (2012) 10-item scale. The vitality and learning dimensions each have five items. A sample item for vitality is "I have energy and spirit" and for learning is "I see myself continually improving". The purpose of this paper is to explore the influence of motivated intrinsic motivation on employee behavior. Thriving considered as a whole is more representative of intrinsic motivation, thus we consider thriving as a whole construct. Cronbach's α was 0.961.

Promotive voice and prohibitive voice

We measured voice using Liang et al.'s (2012) 10-item scale. Promotive and prohibitive voice each have five items. A sample item for promotive voice is "I raise suggestions to improve the unit's working procedure" and for prohibitive voice is "I dare to point out problems when they appear in the unit, even if that would hamper relationships with other colleagues". Cronbach's α values were 0.938 and 0.880, respectively.

Controls

First, similar to other literature on voice (Li et al., 2020) and taking into account possible response bias, we selected gender, age, organizational tenure, marriage, education, professional title, and department as control variables. Second, given that some studies demonstrated that proactive personality can affect thriving and voice behavior (Jiang, 2017; Xu et al., 2019), we also took it as a control variable and measured it with Seibert et al.'s (1999) 10-item scale. A sample item is "I am always looking for better ways to do things." Cronbach's α was 0.950.

Analysis

We performed confirmatory factor analyses (CFAs) to verify the discriminant validity of the concepts via Amos 24. The MPS is calculated by a formula and contains a product term. Therefore, the MPS is treated as an explicit variable in this paper and not considered in CFAs. Then, following other studies (Abid et al., 2021; Mo & Shi, 2018), Hayes's (2013) PROCESS macro was used to examine the hypothetical model in this paper, in which a bootstrapping method was conducted to test the mediating and moderated mediating effects (Edwards & Lambert, 2007).

Results

Confirmatory factor analyses

Table 1 presents the CFA results. It shows acceptable fit of the five-factor measurement model (consisting of self-leadership, proactive personality, thriving at work, promotive

voice, and prohibitive voice; $\chi 2 = 1825.219$, df $= 678$, comparative fit index [CFI] $= 0.924$, Tucker–Lewis index [TLI] $= 0.917$, root mean square error of approximation [RMSEA] $= 0.065$). We used $\chi 2$ difference tests to compare this five-factor model to several alternative models. $\chi 2$ difference tests showed that the five-factor model fit the data significantly better than the four-factor model (combined self-leadership with proactive personality; $\chi 2 = 3668.407$, df $= 696$, CFI $= 0.802$, TLI $= 0.790$, RMSEA $= 0.103$; $\Delta\chi 2 = 1843.188$, $p < .001$), the three-factor model (combined self-leadership with proactive personality; combined promotive voice with prohibitive voice; $\chi 2 = 3865.965$, df $= 699$, CFI $= 0.789$, TLI $= 0.777$, RMSEA $= 0.106$; $\Delta\chi 2 = 2040.746$, $p < .001$), and the one-factor model (combined all the items; $\chi 2 = 9146.922$, df $= 702$, CFI $= 0.438$, TLI $= 0.407$, RMSEA $= 0.173$; $\Delta\chi 2 = 7321.703$, $p < .001$). The results verified that the five measurements were different. The results verified that the five measurements were different.

Descriptive statistics and correlations

Table 2 shows the means, standard deviations, and correlations of the variables. Self-leadership was positively related to thriving at work ($r = .346$, $p < .01$), promotive voice ($r = .378$, $p < .01$), and prohibitive voice ($r = .344$, $p < .01$). Thriving at work was positively correlated with promotive voice ($r = .581$, $p < .01$) and prohibitive voice ($r = .499$, $p < .01$). Furthermore, the MPS was positively associated with thriving at work ($r = .335$, $p < .01$).

Hypothesis testing

Table 3 indicates that self-leadership positively affects thriving at work ($B = 0.248$, $p < .01$), supporting Hypothesis 1. Furthermore, thriving at work positively affects promotive voice ($B = 0.514$, $p < .01$) and prohibitive voice ($B = 0.422$, $p < .01$), supporting Hypotheses 2a and 2b.

Hypothesis 3: proposed that thriving at work plays a mediating role between self-leadership and employee voice. A bootstrapping of 5000 was performed to test this mediating effect. Table 3 suggests that thriving at work has a mediating effect between self-leadership and promotive voice (indirect effect $= 0.127$, 95% CI [0.040, 0.244]), supporting Hypothesis 3a. Furthermore, the mediating effect of thriving at work between self-leadership and prohibitive voice is significant (indirect effect $= 0.105$, 95% CI [0.034, 0.215]), again supporting Hypothesis 3b.

Hypothesis 4: predicts that the job characteristic (expressed as MPS) moderates the relationship between self-leadership and thriving at work. Table 3 shows that the interaction between self-leadership and MPS significantly affects thriving at work ($B = -0.001$, $p < .05$). Figure 2 illustrates that when employees are in a strong ($M + 1$ SD) MPS, self-leadership has a weaker impact on thriving at work than when they are in a weak ($M - 1$ SD) MPS; thus, Hypothesis 4 is supported.

Hypothesis 5 provides that the job characteristic (expressed as MPS) moderates the mediation effect of thriving at work between self-leadership and voice behavior. A bootstrap of 5000 was also performed to test this moderated mediation. Table 4 suggests that for promotive voice, the mediating role of thriving at work is significant (indirect effect $= 0.108$, 95% CI [0.019, 0.241]) when the MPS is low ($M - 1$ SD) and is not significant (indirect effect $= 0.018$, 95% CI [-0.129, 0.134]) when the MPS is high ($M + 1$ SD). Therefore, for promotive voice, the job characteristic (MPS) plays a moderating role; this supports Hypothesis 5a. In addition, for prohibitive voice, the mediating role of thriving at work is significant (indirect effect $= 0.089$, 95% CI [0.012, 0.203]) when the MPS is low ($M - 1$ SD) and is not significant (indirect effect $= 0.015$, 95% CI [-0.106, 0.111]) when the MPS is high ($M + 1$ SD). Therefore, for prohibitive

Table 1 Results of confirmative factor analysis

Model	χ^2	df	$\Delta\chi$ 2 (Δdf)	RMSEA	CFI	TLI
5-factor Model[a]	1825.219	678	-----	0.065	0.924	0.917
4-factor Model[b] (combining SL and PP)	3668.407	696	1843.188(18)[***]	0.103	0.802	0.790
3-factor Model[c] (combining SL and PP; combining V1 and V2)	3865.965	699	2040.746(21)[***]	0.106	0.789	0.777
1-factor Model[d]	9146.922	702	7321.703(24)[***]	0.173	0.438	0.407

SL $=$ self-leadership, PP $=$ proactive personality, V1 $=$ promotive voice, V2 $=$ prohibitive voice

[a]self-leadership, proactive personality, thriving at work, promotive voice, prohibitive voice. [b]Combining self-leadership and proactive personality; [c]Combining self-leadership and proactive personality; combining promotive voice and prohibitive voice; [d]Combining all constructs

$N = 405$

[***]$p < 0.001$

Table 2 Descriptive statistics and correlations for study variables

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age	32.070	5.58														
2. Tenure	9.410	6.07	0.923**													
3. Marriage	0.830	0.37	0.429**	0.379**												
4. Gender	1.960	0.20	0.114*	0.127*	0.148**											
5. Education	1.690	0.58	−0.151**	−0.262**	−0.078	−0.109*										
6. Professional title	1.100	0.38	0.601**	0.654**	0.122*	0.056	0.057									
7. Surgery	0.400	0.49	−0.139**	−0.130**	0.002	0.167**	−0.121*	−0.120*								
8. Internal medicine	0.380	0.49	−0.173**	−0.191**	−0.048	0.028	0.113*	−0.148**	−0.646**							
9. PP	5.739	0.89	−0.025	−0.047	0.003	0.049	−0.043	−0.022	0.129**	0.031	(0.950)					
10. Self-leadership	5.890	0.81	0.012	0.009	0.023	0.056	0.000	0.043	0.095	0.008	0.700**	(0.922)				
11. MPS	207.414	78.31	−0.078	−0.101*	−0.038	0.079	−0.016	−0.084	0.103*	0.072	0.770**	0.701**				
12. Thriving at work	6.026	0.89	0.053	0.041	0.068	0.098*	−0.045	−0.022	0.033	0.067	0.331**	0.346**	0.335**	(0.961)		
13. Promotive voice	5.781	0.94	0.093	0.057	0.045	0.050	−0.028	0.024	0.102*	−0.015	0.440**	0.378**	0.411**	0.581**	(0.938)	
14. Prohibitive voice	5.667	0.92	0.139**	0.118*	0.081	0.031	−0.027	0.082	0.088	−0.015	0.396**	0.344**	0.359**	0.499**	0.780**	(0.880)

N=405. PP=proactive personality, MPS=motivating potential score, Cronbach's α values are on the diagonal. Age and tenure measured in years. Marriage 0=no, 1=yes. Gender 1=male, 2=female. Education 1=Technical secondary school, 2=college, 3=bachelor degree or above. Professional title 1=primary, 2=intermediate, 3=senior. Surgery 0=no, 1=yes. Internal medicine 0=no, 1=yes

M=mean, SD=standard deviation

*p<.05. **p<.01

Table 3 Regression analyses for the model

Predictor	Thriving at work		Promotive voice	Prohibitive voice
	Model1	Model2	Model3	Model4
Intercept	2.830**	2.321	0.257	1.083
Age	0.012	0.010	0.035	0.022
Tenure	0.006	0.009	−0.018	0.000
Marriage	0.049	0.100	−0.073	0.007
Gender	0.235	0.201	−0.132	−0.264
Education	−0.013	−0.017	0.013	0.034
Professional title	−0.199	−0.182	0.016	0.091
Surgery	0.099	0.118	0.141	0.199
Internal medicine	0.191	0.200	0.010	0.088
Proactive personality	0.160*	0.084	0.266**	0.244**
Self-leadership	0.248**	0.355**	0.031	0.032
Thriving at work			0.514**	0.422**
MPS		0.009*		
Self-leadership × MPS		−0.001*		
R^2	0.155	0.168	0.420	0.333
F	7.211**	6.596**	25.864**	17.835**

Indirect effects of self-leadership on promotive voice and prohibitive voice

Promotive voice			Prohibitive voice		
Indirect effect	Sobel Test (z)	95% CI [a]	Indirect effect	Sobel Test (z)	95% CI [a]
0.127	3.304**	[0.040, 0.244]	0.105	3.214**	[0.034, 0.215]

N=405. *MPS* motivating potential score. a. Based on bootstrap 5000. *$p<.05$. **$p<.01$
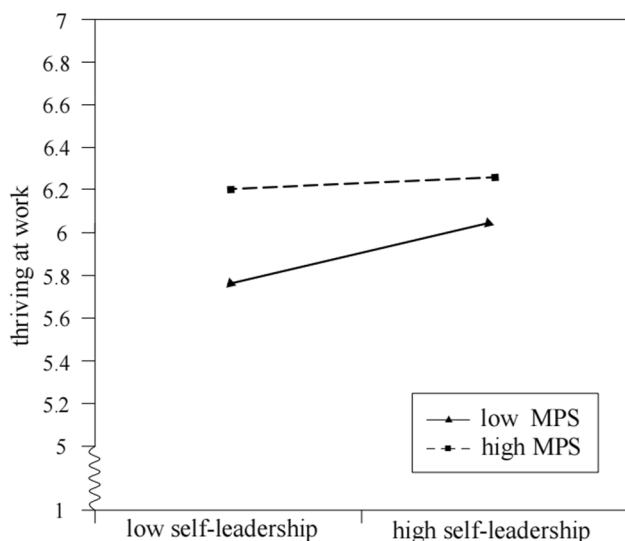
Fig. 2 Moderation of job characteristic (MPS). Notes: *MPS* motivating potential score

voice, the job characteristic (MPS) plays a moderating role; this supports Hypothesis 5b.

Additional analysis

Table 3 shows that thriving at work fully mediates the relationship of self-leadership on promotive/prohibitive voice behavior. However, it has been shown that the role of learning and vitality on the two types of voice behavior could be different (Sheng & Zhou, 2022). Therefore, although there is no relevant hypothesis, we empirically analyzed the role of the two dimensions of thriving (learning and vitality) in the self-leadership- promotive/prohibitive voice relationship, using Hayes's (2013) PROCESS macro. A bootstrapping of 5000 was performed to test the mediating effect and to generate confidence intervals. As shown in Table 5, when learning and vitality are analyzed as mediators at the same time, vitality has a mediating effect between self-leadership and promotive and prohibitive voice (indirect effect = 0.088, 95% CI [0.020, 0.191] and indirect effect = 0.084, 95% CI [0.023, 0.184], respectively). Conversely, the mediating effect of learning between self-leadership and promotive and prohibitive voice is not significant (indirect effect = 0.034, 95% CI [- 0.007, 0.117] and indirect effect = 0.013, 95% CI [-. 029, 0.084], respectively).

Next, we verified the moderating effect of MPS between self-leadership and the two thriving dimensions (learning and vitality). As shown in Table 5, the interaction between self-leadership and MPS affects vitality (B = − 0.001,

Table 4 Conditional indirect effect analyses for the model

MPS	Promotive voice			Prohibitive voice		
	effect	BootSE	95% CI[a]	effect	BootSE	95% CI
High(M + 1SD)	0.018	0.067	[-0.129, 0.134]	0.015	0.055	[-0.106, 0.111]
Low(M-1SD)	0.108	0.055	[0.019, 0.241]	0.089	0.047	[0.012, 0.203]

N = 405. [a] confidence interval. *M* mean, *SD* standard deviation. *MPS* motivating potential score, *SE* standard error

Table 5 Additional analyses for the mediating effects of the two thriving dimensions and the moderating effects of MPS

Predictor	Learning		Vitality		Promotive voice	Prohibitive voice
	Model1	Model2	Model3	Model4	Model5	Model6
Intercept	2.846**	4.787**	2.815**	4.873**	0.313	1.157
Age	0.008	0.006	0.016	0.014	0.034	0.021
Tenure	0.008	0.010	0.005	0.007	−0.018	0.001
Marriage	0.062	0.104	0.036	0.097	−0.069	0.013
Gender	0.309	0.281	0.161	0.121	−0.110	−0.237
Education	0.024	0.021	−0.050	−0.054	0.021	0.044
Professional title	−0.062	−0.047	−0.335	−0.316	0.043	0.127
Surgery	0.096	0.111	0.102	0.125	0.142	0.201
Internal medicine	0.120	0.127	0.261	0.272	−0.003	0.072
Proactive personality	0.127*	0.062	0.194**	0.106	0.262**	0.237**
Self-leadership	0.252**	0.150	0.243**	0.096	0.037	0.039
Learning					0.133	0.050
Vitality					0.362**	0.347**
MPS		0.002		0.002*		
Self-leadership × MPS		−0.001		−0.001*		
R²	0.142	0.152	0.148	0.163	0.424	0.341
F	6.525**	5.837**	6.849**	6.344**	24.087**	16.888**

Indirect effects of self-leadership on promotive voice and prohibitive voice

	Promotive voice			Prohibitive voice		
	Indirect effect	Sobel Test (z)	95% CI[a]	Indirect effect	Sobel Test (z)	95% CI[a]
Learning	0.034	1.556	[-0.007, 0.117]	0.013	0.611	[-0.029, 0.084]
Vitality	0.088	2.616**	[0.020, 0.191]	0.084	2.556*	[0.023, 0.184]

N = 405. *MPS* motivating potential score. a. Based on bootstrap 5000. *$p < .05$. **$p < .01$

$p < .05$) significantly, but has no significant impact on learning (B = −0.001, ns). Last, since the mediating effect of learning between self-leadership and voice behavior is nonsignificant and the moderating effect of MPS on the relationship between self-leadership and learning is also nonsignificant, we only test whether MPS moderates the mediation effect of vitality between self-leadership and voice behavior. A bootstrap of 5000 was also performed to test this moderated mediation. As shown in Table 6, for promotive voice, the mediating role of vitality is significant (indirect effect = 0.073, 95% CI [0.003, 0.186]) when the MPS is low (M − 1 SD) and is not significant (indirect effect = −0.003, 95% CI [−0.111, 0.098]) when the MPS is high (M + 1 SD). Therefore, for promotive voice, the MPS plays a moderating role. In addition, for

prohibitive voice, the mediating role of vitality is significant (indirect effect = 0.070, 95% CI [0.003, 0.176]) when the MPS is low (M − 1 SD), and is not significant (indirect effect = −0.003, 95% CI [−0.111, 0.090]) when the MPS is high (M + 1 SD). Therefore, for prohibitive voice, MPS also plays a moderating role.

Discussion

This study focuses on how self-leadership, a self-focused variable, affects extra-role behavior (i.e., voice behavior). Based on SDT, through the investigation of its underlying mechanism, that is, taking thriving at work as a mediator and job characteristic (MPS) as a moderator, we have gained an

Table 6 Conditional indirect effect analyses for the additional analysis

Mediator	MPS	Promotive voice			Prohibitive voice		
		effect	BootSE	95% CI[a]	effect	BootSE	95% CI
Vitality	High(M+1SD)	−0.003	0.053	[-0.111, 0.098]	−0.003	0.050	[-0.111, 0.090]
	Low(M-1SD)	0.073	0.045	[0.003, 0.186]	0.070	0.042	[0.003, 0.176]

$N = 405$. [a] confidence interval. *M* mean, *SD* standard deviation. *MPS* motivating potential score, *SE* standard error

in-depth understanding about self-leadership and the SDT. The empirical results support all the hypotheses proposed in this study.

Theoretical implications

There are several important theoretical implications. First, self-leadership positively affects employee voice via thriving at work, which advances the study on self-leadership in terms of the extra-role behavior. Not only does self-leadership facilitate employees' own development and success, as stated in Megheirkouni's (2018) study, we found that this proactive state of self-leadership also spills over to the organization and colleagues, contributing to organizational development through voice behavior. This deepens the understanding of self-leadership. In this paper, we control for proactive personality when examining the underlying process between self-leadership and voice behavior. The corresponding results demonstrate that self-leadership and proactive personality are distinct concepts, and they have their own unique effect on extra-role behavior, such as voice behavior. This provides an empirical basis for future research on self-leadership. In addition, this study found that self-leadership, as a new antecedent, promotes employees to thrive at work. This observation supports Cockerell's (2020) point: "Things are more navigable when we are prepared, and learning to lead ourselves is the first step." It also demonstrates that positive personal characteristics (e.g., self-leadership) are conducive to employees thriving at work, which is also consistent with Abid et al.'s (2021) findings that employees who are hopeful and optimistic are more likely to thrive at work.

Second, from the perspective of SDT, thriving at work explains how self-leadership affects voice behavior, which elucidates the mechanism of self-leadership clearer. Previous research has more often advocated that self-leadership enhances self-efficacy and thus promotes work outcomes (Ganesh et al., 2019; Megheirkouni, 2018; Prussia et al., 1998), while less discussing its impact on the need for autonomy and the need for relatedness. However, in terms of the most essential attribute of self-leadership—that employees lead themselves rather than being led by others—i.e., high degree of autonomy, this autonomous skillset also promotes the satisfaction of employees' autonomy and relatedness

needs (Deci & Ryan, 2000; Hodgins et al., 1996; Ryan & Lynch, 1989). To summarize, strong self-leadership provides employees with sufficient nutriments to satisfy the three basic needs and promotes intrinsic motivation, which further promotes employees to pursue higher-order needs and increase extra-role behaviors, such as voice behavior (Lim et al., 2018; Gagne & Deci, 2005). Thus, SDT can fully explain the mechanism of self-leadership and provide us some new knowledge about the role of self-leadership. Furthermore, additional analyses indicated that the mediating effect of vitality between self-leadership and voice behavior is significant, while the mediating effect of learning is not significant. That is, vitality is more likely to convey the effect of self-leadership on voice behavior relative to learning. To some extent, this also suggests that vitality is a better indicator of intrinsic motivation, which is consistent with the views of Deci and Ryan (2000) and Ryan and Deci (2000), who argued that intrinsically motivated people will exhibit more vitality.

Third, this research found that the job characteristic (expressed as MPS) is a boundary condition that fluctuates the effect of self-leadership on thriving at work and voice behavior. Thus, our understanding of self-leadership is more complete. When the work itself is not motivating enough, the positive role of self-leadership will be more obvious, and employees will be able to take the initiative to adjust their goals, adjust their mindset, and improve the intrinsic motivation (i.e., thriving at work). This result also reflects the essential role of self-leadership: individuals can enhance their subjective perception of work to a more positive state through self-leadership strategies (Goldsby et al., 2021). Although the job characteristic is often beyond our control, we can change our own mentality and work process through self-leadership (Goldsby et al., 2021) to feel more controllable and purposeful at work (Harari et al., 2021). As a result, performance can be improved, providing useful insight for management practice. Incidentally, this result suggests that the effects of self-leadership and job characteristics on intrinsic motivation are substitutes for each other. Job characteristics such as autonomy and feedback can provide employees with the nutriments that promote thriving at work (Lee et al., 2015; Xie, 2016). Self-leadership strategies such as self-goal setting and self-observation also allow employees to feel more autonomy and feedback, and

these nutriments promote intrinsic motivation, i.e., thriving at work (van Dorssen-Boog et al., 2020). The nutriments provided by self-leadership and job characteristics for thriving are somewhat substitutable, which implies that either internal or external factors can promote intrinsic motivation as long as they provide nutrients to satisfy the three basic needs (Spreitzer & Porath, 2014), in the sense that the two have similar effects on intrinsic motivation. Thus, the understanding of SDT is deepened.

Practical implications

There are also some practical implications for the management. First, the current study demonstrated that self-leadership positively affects promotive and prohibitive voice behaviors through thriving at work. Organizations can facilitate voice behavior by helping employees become self-leaders through self-leadership training programs (Sampl et al., 2017). Specifically, organizations in the healthcare arena can help their workers learn to set their own work goals, encourage them to have positive self-talk and track their work results, and gradually make them feel that they are in charge of their own work content and process, thereby enhancing their intrinsic motivation. However, this requires supervisor empowerment, otherwise employees are not free to develop and exercise these skills (Yun et al., 2006). Furthermore, in addition to training, organizations can also screen employees with higher self-leadership through psychometric tests and interviews. For example, employees with traits such as openness, conscientiousness, optimism, and hope may have a higher propensity for self-direction and self-motivation (Abid et al., 2021; Harari et al., 2021).

Second, the results suggested that thriving at work positively affects extra-role behavior, including voice behavior. In addition to self-leadership, organizations can also promote thriving at work in other ways to promote voice behavior. For example, organizations in the healthcare arena can share more information with their employees, create a trusting work environment, and facilitate employees with more decision-making power (Spreitzer & Porath, 2014). Furthermore, organizations in the healthcare arena can foster a caring atmosphere that can both provide employees with life opportunities and help them overcome adversity (Feeney & Collins, 2015).

Third, the results showed that the effects of self-leadership and job characteristics on thriving at work and voice behavior are interchangeable. Therefore, organizations such as healthcare can start from job design to make jobs with a higher MPS. After all, the cultivation of self-leadership requires an empowering culture, the right leaders, and the right employees (Furtner et al., 2013; van Dorssen-Boog et al., 2021), which does not happen overnight. Specifically, in order to improve job characteristics, leaders can share more of the organizational vision and emphasize the importance and contribution of each position; at the same time, leaders should provide timely feedback to employees on their work results and give them more space and freedom to carry out their own work (Hackman & Oldham, 1976).

Limitations and directions for further research

To make the findings more valid, this study collected questionnaires in three time points and controlled for proactive personality; however, there are still some limitations. First, the respondents in this study were all nurses from the same hospital, which poses some challenges to the generalizability of the findings. Hence, this model could be validated in other industries in the future to make the findings more robust. Second, all scales were self-reported, which may introduce the effect of common method variance on the results. Future studies can collect data from different respondents, such as the data of employee voice behavior obtained from leaders.

Third, we cannot discern the causality between the variables in the model due to the cross-sectional data of our research. For example, through the lens of social learning theory, voice behavior is beneficial to improve employee's internal status and self-image, which may facilitate an employee to thrive at work. From a social cognitive theory perspective, employees who feel more thriving at work develop a more positive self-concept, which can drive them to develop additional self-leadership skills. This needs to be demonstrated further through complete panel design or experimental studies, such as adding a self-leadership training program and introducing a growth model. Fourth, this study used thriving at work as a manifestation of intrinsic motivation rather than directly measuring the three needs; this may have some challenges for the findings. Future studies may try to measure the three needs directly to verify the reliability of the model.

Conclusion

To explore the relationship between self-leadership and extra-role behavior, we investigated its relationship with voice behavior from the perspective of the SDT. We found that thriving at work mediated the effect of self-leadership on employee voice, and the job characteristic (expressed as MPS) moderated the relationship between self-leadership and thriving at work. In general, the stronger the self-leadership, the better the vitality and learning state, and the more the employees' voice behavior will be stimulated. Future research could continue to demonstrate the effects of self-leadership on other extra-role behaviors such as organization citizenship behavior to individual or organization.

Appendix 1

Measures of Core Constructs
Self-leadership.
Behavior Awareness and Volition (BAV)

1. I establish specific goals for my own performance.
2. I make a point to keep track of how well I'm doing at work.
3. I work toward specific goals I have set for myself.

Task Motivation (TM)

4. When I have successfully completed a task, I often reward myself with something I like.
5. Sometimes I picture in my mind a successful performance before I actually do a task.
6. I visualize myself successfully performing a task before I do it.

Constructive Cognition (CC)

7. Sometimes I talk to myself (out loud or in my head) to work through difficult situations.
8. I try to mentally evaluate the accuracy of my own beliefs about situations I am having problems with.
9. I think about my own beliefs and assumptions whenever I encounter a difficult situation.

Proactive personality

1. No matter what the odds, if I believe in something I will make it happen.
2. I am constantly on the lookout for new ways to improve my life.
3. Wherever I have been, I have been a powerful force for constructive change.
4. Nothing is more exciting than seeing my ideas turn into reality.
5. If I see something I don't like, I fix it.
6. I love being a champion for my ideas, even against others' opposition.
7. I excel at identifying opportunities.
8. I am always looking for better ways to do things.
9. If I believe in an idea, no obstacle will prevent me from making it happen.
10. I can spot a good opportunity long before others can.

Thriving at work.
Learning latent factor.

1. I find myself learning often.
2. I continue to learn more as time goes by.

3. I see myself continually improving.
4. I am not learning (R).
5. I am developing a lot as a person.

Vitality latent factor.

1. I feel alive and vital.
2. I have energy and spirit.
3. I do not fell very energetic (R).
4. I feel alert and awake.
5. I am looking forward to each new day.

Motivating potential score.
Skill Variety.
The job requires me to do many different things at work, using a variety of my skills and talents.
The job requires me to use a number of complex or high-level skills.
The job is quite simple and repetitive (R).
Task Identity.
The job is a complete piece of work that has an obvious beginning and end.
The job provides me the chance to completely finish the pieces of work I begin.
The job is arranged so that I do not have the chance to do an entire piece of work from beginning to end (R).
Task Significance.
The results of my work are likely to significantly affect the lives or well-being of other people.
This job is one where a lot of other people can be affected by how well the work gets done.
The job itself is not very significant or important in the broader scheme of things (R).
Autonomy.
The job permits me to decide on my own how to go about doing the work.
The job gives me considerable opportunity for independence and freedom in how I do the work.
The job denies me any chance to use my personal initiative and judgment in carrying out the work (R).
Feedback.
Doing the job itself provide me with information about my work performance.
Just doing the work required by the job provides many chances for me to figure out how well I am doing.
The job itself provides very few clues about whether or not I am performing well (R).

Promotive voice/Prohibitive voice.
Promotive voice.

1. Proactively develop and make suggestions for issues that may influence the unit.

2. Proactively suggest new projects which are beneficial to the work unit.
3. Raise suggestions to improve the unit's working procedure.
4. Proactively voice out constructive suggestions that help the unit reach its goals.
5. Make constructive suggestions to improve the unit's operation.

Prohibitive voice.

1. Speak up honestly with problems that might cause serious loss to the work unit, even when/though dissenting opinions exist.
2. Advise other colleagues against undesirable behaviors that would hamper job performance.
3. Dare to voice out opinions on things that might affect efficiency in the work unit, even if that would embarrass others.
4. Dare to point out problems when they appear in the unit, even if that would hamper relationships with other colleagues.
5. Proactively report coordination problems in the workplace to the management.

Data availability The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

The authors have no relevant financial or non-financial interests to disclose.

Ethical approval Our study did not involve human clinical trials or animal experiments. Ethical review and approval steps were not required for the study on human participants, based on local legislation and institutional requirements.

Informed consent Written informed consent from the participants was not required to participate in this study, based in the national legislation and the institutional requirements.

Conflict of interest The authors have no relevant financial or non-financial interests to disclose.

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