The influence of transformational leadership on work engagement in the context of learning organization mediated by employees' motivation

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Abstract

Purpose – This study aims to focus on determining the influence of transformational leadership on work engagement as mediated by employee motivation.

Design/methodology/approach – The research findings are based on a quantitative analysis of a survey of 443 full-time employees working in the Guangdong–Hong Kong–Macao Great Bay Area (GBA) of China.

Findings – The positive perception of transformational leadership from employees enables them to accomplish tasks beyond expectations. With the help of structural equation modeling, this study reveals that the influence path of perceptions of transformational leadership on work engagement is partially mediated through employee motivation.

Research limitations/implications – Employee motivation is not the only mediating factor, other factors mediate the relationship between transformational leadership and work engagement. The problem of sample size and sampling collection, the survey only focuses on samples working in the GBA.

Originality/value – The analysis and results based on data from mainland China, especially the GBA, expands the boundaries of the role of transformational leaders in learning organization and provides additional data support and sources for future relevant research. At the same time, the study of the mediation models between leadership and work engagement also hints more potential possible mediation factors.

Keywords Transformational leadership, Work engagement, Employee motivation, Organizational learning (OL), Self-determination theory, Mediating effect

Paper type Research paper

1. Introduction

Through the overarching lens of learning organization (LO) framework, we examined the influence of transformational leadership (TL) on work engagement (WE) as mediated by motivation.

The LO framework (Senge, 1990) describes an integrative approach in organizations that build on a shared vision for long-term commitment by its people who are self-motivated and want to continue learning and contribute toward learning by their being opened to new

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modes of thinking, with and through team members. It has been noted by Appelbaum and Goransson (1997, p. 127) that "this framework argues that organizational learning (OL) must be seen to encompass both aspects of unending cognitive and social construction of learning." Following from the LO framework, our study took a perspective of self-motivated employees (Tremblay, Blanchard, Taylor, Pelletier, & Villeneuve, 2009) united with the vision of TL (Avolio, 2005) as an important enabler toward WE (Schaufeli, Martínez, Pinto, Salanova, & Bakker, 2002) in organizations.

The LO is nurtured by a collaborative environment facilitating the sharing of learned knowledge to address organizational challenges while constantly encouraging innovations (Rana, Ardichvili, & Polesello, 2016), which are influenced by leadership styles (Rupcic, 2020). This study investigated how employees' perceptions of TL may trigger employees' self-motivation toward WE (Li & Mei, 2013), of which the sharing of knowledge amongst organizational members is one of its manifestations (Islam, 2019). In a study done on leadership styles in China, Xie (2020) noted that TL was a strong predictor in LOs, whereas servant leadership was not significant. This supports similar findings on the role of TL on LOs by Amitay, Popper and Lipshitz (2005) and Swift and Hwang (2008).

TL is a dominant paradigm in organizational management research (Judge & Piccolo, 2004), and the mediating examination is also commonly used in the research of organizational behavior. Kovjanic, Schuh, and Jonas (2013) observed that effective leadership is not only the responsibility of the leader but also through the contributing behavior of employees. Previous studies have paid too much attention to the role of the leadership process on organizational performance while ignoring, in some respects, the attributes of the employees themselves.

The employee's perception of the leader will affect the employee's response to the leader's behavior, especially in terms of more work and self-motivation. Nevertheless, western experience does not necessarily apply to China's situation. Previous research in this article explores employee self-motivation as an important mechanism for cultivating employees' WE. From six different dimensions of motivation sourced from Chinese local data [Great Bay Area (GBA)], this study can more clearly clarify how employees' perceptions of TL trigger employees' self-motivation and further influence employees' WE for OL.

2. Literature review

2.1 Transformational leadership (TL)

2.1.1 Concept of transformational leadership. TL is a "leadership style that motivates employees or followers to change beliefs, values, abilities, and motivations," which can improve their performance, transcend self-interest for the benefit of the organization (Avolio, 2005) and encourage employees to establish self-motivation awareness (Bass, 1985). Specifically, first, TL helps to link the collective goals of the team or organization with the goals of everyone (i.e. it makes it possible for individuals to pursue these goals autonomously). Second, TL encourages individuals to develop new ways to effectively complete tasks and provide them with corresponding autonomy. Furthermore, according to Avolio (2005), TL expands personal responsibilities and encourages individuals to take on greater challenges in the workplace. Meanwhile, this leading style also helps employees prepare to respond to higher expectations and accept more difficult challenges). In short, transformational leaders influence employees' self-motivation by influencing employees' transgressions and performance.

2.1.2 Transformational leadership and learning organization (LO)/organizational learning (OL). A close relationship between TL and LO has emerged in various studies. TL has a significant positive impact on OL (Molodchik & Jardon, 2015; Imran, Ilyas, Aslam, & Ubaid-Ur-Rahman, 2016). In past studies, there have also been many attempts to address their relationship and the important role of TL for LO from different perspectives. The more managers are perceived as transformational leaders, the more intensive the OL will be. Both leadership and organizational culture can positively and significantly affect the operation of LO (Chang & Lee, 2007). Leadership tasks performed by new service development executives significantly affect the development of OL capability, which in turn significantly affects organizational performance processes, and multi-lateral flow of information across the organization in developing the routines (Limpibunterng & Johri, 2009).

2.2 Employee motivation and the self-determination theory (SDT)

2.2.1 The six landmarks of self-determination theory. The definition of work motivation raised by Griffin, Wayne and Pinder (1985) was described as a set of energetic forces that originates both within as well as beyond an individual's being, to initiate work-related behavior. During the decade of development in the study, after Deci and Ryan (1985) and Deci (2010) and contributing the framework of self-determination theory (SDT), a series of scholars introduced empirical studies on the field of SDT-based work. There are five landmarks inside the extrinsic motivation, ranking the degree from lowest to highest: amotivation, external regulation, introjected regulation, identified regulation and integrated regulation. Amotivation means that individuals act passively or have no intention to act. The statement of external regulation represents acting to obtain rewards only. Introjected regulation allows individuals to follow values of self-worth (e.g. conscientiousness, self-esteem). Integrated regulation identifies the values of activities within self-awareness, representing the complete internalization of extrinsic motivation.

Regardless of the categorized self-determined motivation (identification, integration and intrinsic motivation) or non-self-determined motivation (introjection, externalization and amotivation) Therefore, the premise of SDT is that motivation is internally driven, and that the individual is self-determined about being motivated (Tremblay, Blanchard, Taylor, Pelletier, & Villeneuve, 2009).

2.2.2 The self-determination theory and learning organization/organizational learning culture (LO/OLC). In terms of the relationship between employee motivation (EM) and LO, many more-cited studies have shown their relevance. Among the valuable research directions, and through a look at the SDT, discusses methods to encourage learning within business organizations, thanks to the flattening organizational structures (Liu & Fu, 2007). The researchers Joo and Lim (2009) investigated the effect of OLC on employees' intrinsic motivation and organizational commitment and resulted that the OL culture accounted partially of the variances in intrinsic motivation in positive way, though not many supportive papers are found between extrinsic motivation and LO/OLC, we can treat this direction as a conception to help expanding the research.

2.3 Work engagement

Since the emerging study about WE 20 years ago, many researchers have conceptualized it, an often-cited definition declaims that WE is persistence and pervasive affective-cognitive state of being characterized by vigor (i.e. high energy and working resilience), dedication (i.e. sense of pride and challenge) and absorption (i.e. work concentration and engrossment) (Schaufeli *et al.*, 2002). Many related theories have also supported the appearance of WE,

such as SDT (Meyer & Gagnè, 2008) and the conservation of resources theory (Halbesleben, 2011).

Schaufeli, Shimazu, Hakanen, Salanova and De Witte (2019) have developed the cross-cultural scale of measurement, namely, the Utrecht Working Engagement Scale (UWES), which includes the examination through countries, including the version of China (simplified Chinese). Furthermore, it was proven to have a high quality of reliability and validity across countries. Their outcomes have benefited many researchers.

In the angle of WE and OL/OLC, wide studies have been done to verify the positive relevant of these two elements covering sectors and industries, and becoming one of the most popular topics companying with the growing importance of OL in academia. It encourages new studies in recent years, like Hanaysha (2016) tested and proved the effects of WE and OL in higher education sector; and Sari and Palupiningdyah (2020) worked on the effect of WE and OL on the innovative behavior. In this article, the authors try to verify the effect of TL on WE to enrich the context of LO.

3. Hypothesis development

3.1 Perception of transformational leadership and work engagement

In previous research, most scholars believe that TL behavior is positively correlated with WE (Tims, Bakker, & Xanthopoulou, 2011; Ghadi, Fernando, & Caputi, 2013); nevertheless, the old research on the relationship between TL and WE started from the perspective of the leader. From the evaluation of employees, this article describes WE as vitality, dedication and focus. In addition, the characteristic of concentration is to work intensively. In this regard, Kahn (1990) has pointed out that three psychological conditions are required to activate WE: meaningfulness, safety, availability and their individual and contextual sources. Psychological meaningfulness is a perception of the return on investment of hard work, while psychological safety is the ability to present oneself and one's behavior without being inhibited or feared because of negative effects on self-image or career. In addition, psychological availability at work refers to being physically and emotionally prepared to engage in work at a specific moment regardless of any disturbances. Additionally, considering that TL is enlightening and visionary, their employees will be more likely to work harder to achieve the vision proposed by these leaders while experiencing a higher level of WE (Zhao & Chen, 2013). Accordingly, it is hypothesized that:

H1. Perception of TL positively predicts WE.

3.2 Perception of transformational leadership and employee motivation

TL influences employees on their values, while employees who perceive the behaviors of transformational leaders will also be intrinsically motivated because they will experience changes in self-identification, beliefs and values to stay aligned with the leader. In addition, TL provides individuals with a goal that goes beyond short-term orientation and helps them focus on the internal needs of higher levels (Judge & Piccolo, 2004). Therefore, this article predicts that employees who perceive a relatively higher level of TL behavior will experience a higher level of motivational autonomy at work, and they will also be driven by intrinsic motivation. In addition, TL attracts employees' ideals in common and moral values, allowing them to identify with leaders' needs (Judge & Piccolo, 2004). Accordingly, with what the theory of self-determination has illustrated, this research argues that TL is more likely to stimulate employees' motivation as sourced by self-determined motivation rather than non-self-determined motivation; hence, it is hypothesized that:

H2a. The perception of TL positively predicts intrinsic motivation.

H2b. The perception of TL positively predicts integrated regulation.

H2c. The perception of TL positively predicts identified regulation.

H2d. The perception of TL negatively predicts introjected regulation.

H2e. The perception of TL negatively predicts external regulation.

H2f. The perception of TL negatively predicts amotivation.

3.3 Employee motivation and work engagement

3.3.1 Self-determined motivation and work engagement. Some scholars argue that followers are complementary to leadership because a follower can provide strength to the leader by supporting the leader and by contributing to the organization in areas that complement the leader's position (Suda, 2013). This is in line with Kelley (1988), who claims that followers influence leaders to improve and achieve team and organizational goals. Meanwhile, when highly involuntary individuals feel high demand for work, they experience more negative feedback. Kahn (1990) believes that intrinsic, integrated and identified motivation are the key driving forces of psychological meaningfulness at work. This is because individuals with work autonomy will also possess experienced job ownership, and their behavior is not controlled by others (Kiggundu, 1980), thus promoting the realization of meaningfulness (Asmaluddin & Sintaasih, 2021). The above situation shows that employees with intrinsic motivation, integrated regulation and identified regulation may have a greater tendency to engage in work. Accordingly, it is hypothesized that:

H3a. Intrinsic motivation positively predicts WE.

H3b. Integrated regulation positively predicts WE.

H3c. Identified regulation positively predicts WE.

3.3.2 Non-self-determined motivation and work engagement. This article speculates that employees whose inspirational motivations are controlled by non-self-determined regulations experience a lower degree of WE and have lower satisfaction with work. In addition, individuals who experience occasionally positive or negative reinforcement may feel pressure and conflict due to the need to behave in a certain way to maintain themselves, which may cause employee stress and burnout (Lepine, Podsakoff, & Lepine, 2005). Accordingly, it is hypothesized that:

H3d. Introjected regulation may negatively predict WE.

H3e. External regulation may negatively predict WE.

H3f. Amotivation negatively predicts WE.

3.4 Mediating effect of employee motivation

In the related SDT research, scholars emphasized the importance of studying different forms of motivation because they have different connections with emotions, attitudes and behavioral outcomes. There is evidence that the motivation of identified regulation is related to employee performance (Fernet, 2013). This article believes that an individual's decision-making elements are related to WE. Ryan and Deci (2000) support that SDT maintains that

an understanding of human motivation requires a consideration of innate psychological needs for competence, autonomy and relatedness. In this process, employee perception is a higher level of cognition. Therefore, the identification of employees' values and leaders' values can predict how much employees invest in their work, namely, EM can also explain their WE. Accordingly, it is hypothesized that:

H4. EM mediates the association between the perception of TL and WE.

We, therefore, propose hypothetical models, as shown in *Figure 1* right after this paragraph, containing the four hypotheses from *H1* to *H4* and their cause and effect.

4. Methodology

4.1 Sample and data collection

This article uses wjx.cn [1], an internet questionnaire platform, to collect survey data on employees working in the Guangdong–Hong Kong–Macao GBA and receives a total of 520 respondents. On account of the limitation of the internet survey, everyone who knows the questionnaire's link can respond to the survey because for accurate analysis, the author selects only adult and full-time employees who work in the GBA. In the questionnaire screening, there were several restrictions or filtering questions.

Moreover, as the research in this article mainly focuses on employees' perception of TL rather than the TL behavior itself, the interviewees selected in this article evaluate the scale of their leaders' type to measure their sense of TL. Therefore, in the screening survey, only after the interviewees scored their leaders' transformational behaviors would the interviewees continue to respond to EM and work commitment after they pass the screening. Additionally, to guarantee the quality of the response, only those participants with Z scores of −2 and +2 were kept. After the filter, 443 respondents were judged usable in this study, and the valid rate was 85.19%.

4.2 Measurement

All questionnaires are available in both English and Chinese to assist respondents in their understanding of the content. The Chinese versions were taken from the questionnaire

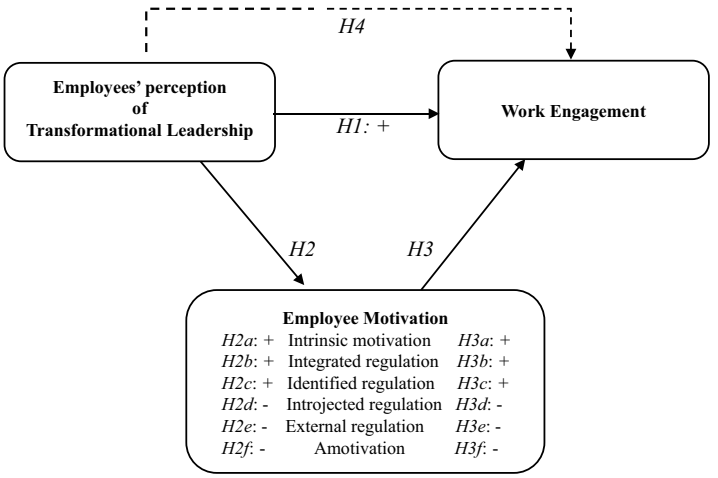


Figure 1.
Hypothesized model showing the direct, indirect and mediation relationships

developers' Chinese versions that had been validated for pilot validity. For TL measurement, this article used the global TL (GTL) scale to measure employees' perception of TL (Carless, Wearing, & Mann, 2000). The seven question indicators in the scale include "My leader communicates a clear and positive vision of the future," etc. In terms of EM measurement, this article uses the 18-item WEIMS scale to measure the level of EM (Tremblay *et al.*, 2009), such as "Because this is the type of work, I chose to do to attain a certain lifestyle." In terms of WE measurement, this article uses the 17 items of the UWES scale, such as "At my work, I feel bursting with energy." All measurements use the seven-point Likert scale to score "1" means "strongly disagree," "4" means "neutral" and "7" means "strongly agree."

Furthermore, to eliminate common model errors, this paper also collects employee social-demographic indicators as the control variables of the model, including the employee's gender, age, working years and industries.

4.3 Descriptive statistics

Inside all the valid samples, as illustrated in Table 1, *demographic profile of respondents*, there were 202 (45.60%) males and 241 females (54.40%) who showed balanced responses,

Table 1. Demographic profile of respondents $n = 443$

Item	Category	Frequency	(%)
Gender	Male	202	45.60
	Female	241	54.40
Age	18–30	42	9.48
	31–50	126	64.59
	51–60	60	13.54
	61 or above	46	10.38
Academic background	High school or lower	159	35.89
	Undergraduate	246	55.53
	Masters or above	38	8.58
Working location	Guangdong Province	223	50.34
	Hong Kong SAR	106	23.93
	Macau SAR	104	23.48
Working years	1 year or less	19	4.29
	1–5 years	73	16.48
	6–10 years	118	26.64
	11–20years	180	40.63
	21 years or above	53	11.96
Duration of working with a leader	1 year or less	25	5.64
	1–5 years	126	28.44
	6–10 years	142	32.05
	11–20years	80	18.06
	21 years or above	53	11.96
	Work without a leader	17	3.84
Industry	Agriculture	61	13.77
	Construction	83	18.74
	Education	39	8.80
	Industrial manufacturing	46	10.38
	Innovation, science and technology	28	6.32
	Mining	61	13.77
	Wholesale/retail	64	14.45
	Service industry	35	7.90
	Transport and logistics	26	5.87

whose ages were centralized among 31–50 years old (> 60%) and combined with the educational background of the participants, the major group, which was larger than 60%, had more education experience. The original industry of interviewees shows that there is no occupational preference of the respondents. Among the interviewees, the maximum number of years working as a follower was between six and ten years (32.05%), and more employees had more than ten years of work experience (40.63%) and the respondents were broadly distributed across all sectors.

5. The procedure of data analysis and findings

5.1 Reliability and validity analysis

5.1.1 Confirmatory factor analysis (CFA) of transformational leadership. In the research of TL, this article uses AMOS 26.0 to perform a confirmatory factor analysis (CFA) on the model. After times of fitting operations, the six questions out of seven of the GTL scales are finally retained, deleting the item "My leader instills pride and respect in others and inspires me by being highly competent." CFA of TL is shown in Table 2 that, from the TL model, it is easily observed that CR = 0.95 (> 0.7) and AVE = 0.74 (>0.5). After the modification, by deleting the item of lower factor loadings (<0.7), a better model fitting index result was obtained, where the model fitness index analysis implied that the goodness-of-fit index (GFI) = 0.92, root mean square error of approximation (RMSEA) = 0.16, the Tucker–Lewis index (TLI) = 0.93 and comparative fit index (CFI) = 0.96.

5.1.2 Confirmatory factor analysis (CFA) of employee motivation. After the fit analysis of the motivation model of six dimensions, in Table 3, it concludes the outcomes from the treatment of dimension reduction, an ideal model fit index result was obtained and all the factor loadings were higher than 0.90, with the value of CR = 0.95 (>0.7) and the value of AVE = 0.87 (>0.5). The model fit indices are specifically χ^2/df = 13.04, GFI = 0.92, TLI = 0.95, CFI = 0.97, RMSEA = 0.17.

5.1.3 Confirmatory factor analysis of work engagement. After the fitting calculation and removing several items with higher covariances, 14 items out of 17 of the scale are eventually retained, deleting items such as "I find the work that I do full of meaning and purpose." In the WE scale of the UWES (Schaufeli & Bakker, 2004), almost all the items loading factors are higher than 0.8, except for *Q1*, whose factor loading equals 0.73. The CR

Table 2.
CFA of TL and model fit indices of TL; n = 443

Composite reliability (CR)		*0.95*	
Average variance extracted (AVE)		*0.74*	
χ2	107.56	*GFI*	0.92
p-value	< 0.001	*RMSEA*	0.16
Degree of freedom	9	*TLI*	0.93
χ2/df	11.95	*CFI*	0.96

Table 3.
CFA of EM – six dimensions

CR						*0.95*	
AVE						*0.87*	
χ2	*Df*	*χ2/df*	*GFI*	*TLI*	*CFI*	*RMSEA*	*p*
117.36	9	13.04	0.92	0.95	0.97	0.17	< 0.001

Notes: IM = intrinsic motivation; INTEG = integrated regulation; IDEN = identified regulation; INTRO = introjected regulation; ER = external regulation; AMO = amotivation

value equals 0.97, and the AVE value equals 0.72, which fit with the statistical requirements. The CFA calculation result was shown in Table 4, and gives the instructions that nearly fits the academic requirement, to be specific, χ^2/df =11.23, GFI = 0.79, CFI = 0.89, TLI = 0.87, RMSEA = 0.15, which means the model fitting has demonstrated acceptable outcomes.

5.1.4 Correlation and reliability analysis of the variables. Table 5 displays the reliability and correlation relationships of the variables used in this study. In this paper, the coefficient is expected to be as small as possible because a smaller coefficient means a lower correlation among variables, avoiding the possibility of higher collinearity. Among the variables of X, Y and M, the correlation values equal from 0.33 to 0.41, which reveal acceptable independence; moreover, the high coefficient among different dimensions of motivation is also explainable because of the continuum of nature.

Among all the items, as the study of this article will examine the various dimensions of EM, a six-factor method is used to score the reliability of EM. The output includes the items of TL, WE, EM, intrinsic motivation, integrated regulation, identified regulation, introjected regulation, external regulation and amotivation, whose Cronbach's α ranges from 0.82 to 0.97.

In addition, this paper uses the bootstrapping method to test the regression model and performs regression analysis through 5,000 bootstrap samples, avoiding the indirect effects related to problems of asymmetric and other non-normal sampling distributions.

5.2 Development of structural equation modeling (SEM)

Based on previous work, the two-step modeling is partially realized, and within this step, the authors tested indicators of the factor loading, reliability and goodness-of-fit and filtered potential errors for each scale of the model. In the second step, we can focus on the overall view of the model with the help of structural equation modeling (SEM). And, SEM analysis shows that the fit indices of comprehensive model (as shown in Table 6) meet the statistical

CR						0.97	
AVE						*0.72*	
χ2	*df*	*χ2/df*	*GFI*	*TLI*	*CFI*	*RMSEA*	*p*
870.05	77.00	11.23	0.79	0.87	0.89	0.15	< 0.001

Table 4. CFA of WE

item	1	2	3	4	5	6	7	8	9
TL	*0.95*								
WE	0.33**	*0.97*							
EM	0.41**	0.39**	*0.89*						
IM	0.39**	0.37**	0.94**	*0.82*					
INTEG	0.39**	0.36**	0.95**	0.87**	*0.90*				
IDEN	0.39**	0.37**	0.93**	0.88**	0.85**	*0.86*			
INTRO	0.40**	0.39**	0.95**	0.87**	0.90**	0.89**	*0.87*		
ER	0.38**	0.34**	0.94**	0.89**	0.86**	0.84**	0.854**	*0.88*	
AMO	−0.39**	−0.38**	−0.94**	−0.85**	−0.89**	−0.82**	−0.88**	−0.87**	*0.86*

Notes: 1. **. $P < 0.01$; 2. Extraction method: principal component analysis; 3. TL = transformational leadership, WE = work engagement, EM = employee motivation, IM = intrinsic motivation, INTEG = integrated regulation, IDEN = identified regulation, INTRO = introjected regulation, ER = external regulation, AMO = amotivation

Table 5. Correlations, reliability (Cronbach's α) of internal consistency; $n = 443$

requirements. The key indicators are as follows: $P < 0.001$, χ^2/df = 4045, GFI = 0.82, TLI = 0.92, CFI = 0.92, RMSEA = 0.09.

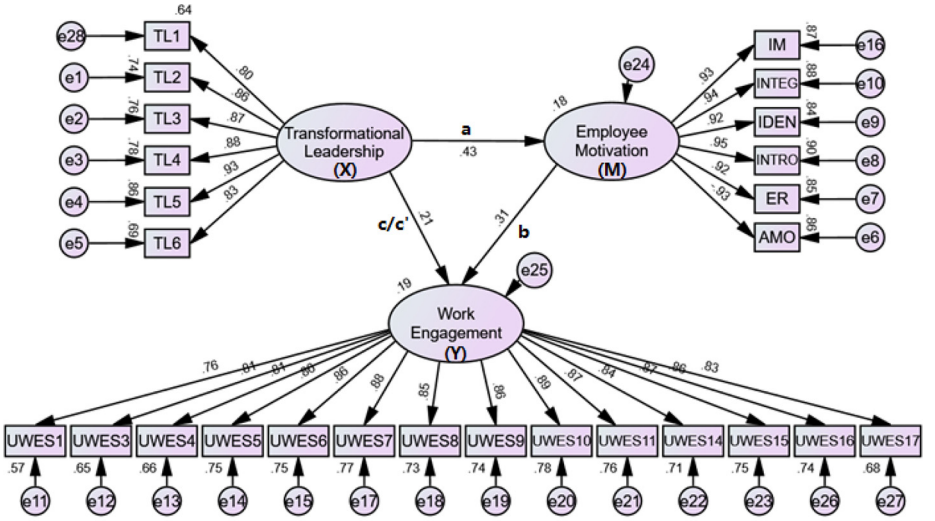
Figure 2 illustrates the comprehensive modified model, and it explains the specific outcomes of this one-factor mediating model. In a simple mediation model, the independent variable (X) affects a dependent variable (Y) through a mediator (M). The total effect of X on Y represents the coefficient (c), while the effect of X on M is measured by (a), and M on Y is measured by (b). When the model is tested with all the elements (X, Y and M), the direct effect of X on Y is defined as (c'). If the indirect effect between Y and X is defined as (a*b), it equals the difference of (c) and (c') (a*b = c-c'). Inferring from logic, a partially mediating model can be proved when a*b < c.

5.3 Empirical analysis

5.3.1 Examination and outcomes of H1. H1 is supported. In research of *H1*, it is proposed that employees' perception of TL positively predicts WE. In the bootstrapping model running on IBM SPSS 26.0 and the extension of PROCESS version 3.4.1 (2020), the relationship between employees'

Table 6.
Model fit indices of comprehensive model; $n = 443$

$\chi 2$	p	df	$\chi 2$/df	GFI	TLI	CFI	RMSEA
1,331.65	<0.001	296.00	4.45	0.82	0.92	0.92	0.09



Notes: $n = 443$, bootstrapping sample = 5,000, percentile and bias-corrected confidence intervals = 95%, e1–e23, e26–e28 = error terms of indicators, e24–e25 = residuals of latent variables, TL1 = remaining six items of perception of TL, the series items of WE = remaining 14 items of WE scale, IM = intrinsic motivation, INTEG = integrated regulation, IDEN= identified regulation, INTRO = introjected regulation, ER= external regulation, AMO = amotivation

Figure 2.
Mediating model of TL and WE with EM as the mediator

perception of TL and WE passed the significance level of 0.001 (β = 0.28, SE = 0.05, t = 5.44, $p < 0.001$), and the results support *H1*, as shown in Table 7. Additionally, only one of the control variables, working location, is marginally significant, which explains almost none of the control variables (gender, age, education, etc.) in this regression analysis can explain the dependent variable of WE in statistical significance; hence, the demographic profile of employees has little explanatory power in whether they are engaged in work or not.

5.3.2 Examination and outcomes of H2. We will next explain the results of the regression analysis from *H2a* to *H2f*, summarized in Table 8, specifically as follows:

H2a, H2b, and H2c are supported. *H2a* to *H2c* propose that employees' perception of TL is positively correlated with employees' self-determined motivation, which includes the three dimensions of intrinsic motivation (IM), integrated regulation (INTEG) and identified regulation (IDEN). When operating with the bootstrapping model, the relationship between the perception of TL and employees' self-determined motivation manifests a significance level of 0.001 (IM: β = 0.39, SE = 0.22, t = 9.01, $p < 0.001$; INTEG: β = 0.42, SE = 0.05, t = 8.91, $p < 0.001$; IDEN: β = 0.39, SE = 0.04, t = 8.79, $p < 0.001$), and it can be concluded that *H2a, H2b* and *H2c* are statistically significant.

H2d and H2e are rejected. *H2d* and *H2e* put forward that the perception of TL is negatively correlated with two dimensions of employees' non-self-determined motivation, including introjected regulation (INTRO) and external regulation (ER); however, the results show the opposite result, which is not in line with the initial hypothesis, i.e. the higher the employees' perception toward TL, the higher the level of an employee will be motivated by introjected and external regulation (INTRO: β = 0.40, SE = 0.04, t = 9.19, $p < 0.001$; ER: β = 0.39, SE = 0.05, t = 8.57, $p < 0.001$).

H2f is supported. Furthermore, in the dimension of amotivation, the significant coefficient and indices are observed as (β= - 0.37, SE = 0.04, t= - 8.97; $p < 0.001$), which illustrates that the outcomes are in line with the original assumption, i.e. the perception of TL is significantly and negatively related to the amotivation of employees.

5.3.3 Examination and outcomes of H3. As for the results of the regression analysis from *H3a* to *H3f*, our interpretation is as follows and summarized in Table 9 for detailed data.

H3a, H3b, H3c and H3f are supported; nevertheless, H3d and H3e are rejected. *H3a* to *H3c* propose that EM (self-determined dimension) can positively predict WE. In conclusion, it was found that the higher the employee's SDT, the higher the level of WE (IM: β = 0.29,

Table 7. Influence of TL on engagement combined with control variables; n = 443

Dependent variable: WE			
	B	SE	T
constant	4.25***	0.55	7.74
TL	0.28***	0.05	5.44
Gender	−0.08	0.14	−0.56
Age	0.18	0.19	0.96
Education	−0.14	0.13	−1.08
Work location	0.23*	0.10	2.31
Working years	−0.26	0.17	−1.55
Years working with a leader	−0.24	0.21	−1.16
R	R^2	F	p
0.39	0.15	10.49	<0.001

Notes: ***Pearson correlation is significant at the 0.001 level; *Pearson correlation is significant at the 0.05 level

Dependent variable: employee motivation (EM)	β	SE	t	LLCI	ULCI
Dependent variable: intrinsic motivation					
Constant	2.79***	0.22	12.74	2.36	3.22
TL	0.39***	0.04	9.01	0.31	0.48
Dependent variable: integrated regulation					
Constant	2.72***	0.24	11.54	2.26	3.19
TL	0.42***	0.05	8.91	0.33	0.51
Dependent variable: identified regulation					
Constant	2.71***	0.22	12.27	2.28	3.15
TL	0.39***	0.04	8.79	0.30	0.48
Dependent variable: introjected regulation					
Constant	2.75***	0.22	12.55	2.32	3.18
TL	0.40***	0.04	9.19	0.32	0.49
Dependent variable: external regulation					
Constant	2.78***	0.23	12.09	2.33	3.23
TL	0.39***	0.05	8.57	0.30	0.48
Dependent variable: amotivation					
Constant	4.97***	0.21	24.11	4.57	5.38
TL	−0.37***	0.04	−8.97	−0.45	−0.29

Notes: ***Significant at the 0.001 level. Bootstrapping sample = 5,000, CI = 95%

Table 8. Regression outcomes from *H2a* to *H2f; n* = 443

Dependent variable: WE	β	SE	*t*	LLCI	ULCI
Constant	2.09***	0.26	7.91	1.57	2.61
TL	0.23***	0.05	4.66	0.13	0.33
Intrinsic motivation	0.29***	0.05	5.91	0.19	0.39
Constant	2.17***	0.26	8.41	1.66	2.67
TL	0.23***	0.05	4.70	0.13	0.33
Integrated regulation	0.27***	0.05	5.91	0.18	0.36
Constant	2.08***	0.26	8.00	1.57	2.60
TL	0.23***	0.05	4.65	0.13	0.32
Identified regulation	0.30***	0.05	6.21	0.21	0.40
Constant	2.03***	0.26	7.77	1.52	2.54
TL	0.22***	0.05	4.42	0.12	0.31
Introjected regulation	0.32***	0.05	6.50	0.22	0.41
Constant	2.19***	0.26	8.35	1.67	2.70
TL	0.24***	0.05	4.95	0.15	0.34
External regulation	0.26***	0.05	5.43	0.16	0.35
Constant	4.50***	0.34	13.13	3.82	5.17
TL	0.22***	0.05	4.59	0.13	0.32
Amotivation	−0.32***	0.05	−6.19	−0.42	−0.22

Notes: ***Significant at the 0.001 level. Bootstrapping sample = 5,000, CI = 95%

Table 9. Regression outcomes of *H3a* to *H3f, n* = 443

SE = 0.05, $t = 5.91$, $p < 0.001$; INTEG: $\beta = 0.27$, SE = 0.05, $t = 5.91$, $p < 0.001$; IDEN: $\beta = 0.30$, SE = 0.05, $t = 6.21$, $p < 0.001$), which confirmed research *H3a, H3b* and *H3c*.

However, at the same time, the results also imply that some dimensions of EM (introjected and external) have violated the negative assumptions, which means that higher

levels of introjected and external regulation (INTRO: $\beta = 0.32$, SE = 0.05, t= 6.50, $p < 0.001$; ER: $\beta = 0.26$, SE = 0.05, $t = 5.42$, $p < 0.001$) also show higher WE, even though introjected regulation has higher interpreting power than external regulation comparing the value of the coefficients, indicating that *H3d* and *H3e* are rejected.

Additionally, the cause and effect of amotivation and WE is supported by the outcomes of the data analysis; specifically, the indices are known as ($\beta = -0.32$, SE = 0.05, $t = -6.19$, $p < 0.001$), which is absolutely in line with *H3f*.

5.3.4 Examination and outcomes of H4. H4 is supported. *H4* predicts that EM is a mediator of sense of TL and WE.

In this article, the confidence interval method has been considered the more accurate detection method, which is also used. This article adopts the regression output results of the bootstrapping mediation effect model on AMOS 26.0 and extension PROCESS 3.4.1 to analyze the direct and indirect mediating effects and total effects within the lower bounds and upper bounds of the 95% confidence interval. The mediating regression results show that the indirect effect of perception of TL (X) on WE (Y) is: (M= EM): $\beta = 0.13$, SE = 0.03, Z value = 4.78 (> 1.96), boot bounds of bias-corrected = 0.08—0.19 and direct effects of TL perception (X) on WE (Y) is as follows: $\beta = 0.20$, SE = 0.05, Z value = 4.00 (> 1.96), LLCI to ULCI equal to 0.11–0.30. The total effect of TL perception (X) on WE (Y) is $\beta = 0.33$, SE = 0.05, Z value = 6.60 (> 1.96), LLCI to ULCI equal to 0.11–0.30. All results are significant at the 0.001 level or the 0.01 level. Similar logic can be used to estimate the mediating effect of other dimensions of motivation, such as intrinsic motivation (IM) and integrated regulation (INTEG). All the undertaken mediators reveal partial mediating effects between X (perception of TL) and Y (WE). Taken together, the outcomes imply that EM is beneficial to mediate the perception of TL and increases work commitment.

The outcomes of the mediating effect is one of the core part of this article, as presented in Table 10, the total effect of X on Y (Path c) equals 0.33 (c = 0.33), while the effect of X on M (Path a) times the effect of M on Y (Path b) equals 0.13 (a*b = 0.13), and the direct effect of X on Y (path c') equals 0.2 (c'=0.2). As a*b < c (0.13 < 0.33), it can be concluded that a partial mediating effect exists. Simultaneously, when the mediating role is measured by IM, INTEG, IDEN, INTRO, ER and AMO, the indices of indirect effects are 0.08, 0.09, 0.09, 0.11, 0.08 and 0.09, respectively. All these indices are smaller than its total effect index, namely, 0.28, which explains the existence of a partially mediating effect in all six dimensions.

5.4 Effects of control variables

The effects of control variables on X, Y and M are discussed in this article as well. The author estimated several control variables, such as gender, age and education. The analyses imply that, first, gender, education, work location and work with/without a leader have no significant predictive power for TL, WE and EM, which means that their differences have no relationship with the abovementioned three main variables; however, some elements of age, working years and years with a leader/supervisor will positively or negatively influence TL, WE and EM.

Employees who are 31–40 years old can produce a positive effect on WE, while employees 41–50 produce a negative effect, which explains why this age interval antagonizes the degree of WE. Similarly, employees with 11–20 years of work experience also have a statistically negative influence on the dependent variable, and employees who get along with leaders within 1–5 years find it easier to perceive TL and even further increase WE.

						Product of coefficients		Bootstrapping Bias-corrected 95% CI	
	Mediator	X	→	Y	β	SE	Z	LL	UL
Indirect	EM	TL	→	WE	0.13***	0.03	4.78	0.08	0.19
Direct					0.20***	0.05	4.00	0.11	0.30
Total					0.33***	0.05	6.60	0.23	0.43
Indirect	IM	TL	→	WE	0.08***	0.02	3.92	0.05	0.13
Direct					0.19***	0.05	3.75	0.09	0.30
Total					0.28***	0.05	5.44	0.18	0.38
Indirect	INTEG	TL	→	WE	0.09***	0.02	4.34	0.05	0.14
Direct					0.18***	0.05	3.51	0.08	0.28
Total					0.28***	0.05	5.44	0.18	0.38
Indirect	IDEN	TL	→	WE	0.09***	0.02	4.23	0.05	0.13
Direct					0.19***	0.05	3.67	0.09	0.29
Total					0.28***	0.05	5.44	0.18	0.38
Indirect	INTRO	TL	→	WE	0.11***	0.02	4.83	0.07	0.15
Direct					0.17**	0.05	3.32	0.07	0.27
Total					0.28***	0.05	5.44	0.18	0.38
Indirect	ER	TL	→	WE	0.08***	0.02	3.78	0.04	0.12
Direct					0.20***	0.05	3.86	0.10	0.30
Total					0.28***	0.05	5.44	0.18	0.38
Indirect	AMO	TL	→	WE	0.09***	0.02	4.19	0.05	0.13
Direct					0.19***	0.05	3.63	0.00	0.09
Total					0.28***	0.05	5.44	0.00	0.18

Table 10.
Mediating effect of variables; $n = 443$

Notes: ***Significant at the 0.001 level, ** significant at the 0.01 level. Bootstrapping sample = 5,000, CI = 95%. TL = transformational leadership, WE = work engagement, EM = employee motivation, IM = intrinsic motivation, INTEG = integrated regulation, IDEN = identified regulation, INTRO = introjected regulation, ER = external regulation, AMO = amotivation

5.5 Discussion of results

This study suggests a mediating model in which employees' perception of TL acts on WE through EM as a mediator. To what extent are our results related or not with the literature on the LO framework? Our research has found that the perception of TL has a significant positive relationship with WE, and it also indicates that this sense will increase their commitment to work. This is in line with the findings of scholars that advocate and are associated with the learning organizational framework, such as Senge (1990), Appelbaum and Goransson (1997) and more recently, Xie (2020).

Tuin, Schaufelin and Broeck's (2021) new findings support the most central point of SDT: that intrinsic motivation is the most important type of motivation for employee well-being, attitudes and behavior. Including the behavior of having a long-term commitment to a shared vision found in LO (Senge, 1990), which are sustained through TL.

Our findings supported the hypotheses that employees' perception of TL is positively correlated with employees' self-determined motivation. However, contrary to what was expected, it was observed that even introjected and external regulation also impacted positively on WE. This findings reveals the possibility that the career and workplace structure of a unique cultural context (i.e. Mainland China) (Stead, 2004) further contributes to the developing literature about LOs. Employees with stronger perceptions of TL can improve the motivational level; specifically, in the dimension of self-determination, the relationship between perception of TL and motivation is positively strengthened. Our

research findings noted that younger employees and those with less years of working experience tended to have a stronger perception of TL in their organizations. This was aptly and correctly pointed out by Appelbaum and Goransson (1997) about the cognitive and social construction aspects of learning. On the other hand, in the dimension of non-self-determination, concrete evidence implies that the perception of TL improves introjection and external motivation. It was reasonable to observe in our findings that amotivation is reduced by a higher level of sense of TL.

For Path b, namely, influence M (EM) on Y (WE), the situation is similar. Thus, all dimensions (i.e. IM, INTEG, IDEN, INTRO and ER) enhance the degree of WE, except for amotivation, which is natural and logical. For instance, a passive employee will never invest high passion and energy into work or be productive. This research supports the various characteristics of perceived motivation (Kovjanic *et al.*, 2013), which are found in LOs. From the above discussion, we can infer that followers who identify TL are more likely to produce more positive autonomous and internal work goals, and TL can establish attractive work goals for employees, making their work goals and personal values harmonized and making it possible for employees to pursue these goals autonomously. This was also observed by Avolio (2005) whose work considered employees adopting to new ways of thinking, which Senge (1990) advances in LOs.

Finally, all three elements of self-determined motivation in our research were related to a higher level of work input. This finding supports the observation of Li and Mei (2013) about employees with greater autonomy and self-motivation having a greater degree of WE, which are also expected of employees in LOs (Senge, 1990).

One unique observation of our study not associated with the LO framework is that when the level of external regulation is high (i.e. when individuals with a high sense of non-self-determination perceive high work requirements), they can still increase their work input. For Chinese employees, introjected regulation is also an important influencing factor. When a follower believes in a transformational leader's behaviors, elements of psychological constraints, such as conscientiousness and a sense of guilt, will stimulate higher investment in work. In general, the EM theory, as a partial mediator, can explain the relationship between the perception of TL and WE. In addition, the attributive classification of employees' demographic data also significantly affects WE, such as the different stages of age, the scale of working years and the duration following a transformational leader.

6. Conclusion

6.1 Suggestions and future study

Some experimental studies have shown that TL helps with employees' innovative behavior, task performance (Aryee, Walumbwa, Zhou, & Hartnell, 2012) and fits the development needs of OL. The results of the present research show that there are direct and indirect relations between the sense of TL and WE, which proves the importance of EM in the leadership process. The authors suggest that TL training has practical significance; specifically, TL training can significantly improve the organizational commitment and work performance of followers.

In the training toward leaders, the program should include cultivating the leaders' ability to identify with employees. For many traditional Chinese leaders, especially leaders of the old schools, it is difficult to transfer them with their style, but learning new abilities will be helpful to the whole organization, which is already proven by data analysis in this study. Similarly, training programs for leaders should also pay attention to improving employees' self-determination, such as intrinsic and identified motivation.

By setting reward goals, high levels of employee self-esteem can be promoted, but it is not a long-term-oriented method because positive and negative reinforcement cannot cause essential changes in an individual. The critical approach is to improve the psychological internalization of employees and make them identify with the values and culture of the enterprises to make employees be self-driven and feel satisfied from the inside. Additionally, leaders should also create a safe psychological environment and establish a suitable mechanism to guide the work of followers to build a climate that is conducive to motivating employees' experience of autonomy.

As observed by Xie (2019), under the framework of academic paradigms, more qualitative researchers would find cases that offer explanations to emerging different styles of leadership in unique contexts. Further, new types of leadership theories could be developed from future qualitative research, and questionnaires may be developed from those qualitative research findings measuring new leadership constructs. Eventually, different groups of employees have diverted points of being easily guided and influenced. For instance, senior employees find it relatively harder to invest more in work than younger employees, and new employees can perceive TL easier than experienced employees; wise leaders should notice the diversity of employees and try to influence them with suitable treatments. Hence, there is no doubt that creative employee performance is extremely positive for LO (Wadei, Lu, & Wu, 2021) in the coming post-COVID-19 era, when enterprises can only offer limited monetary incentive methods, by internalizing the values of corporations and employees, TL can effectively improve employees' satisfaction and WE.

6.2 Limitations

Diversity of mediating factors. EM is not the only mediating factor; there are other factors that mediate the relationship between TL and WE, such as organizational support, organizational culture and meaning in work (Ghadi *et al.*, 2013).

Validity of the questionnaire and responses. As the questionnaire is translated from English to Chinese, the encoding and decoding process is bound to be accompanied by the loss of information. At the same time, there is a question mark about the understanding of questions when a respondent fills out the questionnaire, e.g. an eligible respondent does not comprehend the meaning of TL.

The problem of sample size and sampling collection. The survey only focuses on samples working in the GBA, and future research should expand to examine populations in other wider regions. Finally, the period of the samples collected in this article is relatively narrow, focusing on collecting data within a couple of weeks, which means that the entire sample cannot reflect the overall and sequential development of the group. Future research should use more comprehensive samples and adopt a longitudinal method to track the impact of perceptions towards transformational leaders on the WE of employees.

Note

1. See more information about wjx.cn: https://www.wjx.cn/html/aboutus.aspx

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