

RESEARCH

Open Access



Inclusive leadership and employee workplace well-being: the role of vigor and supervisor developmental feedback

Yonghua Liu¹, Yangchun Fang^{1,2*}, Le Hu^{3*}, Nuo Chen¹, Xiaodu Li¹ and Yuhui Cai¹

Abstract

Purpose Employees within organizations actively pursue and maintain their workplace well-being. Although there are current studies that have examined the linking inclusive leadership to employee workplace well-being, the underlying intrinsic link between the two remains unclear. On the basis of self-determination theory, this research examined the relationship between inclusive leadership, vigor, supervisor developmental feedback, and workplace well-being.

Patients and methods Data were collected from 61 teams that totaled 342 full-time employees through a 3-stage questionnaire. Multilevel Structural Equation Modeling and Monte Carlo simulations were conducted on data for hypothesis testing.

Results Inclusive leadership positively correlated with employee workplace well-being. Employee vigor mediates the link between inclusive leadership and employee workplace well-being. Supervisor developmental feedback moderated the relationship between inclusive leadership and employee vigor.

Conclusions Inclusive leadership can improve employees' workplace well-being by stimulating their vigor. Therefore, managers need to be able to effectively meet employees' basic needs to stimulate their vigor. Based on meeting employees' basic needs, managers can also provide targeted developmental feedback to meet employees' growth needs, which can more effectively promote employees' vigor and workplace well-being.

Keywords Inclusive leadership, Workplace well-being, Vigor, Supervisor developmental feedback

Introduction

People within organizations seek to maintain their happiness and well-being [1–6]. However, as the workplace becomes increasingly competitive, employees progressively face high levels of stress and lower levels of well-being [7]. A 2021 survey from the journal *Nature* revealed that only 47% of the respondents were positive about their career prospects, which was a decrease of 12% from the 2018 survey [8]. Workplace well-being includes the all-encompassing positive feelings and emotional experiences of employees about the environment and content of their current job [9]. It reflects the degree

*Correspondence:

Yangchun Fang
335046443@qq.com

Le Hu
292595797@qq.com

¹School of Management, Zhejiang University of Technology, Hangzhou, China

²Global Institute for Zhejiang Merchants Development, Zhejiang University of Technology, Hangzhou, China

³Faculty of Education, University of Malaya, Kuala Lumpur, Malaysia



© The Author(s) 2024. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

of satisfaction with the work they are doing and the degree of recognition of job-related factors [10]. Notably, employees with high levels of well-being at work are typically more engaged in their work, show higher levels of motivation and creativity [11, 12], and are also more likely to achieve personal and career success [13, 14]. In a competitive environment, concern for the well-being of employees and providing support are crucial factors for organizations to attract and retain the brightest talent.

Previous studies have shown that many leadership behaviors favorably impact employee workplace well-being. For example, transformational leadership, happiness leadership, neuroleadership, empowering leadership, and servant leadership have all been shown to be positively associated with employee workplace well-being [15–19]. However, we suggest that inclusive leadership may be a more appropriate leadership behavior to enhance employee workplace well-being. Inclusive leadership promotes a sense of belonging for the team members and the use of their unique strengths through behaviors [20–22]. Being accepted by the group and having one's individual competencies utilized are key prerequisites for employee workplace well-being [11, 23, 24]. Previous research has also shown that inclusive leadership, which stresses embracing employees as they are; treating them with care, support, and respect; enabling them to contribute their particular capabilities and perspectives, can enhance employee workplace well-being [25, 26]. The shortcomings are that these studies have been conducted from the perspective of job characteristics and resources, and they have assumed that employees experience well-being when they have a good fit with their job or when they have adequate resources in the workplace. Although this provides valuable insight into the interpretation of the connection between inclusive leadership and workplace well-being, we hypothesized that the well-being of employees at work should concentrate on the inner needs of employees, and satisfying their internal needs may be more effective at enhancing employee workplace well-being.

To better understand when and how inclusive leadership influences employee workplace well-being, we developed a model of moderated mediation based on the self-determination theory (SDT). SDT states that people reach an optimal level of functioning when their three basic psychological needs of autonomy, competence, and relationships are fulfilled, resulting in a sense of well-being [27–29]. Based on SDT, we hypothesized that vigor may be an important mediating variable that links the relationship between inclusive leadership and employee workplace well-being. Vigor refers to the belief of an individual that he or she possesses physical strength, emotional energy, and cognitive liveliness [30], and reflects their physical and mental state. Previous studies have

also confirmed that positive leadership behaviors can stimulate employee vigor [31, 32]. As an emerging positive type of leadership, inclusive leadership provides a positive influence, so that teams will ensure fairness and justice, respect and support members, and promote and help them to utilize their particular capabilities and viewpoints [20, 22, 33, 34]. It is able to meet the autonomy, competence, and relational needs of employees, thus, energizing their vigor, which includes cognitive liveliness and emotional energy. Employees with high vigor are not only energetic and full of positive emotions, they are also enthusiastic about their tasks and goals, actively engaged in their work, and strive to achieve their work goals [30]. Employees are more prone to having a sense of well-being at work when they are in such a state [35].

In addition, we hypothesized that inclusive leadership could enhance employee vigor by meeting the three basic needs of autonomy, competence, and relationships but does not involve the higher-level needs of employees. Relevant studies have found that satisfying the needs of employees for growth can effectively enhance their vigor [36, 37]. Based on this, we postulated that leaders may be better able to energize employees if they can satisfy their needs for growth by providing learning and developmental information about their individual work situations. Supervisor developmental feedback means valuable information provided by direct supervisors about their employees' learning, growth and development [38]. This feedback is usually aimed at helping employees understand how they are actually doing and where they can improve, so that they can better develop their professional competencies and skills. We postulated that supervisor developmental feedback enhances the positive relationship between inclusive leadership and employee vigor and further promotes employee workplace well-being.

The key contributions of the study can be presented as follows: First, it enriches the research on the relationship between inclusive leadership and employee workplace well-being, which builds on the suggestion of Faraci et al. [1] to focus on the mental health of employees. Secondly, we found a mediating role for vigor in the relationship between inclusive leadership and employee workplace well-being based on the SDT. This not only helps us to understand how inclusive leadership affects employee workplace well-being but also enriches the research on vigor. Finally, we also found that supervisor developmental feedback moderated the relationship between inclusive leadership and employee vigor. This not only clarifies the boundary conditions for the benefits of inclusive leadership on employee vigor and their workplace well-being but also illustrates the importance of the needs of employees for growth in their well-being and vigor, which contributes to the SDT.

After the introductory remarks, the study moves on to an in-depth examination of the theory and development of the hypothesis. The third part details the methods, including participants, procedures, measurements, and analytical strategies. Part four presents the results of the analyses, which cover preliminary analyses and hypothesis testing. The fifth section discusses the theoretical implications, practical implications, and research shortcomings and prospects.

Theory and development of the hypothesis

Inclusive leadership and employee workplace well-being

Well-being management constitutes an important component in the creation of companies that cultivate a virtuous circle of happiness and the creation of a positive atmosphere inside organizations [7]. Research has shown that employee well-being is the way to achieve productive and innovative growth of employees and to implement an organizational culture based on the portfolio of corporate social responsibility, sustainability and happiness management [39, 40]. Díaz-García et al. [41] also developed the concept of happiness leadership in this context, which seeks to exercise actions that help reduce stress, frustration, and fear, thereby improving well-being to optimize work performance. Thinking, feeling, and doing from a happiness management approach supports people's vision from an organizational and emotional perspective by developing aspects such as creativity, flexibility, and sustainability. Current research concludes that employee well-being comprises three dimensions: workplace well-being, subjective well-being, and psychological well-being [23, 42]. Subjective well-being emphasizes individuals' overall evaluation of their quality of life based on personal criteria [43, 44]. Psychological well-being focuses on good psychological functioning and the realization of personal potentials [45–47]. Workplace well-being reflects employees' job satisfaction and positive emotions concerning their workplace [4, 23, 42]. As we focus on the workplace context, where subjective and psychological well-being are integral, our specific interest is in workplace well-being. Workplace well-being has been confirmed to enhance organizational performance and virtuousness [48, 49], improve individual career commitment and loyalty [50, 51], and reduce turnover intentions [52, 53]. Therefore, understanding how to improve workplace well-being is crucial for organizations.

The study of inclusive leadership has its roots in the study of the term “inclusiveness” in education where it has been recognized as a collective, egalitarian leadership structure that emphasizes the participation of school community members in the governance of the school; it is also a style of leadership that embraces differences in cultural values in teaching and learning [54]. Nembhard and Edmondson [55] have been the first to introduce

inclusive leadership into the organizational arena. They identified inclusive leadership as a new style of leadership that encourages employees to express themselves, listens to employees' opinions, and acknowledges their contributions in a timely manner. Holland [56] argues that inclusive leadership is a process that emphasizes active followership and prioritizes the needs and expectations of followers. The guiding principle is to “do things with people, not to people,” fostering a two-way influence relationship. Carmeli et al. [22] concluded that inclusive leadership is a distinct style and core of relational leadership, which is a leadership style with openness, availability and accessibility in their interaction with subordinates. Shore et al. [34] postulated that inclusive leadership allows members to feel included in the team by focusing on their sense of belonging and uniqueness. Randel et al. [20] reviewed relevant research on inclusive leadership and proposed that the goal of inclusive leadership is to meet the needs of the team members for belonging and uniqueness through behaviors. They summarized three leadership behaviors; which included support the members of the group, making sure that justice and equity are part of each member's experience and offering opportunities for sharing decision making on relevant matters; that increase the sense of belonging of the team members and two leadership behaviors. This type of support includes encourage diverse group contributions and help group members fully utilize their specific talents and perspectives to enhance the group's work, that reflect the uniqueness of the team members [20]. Inclusive leaders who pay attention to the behaviors of their subordinates and can listen to and attend to their subordinates' needs can enhance the positive emotions and job satisfaction of their employees [57, 58]. These factors are closely related to their workplace well-being [11, 23, 24, 59–61]. Additionally, Choi et al. [25] found that inclusive leaders can enhance the well-being of their employees in the workplace by helping them to become more attuned to their jobs. A study by Luu also found that inclusive leaders could promote the well-being of employees with disabilities in the workplace by helping them to build work and personal resources [62]. Cao et al. [26] found that inclusive leaders could build an inclusive climate in the department, thereby enhancing employee workplace well-being [63]. All of these studies have contributed to our understand of the link between inclusive leadership and employee workplace well-being, and therefore, we proposed the following:

Hypothesis 1 Inclusive leadership is positively related to employee workplace well-being.

The mediating role of vigor

Vigor is an employee's perception of his or her physical strength, emotional energy, and cognitive liveness at work, which reflects a state of mind and body [30]. Physical strength represents the level of energy required to perform an innovative task; emotional energy refers to the level of positive emotions generated while engaging in an organizational task, and cognitive flexibility denotes the degree of agility of the individual's thinking [30, 64]. Employee vigor is defined as how employees feel about their energy reserves at work and is strongly connected to motivational processes at work. According to the SDT, individuals will reach an optimal level of functioning and experience more well-being when the three basic psychological needs of autonomy, competence, and relationships are satisfied [27–29]. We concluded that inclusive leadership, which emphasizes respect for the uniqueness of employees and sense of belonging [20], can effectively satisfy the basic needs of employees. This can enhance the vigor of employees and ultimately affect their workplace well-being. First, inclusive leadership treats group members fairly and grants them more autonomy in their work [33, 64, 65]. The fair and equitable treatment by leaders conveys how members are bound to their group and therefore fosters a sense of affiliation [66]. A sense of belonging has been shown to be an important prerequisite for vigor [67]. Moreover, a study by Spreitzer et al. [68] states that empowered employees feel energized when the leaders are happy to share their power. Secondly, inclusive leadership emphasizes positive interactions with employees and stresses the importance of building good interpersonal relationships. Inclusive leadership listens to the feelings and ideas of employees and provides support, which conveys the message that the leader has the best interest of his or her members in mind [54, 69]. Thus, employees become more trusting of their leader. Simultaneously, the behaviors of inclusive leaders model support for members within the team so that others can emulate that care and accepting attitude in their team communications, thus, fostering relationships and team cohesion [20]. Employees feel more vigor when their relational needs in the workplace are satisfied [67]. Finally, inclusive leadership values the uniqueness of its employees. By giving extra care to soliciting diverse viewpoints and approaches, inclusive leaders are capable of supporting viewpoints and directions that are not normative but still help drive performance [34, 70, 71]. Inclusive leadership learns about the strengths and preferences of team members and then helps team members contribute to the team by making the most of their strengths [20]. When the employees progress and contribute at work, their need for competence is satisfied, and they show more vigor [72].

Previous studies have found that employees with vigor are more focused and engaged in their work and can experience more positive emotions [30]. Employees with positive emotions also show higher levels of satisfaction with their work [73, 74]. In addition, vigorous employees are better able to manage the stresses and challenges of their work, reduce the negative impacts of their work, and enhance their workplace well-being [35]. In light of the effects of inclusive leadership on vigor, the following hypothesis was proposed:

Hypothesis 2 Vigor mediates the positive connection between inclusive leadership and employee workplace well-being.

The moderating role of supervisor developmental feedback

In the preceding hypothesis, we concluded that inclusive leadership behaviors enhance employee vigor by satisfying the three basic psychological needs for autonomy, competence, and relationships. However, we did not discuss the possible effects of the fulfillment of other individual needs, such as needs for growth. Related studies have found that employees can exhibit greater vigor when their needs for growth are satisfied [36, 37]. Simultaneously, research related to inclusive leadership points out that more attention should be paid to leadership behaviors that reflect the uniqueness of team members. Examples include how to help team members develop their abilities and better contribute to the team [20]. Thus, we hypothesize that supervisor developmental feedback may enhance the positive correlation between inclusive leadership and employee vigor. In particular, inclusive leadership understands the strengths and preferences of employees [20] and provides more valuable feedback. When inclusive leadership provides developmental feedback to employees, the team members are better able to improve their performance on the job and grow in professional competence, at which point the needs of employees for growth are met, and cognitive liveness and emotional energy increase accordingly [36, 37]. Conversely, when inclusive leadership gives employees less developmental feedback, many employees may not know how to contribute by utilizing their unique strengths, and their professional competencies grow relatively slowly. At this point, there may be a relatively weak relationship between inclusive leadership and vigor. Therefore, we proposed the following:

Hypothesis 3 Supervisor developmental feedback moderates the relationship between inclusive leadership and employee vigor. More intensive developmental feedback results in a stronger positive relationship between inclusive leadership and employee vigor.

Hypotheses 2 and 3 can be combined to introduce a mediation of moderation: Vigor mediates the relationship between inclusive leadership and employee workplace well-being, and this process of mediation is moderated by developmental feedback by the supervisor. Thus, the following hypothesis was proposed:

Hypothesis 4 Supervisor developmental feedback moderates the mediating role of vigor in the relationship between inclusive leadership and employee workplace well-being with enhanced supervisor developmental feedback, which results in a stronger mediating role of vigor. To summarize, the proposed theoretical model of the study is shown in Fig. 1.

Methods

Participants and procedures

We used a three-stage questionnaire with a one-month interval between each collection. In particular, we cooperated with Sojump, a professional questionnaire agency in China, which helped us to contact 81 full-time work teams for the research sample. We thoroughly informed respondents of the aims and procedures of the study before the survey started and ensured anonymity. At time 1, we sent out 504 questionnaires to 81 teams to collect data on inclusive leadership, supervisor developmental feedback, and demographic variables. Although three teams did not respond, we received 471 completed questionnaires from the remaining 78 teams, and we retained this data. For time 2, a total of 471 questionnaires were distributed to employees who had previously answered the questionnaire in full to collect data on vigor. While all teams responded, due to resignations and job transfers, nine teams had fewer than three respondents. Consequently, we retained 404 questionnaires from 69 teams. At time 3, a total of 404 questionnaires had been passed out to the employees who answered the questionnaire completely at time 2 to collect data on the employee

workplace well-being. We continued to retain data from teams with more than three respondents, ultimately recovering 342 questionnaires from 65 teams. Overall, of the 504 questionnaires initially distributed, 342 valid questionnaires were returned.

In the sample, 42.7% were male and 57.3% were female. In terms of age, 40.9% were 30 years old and below; 46.5% were 31–40 years old; 10.8% were 41–50 years old, and 1.8% were 51 years old and above. A total of 83.6% of the employees had at least a bachelor's degree. In terms of tenure, 45.9% had less than 5 years of experience; 38.3% had 5–10 years; 11.1% had 10–15 years, and 4.6% had more than 15 years. A total of 4.6% of the employees had worked there for more than 15 years. In terms of sector, 26.3% were service sector, 36.3% were manufacturing, 21.1% were information technology, 9.1% were construction, 5% were public administration, and 2.3 were other. In terms of sector, services accounted for 26.3%, manufacturing 36.3%, information technology 21.1%, construction 9.1%, public administration 5%, and others 2.3%.

Measurements

Inclusive leadership

Inclusive leadership has been assessed by use of the 11-question Inclusive Leadership Scale developed by Fang et al. [75]. The scale was adapted from Carmeli et al.'s [20] scale to fit the Chinese context and was found to have good validity. In this study, we used all 11 question items to measure inclusive leadership, with example questions such as “It is fair for the leader to give job support to its employees.” Cronbach's alpha was 0.920. Because the scale was rated by employees, we pooled the ratings of the team members to the team level. The results show that ICC1=0.448; ICC2=0.817; and Rwg(mean)=0.970, which meets the relevant aggregation criteria [76]. The results of this study are summarized below.

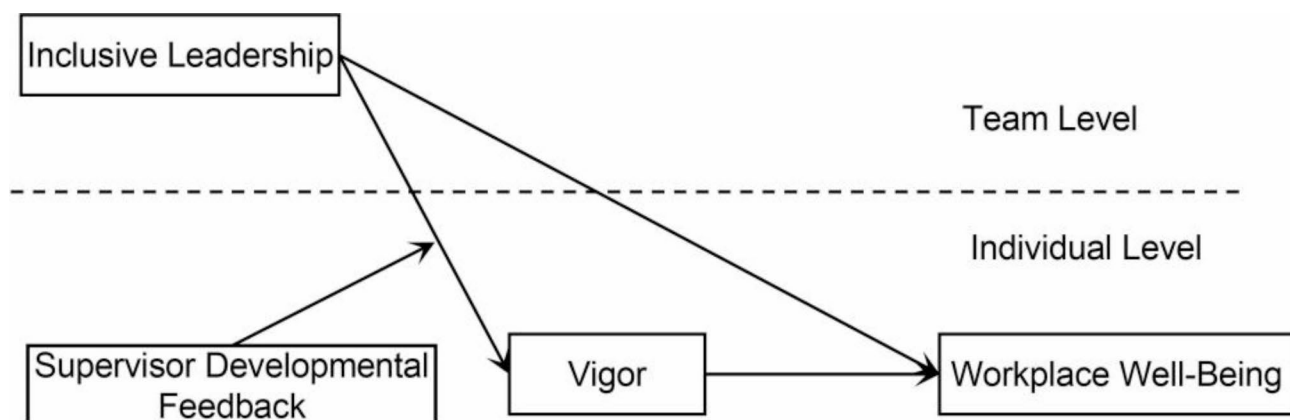


Fig. 1 Research model

Vigor

Vigor was measured using the 5-question scale of Porath et al. [77]. This scale is widely used to measure employee vigor in the workplace. In this study, we used all five items to measure employee vigor, and the example question was “I am full of energy and vitality.” Cronbach’s alpha was 0.852.

Supervisor developmental feedback

Supervisor developmental feedback ratings were assessed with a 3-item scale developed by Zhou [38]. This scale is currently the most recognized supervisor developmental feedback scale. In this study, we used all three items to measure supervisor developmental feedback. An example questions such as “My immediate supervisor often provides information that is beneficial to my work and growth” were used, and the Cronbach’s alpha was 0.783.

Workplace well-being

Workplace well-being has been assessed based on the 6-item scale of Zheng et al. [23]. The scale was developed in the Chinese context and has demonstrated a high level of validity in both Chinese and United States studies. In this study, we used all six items to measure employees’ workplace well-being, and the example question was “I am generally satisfied with the sense of fulfillment I get from my current job.” The Cronbach’s alpha for this measurement was 0.885.

Control variables

To exclude the influence of potential factors on the variables of the results, we used the employee’s gender, age, education, and organizational tenure as control variables based on prior studies [17, 67].

Analytical strategies

First, we utilized SPSS 26 for descriptive statistics and correlation analyses, and a Harman’s one-way analysis to test the common method biases (CMB). Secondly, we performed a multilevel confirmatory factor analysis (MCFA) using Mplus 7.4 to test the discriminant validity between variables and tested the CMB again using an Unmeasured Latent Method Construct (ULMC). Next,

we used Mplus 7.4 to build a multilevel structural equation model (MSEM) to examine the theoretical hypotheses. Finally, we conducted a Monte Carlo simulation with 100,000 replications using R version 4.0.4. to further examine the theoretical hypotheses.

Results

Preliminary analyses

The results of MCFA are shown in Table 1 where the four-factor model fit ($\chi^2=596.945$, $df=343$, $CFI=0.940$, $TLI=0.931$, $RMSEA=0.047$, $SRMR_{within}=0.038$, $SRMR_{between}=0.115$) was better than the rest of the alternatives, which indicated that there was good discriminant validity between the variables.

We used two methods to detect the CMB. First, the Harman one-factor method test analysis showed that the first factor explained 36.459% of the variance, which was lower than 40%. Secondly, we used the Unmeasured Latent Method Construct (ULMC) to test for the CMB. The five-factor model with the addition of the common method factor ($\chi^2=585.545$, $df=328$, $CFI=0.939$, $TLI=0.927$, $RMSEA=0.048$, $SRMR_{within}=0.037$, $SRMR_{between}=0.107$) fit indices were not significantly improved compared with those of the four-factor model [78]. Both methods indicate that there was no serious CMB in this study.

The results of descriptive statistics and correlation analysis are shown in Table 2. Inclusive leadership was significantly and positively related to employee workplace well-being ($r=0.359$, $p<0.01$) and vigor ($r=0.536$, $p<0.01$). Employee vigor was significantly and positively related to employee workplace well-being ($r=0.403$, $p<0.01$). Supervisor development feedback was significantly and positively related to employee vigor ($r=0.420$, $p<0.01$) and workplace well-being ($r=0.432$, $p<0.01$).

Hypotheses testing

The path coefficients and standard errors among the variables in the theoretical model are shown in Fig. 2. Inclusive leadership significantly and positively correlated with employee vigor ($\beta=0.402$, $p<0.001$), and employee significantly and positively correlated to vigor workplace well-being ($\beta=0.724$, $p<0.001$), suggesting that vigor

Table 1 Measurement model comparisons

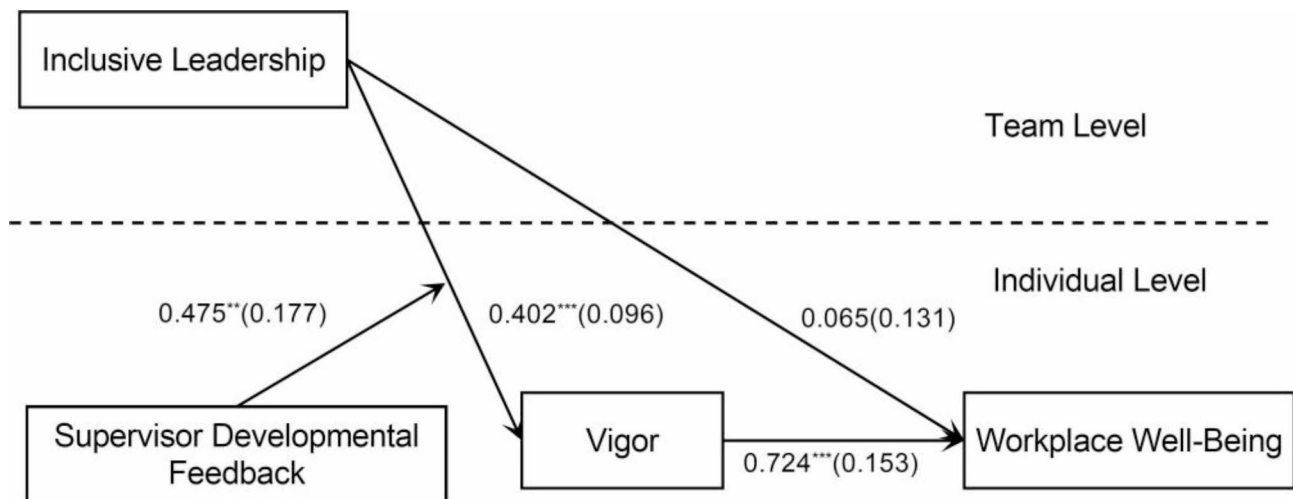
Model	χ^2	df	χ^2/df	RMSEA	CFI	TLI	SRMR _{within}	SRMR _{between}
Four-factor model (IL; VG; SDF; WWB)	596.945	343	1.740	0.047	0.940	0.931	0.038	0.115
Three-factor model (IL; VG + SDF; WWB)	906.657	348	2.605	0.069	0.867	0.851	0.096	0.121
Two-factor model (IL + WWB; VG + SDF)	919.794	350	2.628	0.069	0.864	0.848	0.096	0.215
One-factor model (IL + VG + SDF + WWB)	1595.161	352	4.532	0.102	0.704	0.674	0.138	0.216

Notes: IL=inclusive leadership; VG=vigor; SDF=supervisor developmental feedback; WWB=workplace well-being

Table 2 Descriptive statistics and correlations

Variable	M	SD	1	2	3	4	5	6	7	8	9
1. Gender	1.57	0.495	1								
2. Age	1.74	0.742	-0.128*	1							
3. Education	3.93	0.753	-0.139*	-0.234**	1						
4. Tenure	1.77	0.916	-0.086	0.736**	-0.190**	1					
5. Sector	2.37	1.235	0.001	-0.025	-0.005	0.013	1				
6. IL	3.768	0.596	0.014	0.003	0.020	0.071	0.025	1			
7. VG	3.860	0.596	-0.015	0.086	0.009	0.107*	0.017	0.536**	1		
8. SDF	3.743	0.677	-0.100	-0.071	0.015	-0.043	0.024	0.487**	0.420**	1	
9. WWB	3.757	0.699	-0.030	0.062	0.001	0.042	0.033	0.359**	0.403**	0.432**	1

Notes: * $p < 0.05$, ** $p < 0.01$. M=mean; SD=standard deviation; IL=inclusive leadership; VG=vigor; SDF=supervisor developmental feedback; WWB=workplace well-being

**Fig. 2** Path analysis

mediates the relationship between inclusive leadership and employee workplace well-being. Thus, Hypothesis 2 was confirmed. The interaction term between supervisor developmental feedback and inclusive leadership had a significant effect on employee vigor ($\beta = 0.475$, $p < 0.01$), which supported Hypothesis 3.

To clarify the direction and trend of the moderating effect of the supervisor developmental feedback, we plotted the interaction of the moderating effect of the developmental feedback at high ($M + SD$) and low ($M - SD$) levels (Fig. 3). As shown in Fig. 3, when there was little supervisor developmental feedback, inclusive leadership was positively associated with employee vigor ($\beta = 0.251$, $p < 0.05$). However, when there were large amounts of developmental feedback, the positive link between inclusive leadership and employee vigor ($\beta = 0.552$, $p < 0.001$) was enhanced, which also supported Hypothesis 3.

The results of the Monte Carlo bootstrapping analysis (100,000 times, run in R 4.0.4) are shown in Table 3. The 95% confidence interval (CI) of the total path of the influence of inclusive leadership on employee workplace well-being = [0.122, 0.574], supporting Hypothesis 1. The 95% CI of the indirect influence of inclusive leadership on

employee workplace well-being through vigor = [0.130, 0.489], further verifying Hypothesis 2. The indirect effect was significant (95% CI = [0.195, 0.649]) at high levels of supervisor developmental feedback ($M + SD$), significant (95% CI = [0.029, 0.371]) at low levels of supervisor developmental feedback ($M - SD$), and the difference in the indirect effect between the two was significant at the high and low levels of supervisor developmental feedback (95% CI = [0.055, 0.414]), indicating that the mediating effect of employee vigor is moderated by supervisor developmental feedback. Thus, this proved Hypothesis 4.

Discussion

Based on SDT, we discuss the impact of inclusive leadership on employee workplace well-being. The results indicated that inclusive leadership is positively linked to employee workplace well-being. Vigor mediated the positive relationship between inclusive leadership and employee workplace well-being. Supervisor developmental feedback moderated the relationship between inclusive leadership and work vigor, and feedback also moderated the mediating role of vigor between inclusive leadership and employee workplace well-being. Inclusive

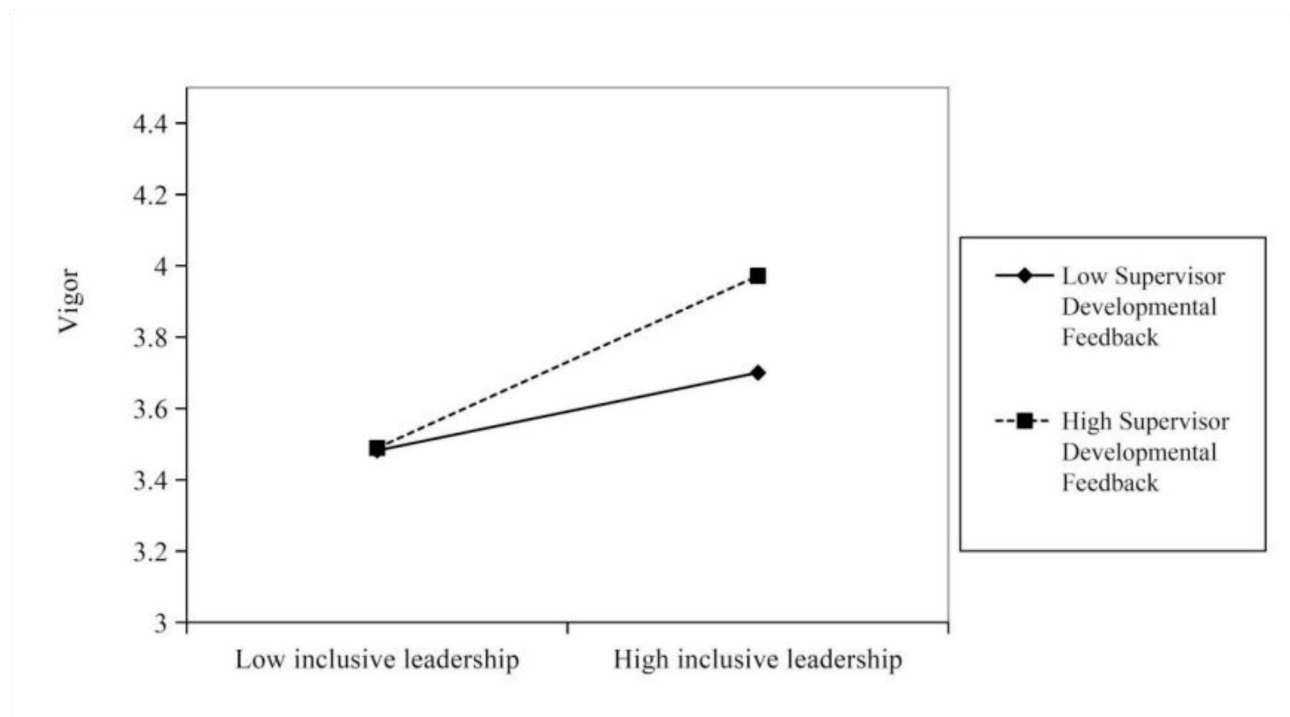


Fig. 3 Moderating effect of the supervisor developmental feedback on the relationship between inclusive leadership and employee vigor

Table 3 Results of a Monte Carlo simulation

Path	SDF	Effect size	Standard error	LL 95% CI	UL 95% CI
Mediation path	-	0.291	0.091	0.130	0.489
	High ($M + SD$)	0.400	0.115	0.195	0.649
	Low ($M - SD$)	0.182	0.086	0.029	0.371
	Difference (High - Low)	0.218	0.090	0.055	0.414
Total path	-	0.356	0.114	0.122	0.574

Notes: $N=61$ (team level). SDF=supervisor developmental feedback

leaders are concerned with the needs of employees for belonging and uniqueness. The behaviors of respect, recognition, support, and encouragement that they display at work serve to activate employee vigor by meeting the needs of employees for autonomy, competence, and relationships, and employees with high levels of vitality are apt to perceive well-being in the workplace. It is important to note that when inclusive leadership provides developmental feedback to employees, it meets their needs for growth and enhances their vigor, which, in turn, enhances their workplace well-being.

Our study makes several contributions. First, it enriches the research on the relationship between inclusive leadership and employee workplace well-being. Previous studies have focused on discussing how inclusive leadership enhances the contributions of employees to the organization [20, 79]. While recent studies have begun to consider the relationship between inclusive

leadership and employee well-being [25, 26], these studies rarely explain how inclusive leadership affects employee workplace well-being from the perspective of employee intrinsic needs. Employee workplace well-being is an all-encompassing positive feeling and emotional experience of an employee's current job and is an important manifestation of an employee's psychological well-being [23]. Examining the relationship between inclusive leadership and employee workplace well-being can help us to better understand how inclusive leadership behavior function and can also deepen our understanding of the antecedents of workplace well-being. This study suggests that inclusive leadership behaviors can satisfy the need of employees to experience a sense of belonging and uniqueness, thereby promoting employee workplace well-being. This not only enriches the research on inclusive leadership but also responds to the suggestion by Faraci et al. [1] to improve attentiveness to the mental health of employees.

Secondly, we identified the mediating role of vigor in the relationship between inclusive leadership and employee workplace well-being. Previous studies have focused on enhancing employee workplace well-being by making person-job matches or providing job resources [25, 26] with less attention paid to the inner needs of employees. By basing this study on the SDT, we found that inclusive leadership accepts employees as they are at work, treats them as member of the inner circle all the time, and encourages and helps them to contribute their

own perspectives and abilities [20]. These behaviors satisfy the three basic needs that include autonomy, competence, and relationship at work, thus, enhancing the vigor of employees at work [29]. In addition, employees with high vigor are full of positive emotions, more engaged in their work, and able to experience more workplace well-being. This not only helps us to understand how inclusive leadership affects employee workplace well-being but also enriches the research related to vigor.

Finally, this study also found that supervisor developmental feedback moderates the relationship between inclusive leadership and employee vigor, which broadens the boundary conditions under which inclusive leadership affects employee vigor and their workplace well-being. Previous research on the well-being of employees had often focused on the autonomy, competence, and relationship needs of individuals [17, 27] and less on their needs for growth. However, related studies have found that employee vigor increases after their growth needs are met [36, 37] and consequently experience a sense of well-being [35]. In light of this, we introduced supervisor developmental feedback as a moderating variable to investigate its effect on the relationship between inclusive leadership and employee vigor. It turns out that inclusive leaders who provide employees with developmental feedback are able to satisfy their needs for growth and enables the employees to show more vigor and, in turn, experience more workplace well-being as well. This finding not only clarifies the boundary conditions of the relationship between inclusive leadership and employee vigor and workplace well-being, it also responds to the suggestion of Broeck et al. [80] to focus on the higher needs of employees, reinforces the theory of self-determination, and provides a new line of thought for future research.

Practical implications

First, the finding that inclusive leadership positively affects employee workplace well-being suggests that organizations should focus on developing inclusive leaders. Currently, the competition in the workplace is becoming increasingly aggressive, and employees often face great pressure [8]. Leadership behaviors positively associated with employee well-being in the workplace [16–18]. Leaders should be more sympathetic and tolerant of their employees, recognize the achievements and performance of their subordinates at their jobs, and provide encouragement, praise, and support in time to enhance their sense of belonging and the level of well-being of their employees in the workplace. In addition, leaders should be tolerant and open to employees' views and suggestions, and should encourage and guide employees when they make mistakes instead of simply condemning them, to build employees' job satisfaction.

Secondly, the mediating role of employee vigor between inclusive leadership and employee workplace well-being suggests that organizations need to focus on employee vigor to enhance their workplace well-being. Employees with high levels of vigor have a higher level of workplace well-being [35]. Organizations should deepen their understanding of the content and efficacy of employee vigor, track and analyze the dynamics of employee vigor, and take appropriate measures to boost employee vigor. In particular, organizations can train leaders at all levels to fully understand the content and function of employee vigor and facilitate their learning about the status of employee vigor on a regular basis, guide them to promote employee vigor through the provision of education and training opportunities, encourage participation in decision-making in the workplace, provide more compensation and incentives, and create a fair organizational climate to enhance employee workplace well-being.

Third, the positive correlation between the supervisor developmental feedback that reinforces inclusive leadership and employee vigor suggests that leaders should value the role of supervisor developmental feedback. Developmental feedback from supervisors can help employees learn and grow and improve productivity [38]. In daily management, leaders not only need to implement inclusive leadership behaviors but also should provide employees with information that contains specific performance, skill development, or behavioral improvements, which can effectively enhance employee vigor and their workplace well-being.

Research shortcomings and prospects

This study is not without limitations. First, the data originated from self-reporting by the employees. Although the CMB test showed that there were no serious problems from self-reporting, data can be collected in the form of multiple party (leaders and employees) reports in the future to obtain more accurate measurements. Moreover, although we used a three-time point time-lagged questionnaire to collect data, it was not strictly longitudinal, and inferences about causality between variables were limited. In the future, longitudinal or quasi-experimental studies are recommended, which may provide a better understanding of the causal relationships among variables.

Second, our study samples were all from China, so further research is needed to determine whether the results of this study can be generalized to another cultural context. Future research could attempt to compare the findings across different cultural contexts to increase cross-cultural comprehension of the connection between inclusive leadership and employee workplace well-being.

Third, this study only discussed the moderating effect of supervisor developmental feedback on the correlation

between inclusive leadership and employee workplace well-being and did not consider the possible effects of individual traits. Since individual traits have a significant impact on behavior, future research could consider the moderating effect of individual trait variables, such as having a proactive personality, to enrich the study of boundary conditions on the influences of inclusive leadership on employee workplace well-being.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s40359-024-02029-5>.

Supplementary Material 1

Supplementary Material 2

Supplementary Material 3

Acknowledgements

We express our gratitude to all the participants for their valuable cooperation in data collection for this study.

Author contributions

Y.H. L., Y.C. F. made the conceptualization. Y.H. L. and L. H. provided the methodology, data collection and analysis. Y.H. L. wrote the main manuscript. N. C., L. H., X.D. L., and Y.H. C. modified the original draft. All authors reviewed the manuscript.

Funding

This research was supported by National Social Science Foundation of China (20BGL143), Zhejiang Soft Science Major Project(2022C15005), Social Science Research Project of Zhejiang University of Technology (SKY-ZX-20200121), Social Science Research Project of Zhejiang University of Technology (SKY-ZX-20200308) and Social Science Empowerment Project of 26 counties and Districts of Zhejiang University of Technology (SKY-ZX-20210297).

Data availability

The data are available at the Open Science Framework: <https://osf.io/y2tu8/>.

Declarations

Ethics approval and consent to participate

The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethical Committee of School of Management, Zhejiang University of Technology in September 2023 (NO. 2023092101). Informed consent was obtained from all individual participants included in the study. We noted in the introductory statement that the study was to be completed anonymously and that completing the questionnaire in its entirety and submitting it constituted voluntary participation in our survey. The study data are strictly confidential and are for research use only. The study was conducted in line with the Declaration of Helsinki and they were allowed to withdrawal at any time.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Received: 29 March 2024 / Accepted: 23 September 2024

Published online: 07 October 2024

References

- Faraci P, Bottaro R, Valenti GD, Craparo G. Psychological well-being during the second wave of COVID-19 pandemic: the mediation role of generalized anxiety. *Psychol Res Behav Manag*. 2022;15:695–709.
- Lyubomirsky S, Layous K. How do simple positive activities increase well-being? *Curr Dir Psychol Sci*. 2013;22:57–62.
- Ravina-Ripoll R, Robina-Ramírez R. Are rural accommodation employees able to aspire to transcendent happiness in their work? An exploratory model. *Humanit Soc Sci Commun*. 2023;10(1):1–13.
- Ravina-Ripoll R, Romero-Rodríguez LM, Ahumada-Tello E. Workplace happiness as a trinomial of organizational climate, academic satisfaction and organizational engagement. *Corp Gov-Int J Us S*. 2021;22(3):474–90.
- Cuesta Valiño P, Gutiérrez Rodríguez P, Contreras P. Consumer happiness: origin and development of the concept. *Anduli: Revista andaluza de ciencias Sociales*. 2023;23:83–98.
- Gutiérrez-Rodríguez P, Cuesta-Valiño P, Ravina-Ripoll R, García-Henche B. Purchase intention of fashion brand retailers: a journey through consumer engagement and happiness. *Manag Decis*. 2024;62(2):381–402.
- Ravina-Ripoll R, Marchena Domínguez J, Del Montañes MÁ. Happiness management en la época de la Industria 4.0. *Retos-Rev Cienc Adm*. 2019;9(18):189–202.
- Woolston C. Stagnating salaries present hurdles to career satisfaction. *Nature*. 2021;599(7885):519–21.
- Forest J, Mageau GA, Crevier-Braud L, Bergeron E, Dubreuil P, Lavigne GL. Harmonious passion as an explanation of the relation between signature strengths' use and well-being at work: test of an intervention program. *Hum Relat*. 2012;65(9):1233–52.
- Weiss HM. Deconstructing job satisfaction: separating evaluations, beliefs and affective experiences. *Hum Resour Manage Rev*. 2003;12(2):173–94.
- Diener E, Oishi S, Tay L. Advances in subjective well-being research. *Nat Hum Behav*. 2018;2:253–60.
- Junça Silva A, Caetano A, Rueff R. Daily work engagement is a process through which daily micro-events at work influence life satisfaction. *Int J Manpow*. 2023;44(7):1288–306.
- Hamar B, Coberley CR, Pope JE, Rula EY. Well-being improvement in a midsize employer: changes in well-being, productivity, health risk, and perceived employer support after implementation of a well-being improvement strategy. *J Occup Environ Med*. 2016;57:367–73.
- Vincent-Höper S, Muser C, Janneck M. Transformational leadership, work engagement, and occupational success. *Career Dev Int*. 2012;17:663–82.
- Ravina-Ripoll R, Balderas-Cejudo A, Núñez-Barriopedro E, Galván-Vela E. Are chefs happiness providers? Exploring the impact of organisational support, intrapreneurship and interactional justice from the perspective of happiness management. *Int J Gastron Food S*. 2023;34:100818.
- Arnold KA, Turner N, Barling J, Kelloway EK, McKee MC. Transformational leadership and psychological well-being: the mediating role of meaningful work. *J Occup Health Psychol*. 2007;123:193–203.
- Zhang Z, Ni G, Lin H, Li ZX, Zhou Z. Linking empowering leadership to work-related well-being and project citizenship behavior in the construction context: a self-determination perspective. *Int J Manag Proj Bus*. 2023;16(2):232–57.
- Ortiz-Gómez M, Molina-Sánchez H, Ariza-Montes A, de Los Ríos-Berjillos A. Servant Leadership and Authentic Leadership as Job resources for Achieving Workers' Subjective Well-Being among organizations based on values. *Psychol Res Behav Manag*. 2022;15:2621–38.
- Ruiz-Rodríguez R, Ortiz-de-Urbina-Criado M, Ravina-Ripoll R. Neuroleadership. A new way for happiness management. *Humanit Soc Sci Commun*. 2023;10(1):1–14.
- Randel AE, Galvin BM, Shore LM, Ehrhart KH, Chung BG, Dean MA, et al. Inclusive leadership: realizing positive outcomes through belongingness and being valued for uniqueness. *Hum Resour Manage Rev*. 2018;28(2):190–203.
- Chung BG, Ehrhart KH, Shore LM, Randel AE, Kedharnath U. Work Group inclusion: test of a scale and model. *Group Organ Manag*. 2019;45(1):75–102.
- Carmeli A, Reiter-Palmon R, Ziv E. Inclusive leadership and employee involvement in creative tasks in the workplace: the mediating role of psychological safety. *Creat Res J*. 2010;22:250–60.
- Zheng XM, Zhu WC, Zhao HX, Zhang C. Employee well-being in organizations: theoretical model, scale development, and cross-cultural validation. *J Organ Behav*. 2015;36(5):621–44.
- Bakker AB, Oerlemans W. Subjective well-being in organizations. In: Cameron KS, Spreitzer GM, editors. *The Oxford handbook of positive organizational scholarship*. Oxford University Press; 2011. pp. 178–87.

25. Choi SB, Tran TTH, Kang S-W. Inclusive leadership and employee well-being: the mediating role of person-job fit. *J Happiness Stud.* 2017;18:1877–901.
26. Cao M, Zhao YX, Zhao SM. How CEOs' inclusive leadership fuels employees' well-being: a three-level model. *J Hum Resour Manage.* 2022;34(11):2305–30.
27. Ryan RM, Deci EL. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am Psychol.* 2000;55(1):68–78.
28. Deci EL, Ryan RM. Facilitating optimal motivation and psychological well-being across life's domains. *Can Psychol.* 2008;49(1):14–23.
29. Deci EL, Ryan RM. Self-determination theory: a macrotheory of human motivation, development, and health. *Can Psychol.* 2008;49(3):182–5.
30. Shirom A. Vigor as a positive affect at work: conceptualizing vigor, its relations with related constructs, and its antecedents and consequences. *Rev Genl Psychol.* 2011;15(1):50–64.
31. Yang C, Nay S, Hoyle RH. Three approaches to using lengthy ordinal scales in structural equation models: parceling, latent scoring, and shortening scales. *Appl Psychol Meas.* 2010;34(2):122–42.
32. Gao RC-R, Murphy WH, Anderson RE. Transformational leadership effects on salespeople's attitudes, striving, and performance. *J Bus Res.* 2020;110:237–45.
33. Shore LM, Cleveland JN, Sanchez D. Inclusive workplaces: a review and model. *Hum Resour Manage Rev.* 2017;28(2):176–89.
34. Shore LM, Randel AE, Chung BG, Dean MA, Singh G. Inclusion and diversity in work groups: a review and model for future research. *J Manag.* 2011;37(4):1262–89.
35. Gil-Beltrán E, Meneghel I, Llorens S, Salanova M. Get vigorous with physical exercise and improve your well-being at work! *Int J Environ Res Public Health.* 2020;17(17):6384.
36. Rego A, Cunha MPE. Do the opportunities for learning and personal development lead to happiness? It depends on work-family conciliation. *J Occup Health Psychol.* 2009;14(3):334–48.
37. Franken E, Plimmer G, Malinen SK. Growth-oriented management and employee outcomes: employee resilience as a mechanism for growth. *Leadersh Org Dev J.* 2023;44(5):627–42.
38. Zhou J. When the presence of creative coworkers is related to creativity: role of supervisor close monitoring, developmental feedback, and creative personality. *J Appl Psychol.* 2003;88(3):413–22.
39. Cuesta-Valino P, Gutierrez-Rodríguez P, Sierra-Fernandez M-P, Aguirre Garcia M-B. Measuring a multidimensional green brand equity: a tool for entrepreneurship development. *Brit Food J.* 2021;123(10):3326–43.
40. Cuesta-Valiño P, Gutiérrez-Rodríguez P, Ravina Ripoll R. Guest editorial: happiness and corporate social responsibility: the role of organizational culture and consumers in a sustainable economy. *Manag Decis.* 2024;62(2):373–80.
41. Díaz-García GA, Ortiz-de-Urbina-Criado M, Ravina-Ripoll R. Happy leadership, now more than ever. *Int J Happiness Dev.* 2024;8(3):223–43.
42. Page KM, Vella-Brodick DA. The 'what', 'why' and 'how' of employee well-being: a new model. *Soc Indic Res.* 2009;90:441–58.
43. Diener E. Subjective well-being. *Psychol Bull.* 1984;95(3):542–75.
44. Diener E. Subjective well-being: the science of happiness and a proposal for a national index. *Am Psychol.* 2000;55(1):34–43.
45. Ryff CD. Beyond Ponce De Leon and life satisfaction: new directions in quest of successful ageing. *Int J Behav Dev.* 1989;12(1):35–55.
46. Ryff CD. Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *J Pers Soc Psychol.* 1989;57(6):1069–81.
47. Ryff CD, Keyes CLM. The structure of psychological well-being revisited. *J Pers Soc Psychol.* 1995;69(4):719–27.
48. Ahmed I, Rehman W-u, Ali F, Ali G, Anwar F. Predicting employee performance through organizational virtuousness: mediation by affective well-being and work engagement. *J Manag Dev.* 2018;37(6):493–502.
49. Salas-Vallina A, Alegre J, López-Cabrales Á. The challenge of increasing employees' well-being and performance: how human resource management practices and engaging leadership work together toward reaching this goal. *Hum Resour Manag.* 2021;60(3):333–47.
50. Singhal H, Rastogi R. Psychological capital and career commitment: the mediating effect of subjective well-being. *Manag Decis.* 2018;56(2):458–73.
51. Núñez-Barriopedro E, Cuesta-Valiño P, Gutiérrez-Rodríguez P, Ravina-Ripoll R. How does happiness influence the loyalty of karate athletes? A model of structural equations from the constructs: consumer satisfaction, engagement, and meaningful. *Front Psycho.* 2021;12:653034.
52. Brunetto Y, Teo ST, Shacklock K, Farr-Wharton R. Emotional intelligence, job satisfaction, well-being and engagement: explaining organisational commitment and turnover intentions in policing. *Hum Resour Manag J.* 2012;22(4):428–41.
53. Lim S, Cortina LM, Magley VJ. Personal and workgroup incivility: impact on work and health outcomes. *J Appl Psychol.* 2008;93(1):95–107.
54. Read CY, Pino Betancourt DM, Morrison C. Social Change: a Framework for Inclusive Leadership Development in nursing education. *J Nurs Educ.* 2016;55:3:164–7.
55. Nembhard IM, Edmondson AC. Making it safe: the effects of leader inclusiveness and professional status on psychological safety and improvement efforts in health care teams. *J Organ Behav.* 2006;27:941–66.
56. Hollander E. Inclusive leadership: the essential leader-follower relationship. Routledge/Taylor & Francis Group; 2009.
57. Ye Q, Wang D, Li X. Promoting employees' learning from errors by inclusive leadership: do positive mood and gender matter? *Balt J Manag.* 2018;13:125–42.
58. Oh J, Kim D, Kim D. The impact of inclusive leadership and autocratic leadership on employees' job satisfaction and commitment in sport organizations: the mediating role of organizational trust and the moderating role of sport involvement. *Sustainability.* 2023;15(4):3367.
59. Bastida M, Neira I, Lacalle-Calderon M. Employee's subjective-well-being and job discretion: Designing gendered happy jobs. *Eur Res Manag Bus Econ.* 2022;28(2):100189.
60. Csordás G, Matuszka B, Sallay V, Martos T. Assessing meaningful work among Hungarian employees: testing psychometric properties of work and meaning inventory in employee subgroups. *BMC Psychol.* 2022;10(1):56.
61. Cuesta-Valiño P, Loranca-Valle C, Núñez-Barriopedro E, Penelas-Leguía A. Model based on service quality, satisfaction and trust, the antecedents of federated athletes' happiness and loyalty. *J Manag Dev.* 2023;42(6):501–13.
62. Luu TT. The well-being among hospitality employees with disabilities: the role of disability inclusive benevolent leadership. *Int J Hosp Manag.* 2019;80:25–35.
63. Abdi F, Jahangiri M, Kamalinia M, Cousins R, Mokarami H. Developing a model for predicting safety performance of nurses based on psychosocial safety climate and role of job demands and resources, job satisfaction, and emotional exhaustion as mediators. *BMC Psychol.* 2023;11(1):187.
64. Little LM, Nelson DL, Wallace JC, Johnson PD. Integrating attachment style, vigor at work, and extra-role performance. *J Organ Behav.* 2011;32(3):464–84.
65. Sabharwal M. Is diversity management sufficient? Organizational inclusion to further performance. *Public Pers Adm.* 2014;43:197–217.
66. Tyler TR, Degoe P, Smith HJ. Understanding why the justice of group procedures matters: a test of the psychological dynamics of the group-value model. *J Pers Soc Psychol.* 1996;70:913–30.
67. Ellis AM, Bauer TN, Erdogan B, Truxillo DM. Daily perceptions of relationship quality with leaders: implications for follower well-being. *Work Stress.* 2019;33:119–36.
68. Spreitzer GM, Bamberger PA, Dutton JE, Eylon D, Kirkman BL, Rosen B. In: Cooper C, Barling J, editors. Taking stock: a review of more than twenty years of research on empowerment at work. Thousand Oaks, CA: Sage; 2008.
69. Mor-Barak ME, Cherin DA. A Tool to Expand Organizational understanding of workforce diversity. *Admin Soc Work.* 1998;22(1):47–64.
70. Mor Barak ME, Daya P. In: Deane BR, editor. Fostering inclusion from the inside out to create an inclusive workplace. Bernardo M. Ferdman; 2014. pp. 391–412.
71. Winters MF. From diversity to inclusion: an inclusion equation. In: Diversity at work: the practice of inclusion. San Francisco: John Wiley & Sons, Inc; 2013. p. 205–28.
72. Nerstad CGL, Caniëls MCJ, Roberts GC, Richardsen AM. Perceived motivational climates and employee energy: the mediating role of basic psychological needs. *Front Psycho.* 2020;11:1509.
73. Judge TA, Ilies R. Affect and job satisfaction: a study of their relationship at work and at home. *J Appl Psychol.* 2004;89:4661–73.
74. Todorova G, Bear JB, Weingart LR. Can conflict be energizing? A study of task conflict, positive emotions, and job satisfaction. *J Appl Psychol.* 2014;99:351–67.
75. Fang Y, Chen J-y, Wang M, Chen C-Y. The impact of inclusive leadership on employees' innovative behaviors: the mediation of psychological capital. *Front Psycho.* 2019;10:1803.
76. Bliese PD. In: Klein KJ, Kozlowski SWJ, editors. Within-group agreement, non-independence, and reliability: implications for data aggregation and analysis. Foundations, extensions, and new directions: Jossey-Bass/Wiley; 2000.
77. Porath C, Spreitzer G, Gibson C, Garnett FG. Thriving at work: toward its measurement, construct validation, and theoretical refinement. *J Organ Behav.* 2012;33(2):250–75.

78. Chen FF. Sensitivity of goodness of fit indexes to lack of measurement invariance. *Struct Equ Model*. 2007;14(3):464–504.
79. Li YX, Shao YD, Wang M, Fang YR, Gong YP, Chang L. From inclusive climate to organizational innovation: examining internal and external enablers for knowledge management capacity. *J Appl Psychol*. 2022;7(12):2285–305.
80. Broeck AVd, Ferris DL, Chang C-H, Rosen CC. A review of self-determination theory's basic psychological needs at work. *J Manag*. 2016;42(5):1195–229.

Publisher's note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.