Linking leadership styles to work engagement

The role of psychological capital among Chinese knowledge workers

Yongzhan Li

Teacher Education College, Pingdingshan University, Pingdingshan, China

Gloria Castaño

Faculty of Psychology, Universidad Complutense de Madrid, Madrid, Spain, and

Yongxin Li

School of Continuing Education, Pingdingshan University, Pingdingshan, China

Abstract

Purpose – The purpose of this study is to explore the relationship between leadership styles, psychological capital and job engagement.

Design/methodology/approach – Data were collected among knowledge workers working no less than 1 year in three high-tech enterprises in Henan Province, China. The investigation was conducted with the cooperation from the human resource departments of the selected enterprises from August to October 2014. To minimize potential common method bias, the authors adopted a cross-lagged design with a time gap of four months. The statistical methods included descriptive statistics, structural equation modeling (SEM) and bootstrap analysis.

Findings – The results showed: leadership styles significantly influenced employees’ psychological capital and work engagement; specifically, transformational and transactional leadership positively predicted employees’ psychological capital and work engagement; compared with transactional leadership, transformational leadership had stronger predictive power to employees’ psychological capital and work engagement; employees’ psychological capital positively predicted their work engagement; and employees’ psychological capital acts as partial mediator between leadership styles and employees’ work engagement.

Originality/value – Although a body of studies have shown that leadership is an important factor influencing employees’ work attitude and outcomes, it is only in recent years that the effect mechanism of leadership becomes a hot subject in organizational behavior and management fields. As for leadership styles, in general, most research concerned transformational leadership, rather than transactional leadership and only a little of research compared the effects of transformational leadership and transactional leadership on employees’ work outcomes. In terms of outcomes of leadership, as noted earlier, the previous research mainly explored job performance, job satisfaction, innovation behavior, job burnout and so on. Regarding the effect of leadership styles on employees’ work engagement, in spite of more and more supportive evidence of the link between transformational leadership and work engagement, few studies examined the relationship between transactional leadership and work engagement. What's more, to the best of our knowledge, till now, no empirical research has explored the internal mechanism of this effect from the perspective of psychological capital. Therefore, the present study is a breakthrough for the direct model of leadership styles and employees’ engagement, theoretically bridges the research gap and contributes to the existing literature by presenting a new picture of leadership behavior effect mechanism.

Keywords Work engagement, Psychological capital, Knowledge workers, Leadership styles

Paper type Research paper

The authors declared that this study was carried out without funding and no conflict of interest. The authors are very glad to publish this article in Chinese Management Studies.
1. Introduction
In this era of the knowledge-based economy, aside from universities and research institutions, high-tech enterprises form other central forces of scientific and technological innovation, greatly influencing the ability of a country to innovate. However, it is worth noting that it is knowledge workers who directly engage in high-tech enterprises’ innovation. As an occupational group, knowledge workers refer to people who own the special means of production, i.e. knowledge capital and apply knowledge to innovative works (Horibe, 1999; Woodruffe, 1999). Compared to other employees, knowledge workers are mainly characterized by independence, autonomy, creative work and strong achievement motive; additionally, their working process is difficult to monitor, the fruits of their labor are difficult to measure, they scorn authority and have a strong tendency towards turn over. Obviously, these characteristics have present unprecedented challenge to the traditional occupational values, such as loyalty and dedication (Foo, 2016). It is worth noting that, nowadays, the generations born in 1980s and 1990s have become the main forces in high-tech enterprises all over the world; particularly, with a quarter of the world’s population and the fastest growing economy, China has a large number of knowledge workers. This greatly impacts the management of modern enterprises and provides an unavoidable topic for human resource management. In view of this, more and more scholars and managers are paying attention to work engagement and view it as an excellent driving force behind the success of an enterprise (Bakker and Schaufeli, 2008).

Generally, employees’ work engagement is considered an important mental state encompassing vigor, dedication and absorption, all of which encourage employees to dedicate their emotions, wisdom and strength to performing within their roles (Schaufeli et al., 2002). As one of the most valuable organizational variables (Leiter and Bakker, 2010; Schaufeli and Salanova, 2008), employees’ work engagement has been demonstrated to positively predict their work performance and innovation (Mone and London, 2010; Park et al., 2014).

To maintain their competitive edge, high-tech enterprises must pay particular attention to human resource development and manage to improve employees’ work engagement. In reality, however, some employees lack sufficient enthusiasm for work and some excellent employees leave the organization. To explain these phenomena, psychological factors and leader behaviors should be taken into account.

As for psychological factors, according to the conservation of resources (COR) theory, when individuals perceive a lack of sufficient resources, job burnout can easily occur (Hobfoll, 1989). As a promising construct emerging from the rise of positive psychology, work engagement was initially brought forward as the opposite of job burnout, even once measured with the MBI. Therefore, based on the COR theory, it is reasonable to speculate that the resources in the workplace influence individuals’ work state; when individuals feel their resources to be sufficient, they are not susceptible to burnout, rather, they are easily engaged in work with enthusiasm.

Among various resources, psychological capital has been considered a promising psychological resource which influences various areas of one’s life, including emotion, motivation, cognition and behavior. As a relatively new concept, psychological capital is also emerging from the positive psychology movement. It refers to a positive psychological state, helping to build competitive advantage for individuals and organizations beyond human and social capital (Luthans and Youssef, 2004). Generally, employees with high psychological capital possess rich psychological resources and positive emotional state; particularly, whenever meeting with difficulties at work, they are always hopeful and optimistic. Given that work engagement integrates vigor, dedication and absorption,
researchers claim that emotion is a natural feature of work engagement (Shu and Lazatkhian, 2017). Therefore, as a positive psychological state, psychological capital contributes to improving individual work engagement (Datu and Valdez, 2016; Ji, 2016; Paeka et al., 2015).

With regards to leader behaviors, leadership style greatly influences employees’ work outcomes – both attitudinal and behavioral, such as job satisfaction, work performance, innovation, organizational commitment, organizational citizenship behavior and so on (Alkahtani, 2016; Chandra and Priyono, 2016; Haghighi, 2016; Le and Lei, 2017; Yao et al., 2014; Yildiz et al., 2014). Recently, some researchers have examined the mechanism of leadership styles influencing employees’ work engagement. However, regarding the two important leadership styles, namely, transformational leadership and transactional leadership, controversy surrounds their predictive power on employees’ attitudes and work outcomes. Most researchers argue that the former has greater power because transactional leaders mainly seek to drive employees’ extrinsic motivation and always overlook employees’ real needs, while transformational leaders engage in driving employees’ intrinsic motivation and care more about their high-level needs (Avolio and Bass, 1991; Bass and Avolio, 1993; Dai et al., 2013; Zhu et al., 2009). However, there is also empirical evidence that the latter has greater power (Padmanathan, 2010).

Although relevant literature indicates that leadership styles affect work engagement, little is known about whether psychological capital intervenes in such effects. In terms of transformational leadership and transactional leadership, they both have been suggested to link to components of psychological capital (Avey et al., 2009; Bono and Ilies, 2006; Gupta et al., 2012; Helland and Winston, 2005; Jung and Avolio, 2000; Luthans, 2003; Luthans et al., 2007), however, few empirical studies explored the mechanism underlying the effect of leadership styles on work engagement from the perspective of psychological capital. Besides, according to Bass’s (1985) leadership theory, compared to transactional leadership, transformational leadership embodies greater spiritual promotion, that is, the latter leadership has considerable positive impact on employees’ aspirations, values, beliefs and ways of thinking, which can more effectively stimulate achievement motivation, rouse positive emotion, improve morale, inspire creativity and so on (George and Sabhapathy, 2010). We thus argue that, in comparison to transactional leadership, transformational leadership should more effectively improve employees’ psychological capital.

Taken together, the present study aimed to contribute to the literature by explore work engagement among Chinese knowledge workers, based on the leadership theory and the COR theory, particularly from the perspectives of leadership styles and individual resources. Specifically, to address the research gap and advance our understanding of the relationship between leadership styles, psychological capital and work engagement, this study first compared the effects of both transformational leadership and transactional leadership on employee work engagement and psychological capital, and then examined whether the two leadership styles can directly and indirectly influence employee work engagement via psychological capital. Given that few studies investigate frontline knowledge workers by examining the relationship between leadership styles, psychological capital and work engagement, the use of Chinese knowledge workers as a sample in this study develops a deeper understanding of how leaders help followers improve psychological capital and maintain work engagement. China is an important economic entity in the world. Since its economic reform and opened to the outside world, China has undergone fundamental changes. Particularly, with the rapid globalization and the increasing interdependence of the economy all over the world, more and more foreign enterprises swarm into China, meanwhile, Chinese enterprises also constantly go abroad. With frequent exchanges and cooperation with western enterprises, Chinese enterprises’ management has become
increasingly “westernized”. However, compared to western enterprises, nowadays, Chinese enterprises’ management system is not sound enough, and there is still some room for improving performance (House, 1995; Poon et al., 2005). Therefore, it is still crucial for Chinese enterprises to create favorable conditions to implement flexible and effective leadership.

2. Theoretical background and Hypotheses

2.1 Leadership style and work engagement

Leadership style is one of the focus topics of leadership theory, and therefore is of great importance to the fields of organizational behavior and human resource management. As an important aspect of employee work environment, leadership style greatly influences employee mental state and potential development (Oldham and Cummings, 1996). Therefore, it is valuable research approach to integrate employee emotional response and mental state into leadership theory. Burns (1978) first divided leadership into two styles: transformational leadership and transactional leadership, considering them as the opposite ends of a continuum. However, according to Bass (1985), the two leadership styles should be complementary structures, rather than bipolar structures, as both relate to the achievement of expected goals. Bass and Avolio (1993) argue that transactional leadership embodies a mutual transactional process, mainly adopting an instrumental approach such as reward or punishment to promote employees’ endeavor and engagement, always focusing on productivity, management by objectives, performance appraisal and exchange based on contract. Transactional leaders manage subordinates through rational and economic means; essentially, they are not very concerned with what subordinates really need, but rather, manage to stimulate subordinates’ extrinsic work motivation by means of task-oriented management. When subordinates achieve the goals that the organization expects, transactional leaders reward subordinates with what the organization has promised, such as money or promotion. These rewards can stimulate subordinates in their continue efforts, thus, to a certain extent, facilitate their work engagement. Transformational leadership mainly focuses on driving employees’ intrinsic work motivation, promoting their development and offering individualized emotional care in the workplace, which is typically characterized by four fundamental aspects: idealized influence, inspirational motivation, intellectual stimulation and individualized consideration (Avolio and Bass, 1991). Transformational leaders tend to fully develop subordinates’ potential, needs, value system, conscience and motivation, inflating their responsibilities and autonomy, helping them to realize that their work is valuable and meaningful to their organization, thus meeting their needs of growth and development (Bass, 1985; Bass and Avolio, 1997; Bass et al., 1996; Foo, 2012). All of these factors further encourage subordinates’ willingness to take on more important work, increasing their capacity to cope with bigger challenges, enhancing their solidarity and cooperation and even making them sacrifice their personal interests for the sake of their organization (Dai et al., 2013). Ultimately, it helps them to reach and even exceed goals that the organization expects (Walumbwa et al., 2008).

During the past few decades, transactional leadership and transformational leadership have gradually become predominant leadership research subjects and have initiated numerous research projects. Although both leadership styles can facilitate employees’ work engagement (Breevaart et al., 2014; Ghadi et al., 2013; Kovjanić et al., 2013; Raja, 2012; Song et al., 2012; Vincent-Höper et al., 2012), given that transactional leadership mainly focuses on driving employees’ extrinsic motivation and always overlooks what employees really need, whereas transformational leadership is more concerned with and manages to meet and develop their high-level needs, mainly by driving employees’ intrinsic motivation to stretch
beyond traditional transaction relationship, a lot of researchers argue that, compared to transactional leadership, transformational leadership is a more proactive leadership and is more likely to help in a high-level leader-member exchange and thus has a greater effect on employees’ work attitude and behavior (Avolio et al., 2004; Bass et al., 1996; Dai et al., 2013; Judge and Piccolo, 2004; Jung, 2001; Lian and Tui, 2012). Therefore, transformational leadership is universally considered to be one of the most popular and effective leadership approaches (Northhouse, 2010; Zhu and Mu, 2016), receiving more and more attention from scholars and managers.

Although most researchers suggest that transformational leadership has a stronger impact on employees’ work attitude and behavior, regarding the predictive power of the two leadership styles on employees’ work engagement, the relevant empirical studies are rather few in number; what’s more, the findings were divergent. For example, Padmanathan (2010) demonstrated that, in comparison to transformational leadership, transactional leadership more strongly influenced Malaysian employees’ work engagement. Conversely, Breevaart et al. (2014) found that Norwegian naval cadets’ work engagement was higher on the days that their leader showed more transformational leadership rather than transactional leadership. Given that both leadership styles are situational, their effectiveness thereby, to certain extent, depends on organizational environment, especially on organizational culture (Casimir et al., 2006). According to cultural dimension theory (Hofstede, 2001), compared to transactional leadership, transformational leadership is more in keeping with high collectivistic organizational culture. Walumbwa et al. (2007) also suggested that employees in collectivistic organizational culture respond more positively to transformational leadership rather than to transactional leadership because the former leadership unites employees around a common goal. Regarding high-tech enterprises, given their requirement for collective innovation, knowledge sharing is crucial for their development (Tsai et al., 2017). Therefore, collectivism should be the mainstream culture in high-tech enterprises. Based on the above theories and research findings, we proposed:

H1. Compared to transactional leadership, transformational leadership has a greater positive effect on knowledge workers’ work engagement.

2.2 Psychological Capital and work engagement
The COR theory is based on the assumption that people always try to maintain, conserve and develop resources they value, because the potential or actual loss of these resources is a threat to them (Hobfoll, 1989). According to this theory, individuals with more resources are less vulnerable to resource loss and more capable of gaining resources and vice versa. Accordingly, there are two approaches or effects of resource development, namely, the loss spiral and the gain spiral. Generally, the Loss Spiral is faster than the gain spiral, thus, relatively speaking, individuals lacking resources are more likely caught in the loss spiral. Additionally, given that valuable resources are always difficult to get, people are more sensitive to resource loss than resource gain. Therefore, individuals always have stronger awareness of conserving rather than gaining resources (Rappaport, 1981). Even so, however, owning more resources can not only reduce the risk of resource loss, but also create opportunities to get other valuable resources; therefore, unless being under great pressure, individuals tends to accumulate resources to cope with the potential resource loss in the future (Kobasa, 1979). Among individual resources, psychological resources are nonnegligible internal resources. This study focused on an important psychological resource, i.e. psychological capital, which is a burgeoning research field. Luthans and colleagues were the first scholars to introduce psychological capital into management,
emphasizing its embodiment of a positive psychological state of development (Luthans and Youssef, 2004). Different from previous trait theory, they considered psychological capital as a positive core psychological construct, including self-efficacy, hope, optimism and resilience. Psychological capital has been recognized as an important resource for organizational effectiveness. Moreover, it can be fostered and developed and has a significantly influence on individual cognitive process, job satisfaction and performance (Avey et al., 2011; Luthans et al., 2005). Hobfoll (2002) suggests that some psychological constructs are best understood as representing a core, underlying construct. By considering self-efficacy, hope, optimism and resilience as important facets of psychological capital, rather than focusing on any single facet, it is expected that their combined effect will be broader and greater than any individual dimension (Luthans et al., 2007). This phenomenon has been called “synergistic effect” (Rego et al., 2012). Given the synergistic effect, this study examines psychological capital as a whole rather than its dimensions.

Sweetman and Luthans (2010) have suggested that psychological capital positively predicts work engagement, and in the face of challenges, the individuals with high psychological capital are more likely to perceive their control of the situation, thus more easily throwing themselves into work. Recently, several empirical studies have examined the close correlation between psychological capital and work engagement across different subjects (Datu and Valdez, 2016; Ji, 2016; Paeka et al., 2015). For example, Paeka et al. (2015) investigated 312 frontline staff from 15 five-star hotels in Korea and demonstrated that work engagement partially mediated the effect of psychological capital on job satisfaction and affective commitment. Investigating 490 college students, Ji (2016) also found that psychological capital positively predicted academic engagement. However, in China, to our knowledge, few studies explored the benefits of psychological capital on employees’ work engagement. The present study thereby attempts to address this gap through assessing the extent to which psychological capital is linked to employees’ work engagement in work settings. As a consequence, we arrived at the following hypothesis:

H2. Knowledge workers’ psychological capital is positively related to their work engagement.

2.3 Psychological Capital as a mediator
Transformational leaders always demonstrate their own rich experience, give employees positive feedback (Luthans et al., 2007) and encourage employees to consider things more positively (Gupta and Singh, 2014). According to Bass’s leadership theory, transformational leadership influences employees’ cognition and behavior through leadership charisma, intellectual stimulation and individualized care (Bass, 1985). In terms of the relationship between transformational leadership and psychological capital, Ashkanasy and Tse (2000) suggests that by means of emotional interactions, transformational leaders persuade subordinates to maintain a positive mindset and to develop an optimistic mood when they pursued positive visions. By considering individuals’ personal needs and through displaying charm, transformational leaders can gain employees’ respect and trust and become the examples for employees to learn from and imitate (Jung and Avolio, 2000); meanwhile, when they imitate the behaviors of their transformational leaders, employees can experience positive emotions, which in turn enhances their self-efficacy and work motivation (Bono and Ilies, 2006). Furthermore, through providing a desirable vision for the organization, transformational leaders help employees to clarify their goals and direction, to realize the value and meaning of their works, which in turn rouses their work enthusiasm and enhances their hope for the future (Helland and Winston, 2005; Yukl, 2002). Additionally, through inspirational motivation and
intellectual stimulation, transformational leaders can facilitate employees’ understanding of their own abilities and help employees to turn difficulties into opportunities for individual development, strengthening their optimism, self-efficacy and resilience (Harland et al., 2005; Luthans, 2003). A few of studies have demonstrated that transformational leadership was positively associated with psychological capital or its dimensions (Bandura, 2002; Gooty et al., 2009; He et al., 2016; Sui et al., 2012).

So far, few empirical studies have explored the relationship between transactional leadership and employees’ psychological capital. In fact, transactional leadership’s effect on employees’ psychological capital should not be underestimated. As a leadership style based on exchange process, transactional leaders always clearly define their expectations and set specific goals for employees, breaks down difficult goals into smaller achievable milestones and motivate employees to accomplish the tasks more efficiently through rewarding employees (Gupta et al., 2012). These behaviors should enhance employees’ hope for the future. Meanwhile, transactional leaders always provide employees with constructive feedback and timely affirm employees’ contributions. These behaviors help to improve employees’ self-efficacy and optimism (Avey et al., 2009; Gupta et al., 2012). In addition, by offering helpful career advice, transactional leadership can enhance employees’ resilience (Luthans et al., 2007). However, according to Bass’s (1985) leadership theory, transactional leadership mainly drives employees’ extrinsic motivation and ignores their high-level needs, thus this leadership should have a relatively weaker effect on employees’ psychological development; while transformational leadership focuses on driving employees’ intrinsic motivation, meeting and developing their high-level needs, thus inherently offering greater spiritual promotion (George and Sabhapathy, 2010). As noted earlier, psychological capital is a positive psychological construct, integrating self-efficacy, hope, optimism and resilience. These components are all important intrinsic psychological qualities or resources, which, to a certain extent, can be viewed as individual’s spiritual power or energy to get competitive advantage (Fredrickson, 2001), closely associated with individual’s intrinsic rather than extrinsic motivation (Luthans and Youssef, 2004). Therefore, we posited:

H3a. Transactional leadership has a positive effect on knowledge workers’ psychological capital.

H3b. Transformational leadership has a positive effect on knowledge workers’ psychological capital.

From the above, both transformational leadership and transactional leadership may influence knowledge workers’ psychological capital; meanwhile the former two may both influence their work engagement. According to Baron and Kenny’s (1986) theory of mediation, we speculate:

H4a. Knowledge workers’ psychological capital mediates the relationship between transactional leadership and their work engagement.

H4b. Knowledge workers’ psychological capital mediates the relationship between transformational leadership and their work engagement.

Finally, the research conceptual model is shown as Figure 1.

3 Method
3.1 Sample and procedure
We collected data among knowledge workers working no less than 1 year in three high-tech enterprises (1 optical instrument enterprise and 2 IT enterprises) in Henan Province, China.
The investigation was conducted with the cooperation of the human resource departments of the selected enterprises between August and October 2014. Following Podsakoff et al. (2003) suggestions, we adopted a cross-lagged design with a time gap of four months so as to minimize potential common method bias. The main independent variables (leadership styles and PsyCap) including demographic information were investigated at survey 1 and the dependent variable (work engagement) was measured at survey 2. Informed consent was received from the participants. In survey 1, a total of 620 questionnaires were distributed and 581 were returned. In survey 2, we handed out 581 questionnaires to the participants who returned questionnaires in survey 1. This time, 567 questionnaires were returned. Discarding 11 questionnaires due to incomplete data, we finally obtained 556 valid questionnaires (89.68 per cent valid response rate) to further analyze statistically. Among the valid subjects, 229 (41.19 per cent) were male, 327 (58.81 per cent) were female; 255 (45.86 per cent) had a tenure ≤3 years, 301 (54.14 per cent) had a tenure >3 years; the ages ranged from 24 to 52 years old (\( M = 29.42, SD = 7.25 \)); 446 (80.22 per cent) had at least a bachelor’s degree.

### 3.2 Measures

#### 3.2.1 Leadership styles.

Leadership styles were measured by Bass and Avolio (1995) MLQ-5X questionnaire. The original measure includes 45 items, among them, 20 items for transformational leadership (\( \alpha = 0.81 \)), 12 items for transactional leadership (\( \alpha = 0.86 \)). Subjects were asked to respond on a Likert-5 scale (1 = “strongly disagree”, 5 = “strongly agree”). The questionnaire was answered according to knowledge workers’ perceptions of their direct superiors’ leadership behaviors. In the present study, the results of confirmatory factor analysis supported the two-dimensional structure, \( \chi^2/df = 4.63 \), GFI = 0.90, AGFI = 0.92, CFI = 0.92, RMSEA = 0.05, SRMR = 0.05, indicating a good construct validity.

#### 3.2.2 Psychological Capital.

Psychological capital was measured by Luthans et al’s (2007) Psychological Capital Questionnaire (PCQ). The scale consists of 24 items, including four subscales: Hope, resilience, optimism and efficacy (each subscale with 6 items). PCQ has been demonstrated good reliability and construct validity (Luthans et al., 2008). The Cronbach’s \( \alpha \) was 0.85 for overall PCQ (0.80, 0.81, 0.83, 0.80 for the four subscales, respectively) in the present study. All items were rated on a Likert-6 scale (1 = “totally disagree”, 6 = “totally agree”). In the present study, the results of confirmatory factor
analysis supported the four-dimensional structure, $\chi^2/df = 3.25$, GFI = 0.92, AGFI = 0.94, CFI = 0.95, RMSEA = 0.04, SRMR = 0.06, indicating a good construct validity.

3.2.3 Work engagement. Work engagement was measured by Schaufeli et al.’s (2002) Utrecht Work Engagement Scale (UWES), which comprises 17 items, exploring the three dimensions: vigor (6 items, $\alpha = 0.80$), dedication (5 items, $\alpha = 0.78$) and absorption (6 items, $\alpha = 0.83$). Responses were conducted on a Likert-7 scale ranging from 0 (never) to 6 (always). In the present study, the Cronbach’s $\alpha$ was 0.86 for overall work engagement and the results of confirmatory factor analysis supported the three-dimensional structure, $\chi^2/df = 3.89$, GFI = 0.91, AGFI = 0.93, CFI = 0.94, RMSEA = 0.05, SRMR = 0.06, indicating a good construct validity.

Of note is that all the above scales were translated into Chinese using the standard back-translation procedure.

3.3 Statistical analyzes
The present study adopted SPSS19.0 and Amos 20.0 to deal with the data. The statistical methods included descriptive statistics, structural equation modeling (SEM) and bootstrap analysis.

3.4 Common method bias and variables’ discriminant validity test
Limited to the research conditions, all variables explored in this study were measured only with self-reported questionnaires. According to Podsakoff et al. (2003), the present study adopted some remedies, such as responding with anonymity, changing the order of items and reverse expression of items, to reduce possible CMV, however, CMV might remain considerable. Therefore, the present study ran Harmon’s single-factor test to inspect the CMV. This test needs to run non-rotational principal component analysis for all variables. If the CMV is significant, the principal component analysis will produce a single factor or there will be a factor explaining most of the variation (James and Brett, 1984). In this study, Harmon’s single-factor test showed that there were four factors and the first one explained only 24.5 per cent of the total variation, indicating that common method bias was not an issue.

To test the discriminant validity of the study variables, according to (Wang et al. (2015), this study established a four-factor baseline model which corresponded with the four study variables, namely, tranformational leadership, transactional leadership, psychological capital and work engagement. Then, through merging and combining the variables together, this study built additional 6 three-factor and 3 two-factor alternative nest models. The results of confirmatory factor analysis (CFA) showed that, with comparison to all of the alternative nest models, the four-factor baseline model fit the data better, $\chi^2/df = 4.14$, GFI = 0.90, AGFI = 0.93, CFI = 0.93, RMSEA = 0.062, SRMR = 0.056, indicating a good discriminant validity of the study variables.

4. Results
4.1 Descriptive statistics
The means, standard deviations and correlations for the study variables are presented in Table I. Pairwise and multiple-variable collinearity was inspected by collinearity diagnostics in SPSS prior to the analyzes. The tolerance value was 0.78, far above the common cutoff threshold value of 0.10 (Hair et al., 1998). The correlation coefficients between the four key variables (transformational leadership and transactional leadership, PsyCap and work engagement) are below moderate in magnitude. These results provide preconditions for the subsequent structural equation modeling.
4.2 Hypotheses test

The present study conducted structural equation modeling to test the hypotheses. Considering the two types of mediation effects (partial mediation and full mediation), to test the hypotheses, we constructed a partial mediation effect model M1 of employees’ psychological capital, the corresponding full mediation effect model M2 and a direct effect model M3 which is based on M1 but omitted the path from leadership styles to psychological capital. The results of SEM were present in Table II. Compared to M2 and M3, M1 showed a better fit to the data, $\Delta \chi^2(M2-M1) = 42.13, \Delta df = 2, p < 0.001$; $\Delta \chi^2(M3-M1) = 34.56, \Delta df = 2, p < .001$. Thus, M1 is the best model we got (see Figure 2). Figure 2 shows, both the direct effect ($0.37, p < 0.001$) and the indirect effect ($0.09, p < 0.001$) of transformational leadership on work engagement via PsyCap were significant; meanwhile, both the direct effect ($0.25, p < 0.01$) and the indirect effect ($0.06, p < 0.01$) of transactional leadership on work engagement via PsyCap were significant. Thus, PsyCap partially mediated the relationship between the two leadership styles and work engagement. Additionally, both transformational leadership and transactional leadership positively predicted work engagement, however, the former had a greater effect ($\beta = 0.37, p < 0.001$) than the latter ($\beta = 0.25, p < 0.01$); meanwhile, both transformational leadership and transactional leadership positively predicted psychological capital, however, the former had a greater effect ($\beta = 0.29, p < 0.001$) than the latter ($\beta = 0.20, p < 0.01$). Therefore, all hypotheses were supported.

Given the relatively strong function of bootstrap analysis in examining indirect effects (Hayes, 2013; Lau and Cheung, 2012), we further adopted this analysis in Amos with 5000 bootstrap samples so as to examine indirect effect in M1. The results showed that the indirect effect of transformational leadership on work engagement via PsyCap was significant, indirect effect = 0.09, $p < 0.001$, 95 per cent CI = [0.046, 0.137], no zero included; meanwhile, the indirect effect of transactional leadership on work engagement via PsyCap was also significant, indirect effect = 0.06, $p < 0.01$, 95 per cent CI = [0.032, 0.155], no zero included either.

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. trans</td>
<td>16.56</td>
<td>8.33</td>
<td>(0.81)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. trans</td>
<td>10.72</td>
<td>4.43</td>
<td>(0.86)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. psyca</td>
<td>27.20</td>
<td>6.17</td>
<td>0.28***</td>
<td>0.17***</td>
<td>(0.85)</td>
<td></td>
</tr>
<tr>
<td>4. work e</td>
<td>18.58</td>
<td>9.24</td>
<td>0.42***</td>
<td>0.24***</td>
<td>0.32***</td>
<td>(0.86)</td>
</tr>
</tbody>
</table>

Notes: N = 556; the Cronbach’s alpha coefficients are in parentheses; **$p < 0.01$; and ***$p < 0.001$

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>$\chi^2$/df</th>
<th>RMSEA</th>
<th>SRMR</th>
<th>GFI</th>
<th>AGFI</th>
<th>CFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>2235.18</td>
<td>531</td>
<td>4.21</td>
<td>0.059</td>
<td>0.053</td>
<td>0.90</td>
<td>0.93</td>
<td>0.93</td>
</tr>
<tr>
<td>M2</td>
<td>2277.31</td>
<td>533</td>
<td>4.27</td>
<td>0.064</td>
<td>0.058</td>
<td>0.88</td>
<td>0.91</td>
<td>0.92</td>
</tr>
<tr>
<td>M3</td>
<td>2269.74</td>
<td>533</td>
<td>4.26</td>
<td>0.071</td>
<td>0.062</td>
<td>0.89</td>
<td>0.92</td>
<td>0.92</td>
</tr>
</tbody>
</table>

Notes: N = 556. M1 = partial mediating effect model of PsyCap; M2 = full mediating effect model of PsyCap; M3 = direct effect model of leadership styles and PsyCap
5. Discussion
Leadership styles greatly affect employees’ work attitude and performance (Avolio et al., 2004). As two high-profile leadership styles, transformational leadership and transactional leadership have become important research themes of leadership during the past few decades. However, the mechanism underlying the effects of them remains unclear. The present study provides a comprehensive insight into this issue.

5.1 Leadership style and work engagement
Regarding the effects of leadership styles on employees’ work engagement, the present study found that both transformational leadership and transactional leadership promoted knowledge workers’ engagement in the workplace, however, the contribution of transformational leadership is greater than transactional leadership. This finding is consistent with Breevaart et al. (2014), supporting H1 and more researchers’ suggestion that, in comparison with transactional leadership, transformational leadership has a greater effect on employees’ work attitude and behavior, because transformational leaders mainly rouse intrinsic work motivation, whereas transactional leaders focus on stimulating extrinsic work motivation (Bass and Avolio, 1990; Gong et al., 2009). What’s more, this finding also supports the argument that transformational leadership more likely rouses positive respond among employees in collectivistic culture than transactional leadership does (Hofstede, 2001; Jung et al., 1995; Walumbwa et al., 2007). According to this finding, high-tech enterprises’ leaders should realize that both transformational leadership and transactional leadership are effective and should be used in unison; particularly, given its stronger impact on knowledge workers’ work engagement, transformational leadership should be paid more attention and be more fully implemented. Hofstede (2001) suggests that leadership styles in different countries are closely associated with the national culture. Cross-cultural studies have showed that in comparison to most western countries, China is characterized by a masculine culture with higher power distance and stronger collectivism, which has been influenced by Confucianism for a long time (Bornholt et al., 2005; Lin and Huang, 2014; Pan et al., 2006; Winfield et al., 2000). Thus, in the context of China, as a
leadership style, transformational leadership has its own uniqueness, emphasizing more on the interpersonal harmony and moral modeling (Li et al., 2015). What’s more, while transformational leadership is more effective in high collectivistic culture (Jung et al., 1995), this leadership benefits less from high power distance culture, relative to transactional leadership (Pan et al., 2006). Therefore, Chinese culture likely exerts dual influences on leadership styles, that is, while its aspect of high collectivism likely benefits transformational leadership, its aspect of high power distance likely hinders transformational leadership. Regarding China’s high-tech enterprises, given their requirements for innovation, it should be better for them to employ more transformational rather than transactional leadership behaviors. Furthermore, obviously, to make transformational leadership work more effectively, China’s high-tech enterprises need to reform management system and develop low power distance organizational culture, managing to overcome the adverse effects of high power distance national culture.

5.2 Psychological Capital and work engagement
Consistent with the previous research (Datu and Valdez, 2016; Ji, 2016; Paeka et al., 2015), the present study found that knowledge workers’ psychological capital positively predicted their work engagement. This finding supports H2 and can be seen from the perspective of the Job Demands-Resources (JD-R) model. According to the JD-R model, employees’ work attitudes and outcomes greatly depend on work demands and resources. Generally, work demands indicate that individuals continually consume resources and energy, while work resources can supplement new resources and energy, stimulate work motivation and promote work engagement (Hakanen et al., 2008). Work resources include both intrinsic and extrinsic resources. Psychological capital belongs to intrinsic resources, more specifically, it is a positive psychological resource. Generally, psychological resources play an important role in stimulating motivation, maintaining work vigor, regulating individual attitudes and behaviors and thus being an important part of an individual’s power system (Fredrickson, 2001). As an important psychological resource, psychological capital can be fostered and developed, providing energy for employees to make up for consumption, encouraging them to obtain competitive advantages and finally affects their work state and outcomes; especially when they encounter difficulties and setbacks, they are still full of hope and optimism for the future, persevering and working hard, rather than losing faith or giving up easily (Zhu and Mu, 2016). According to this finding, to facilitate employees’ work engagement, it is recommendable for high-tech enterprises’ leaders to manage to improve psychological capital among knowledge workers.

5.3 The mediating effect of psychological Capital
Given the positive effect of psychological capital on various outcomes, such as job performance and work engagement (Avey et al., 2011; Datu and Valdez, 2016; Ji, 2016), it will be valuable to explore the antecedents of this important psychological resource. The present study found that both transformational leadership and transactional leadership positively influenced knowledge workers’ psychological capital. This finding supports H3 (both a and b) and is in line with some relevant literature (Avey et al., 2009; Gupta et al., 2012; He et al., 2016; Sui et al., 2012). However, our results further showed that, in comparison to transactional leadership, transformational leadership more strongly influenced knowledge workers’ psychological capital. These findings can also be explained from the perspective of leadership’s spiritual promotion. According to Bass’ leadership theory, compared to transactional leadership, transformational leadership more strongly stir up employees’ intrinsic work motivation and high-level needs, thus has greater spiritual promotion
Integrating together self-efficacy, hope, optimism and resilience, psychological capital can be regarded as individual's spiritual power for getting competitive advantage (Fredrickson, 2001), which is closely linked to individual’s intrinsic motivation (Luthans and Youssef, 2004). Therefore, compared to transactional leadership, transformational leadership more strongly promotes employees’ psychological capital. To our knowledge, few studies have ever compared the effects of transactional and transformational leadership on psychological capital, the present study thereby extend the leadership related research.

However, the most ingenious contribution the present study has done is exploring the mechanism of leadership styles on work engagement from a new perspective. Previous research mainly focused on the mediating or moderating effect of collaboration, job autonomy, organizational identification, emotional intelligence and followers’ characteristics (Ghafoor et al., 2011; Gözükara and Şimşek, 2015; Ochalski, 2016; Soieb et al., 2015; Wang et al., 2015; Zhu et al., 2009). Based on the literature review, the present study further tested the mechanism of leadership styles from the perspective of psychological capital. Structural equation model analysis indicated that knowledge workers’ psychological capital was a partial mediator between leadership styles (both transformational and transactional) and employees’ work engagement, that is, in addition to directly influencing employees’ work engagement, leadership styles also indirectly influenced employees’ work engagement via psychological capital. These findings support H4 (both a and b), indicating that both of leadership styles influence employees’ work engagement partially because these leadership styles help to improve employees’ psychological capital, which in turn facilitates employees’ work engagement. It is worth noting that psychological capital only partially mediates the relationship between leadership styles and employees’ work engagement, indicating that there should be other variables also mediate this relationship. Therefore, to contribute to our knowledge about leadership effectiveness, future research should further explore the mechanism underlying the effects of leadership styles on employees’ work engagement from other theoretical perspectives.

6. Research implication
A body of studies have shown that leadership is an important factor influencing employees’ work attitudes and outcomes, however, most studies are more concerned with transformational leadership than transactional leadership and only a few of studies have compared the effects of transformational leadership and transactional leadership on employees’ work outcomes. Regarding the effects of leadership styles on employees’ work engagement, in spite of more and more supportive evidence of the link between transformational leadership and work engagement (Breevaart et al., 2014; Ghadi et al., 2013; Kovjanic et al., 2013; Raja, 2012; Song et al., 2012; Vincent-Höper et al., 2012), few studies have examined the relationship between transactional leadership and work engagement (Padmanathan, 2010). In addition, to our knowledge, no empirical research has explored the mechanism of these effects from the perspective of psychological capital. Therefore, theoretically, the present study bridges the research gap, contributing to the existing literature on leadership effectiveness, allowing a deeper understanding of how leaders can help followers improve psychological capital and maintain work engagement.

It is worth noting that through investigating Chinese knowledge workers from high-tech enterprises, the present study found that transformational leadership had greater impact on employees’ psychological capital and work engagement than transactional leadership, providing empirical evidence that, in comparison to transactional leadership, transformational leadership more strongly influences employees’ work attitude and
outcomes, no matter in eastern or western culture. These findings indicate that although leadership styles are inevitably influenced by culture, the effectiveness of transformational and transactional leadership has cross-cultural consistency.

Additionally, comparing the effects of different leadership styles is practically valuable for human resource management and organizational development because the results from this comparison can offer leaders with important empirical references to effectively adjust their leadership styles. According to the findings, leaders of high-tech enterprises should flexibly adopt transformational and transactional leadership, particularly more value transformational leadership. Therefore, it is crucial for leaders to provide an inspirational vision of the organization development so as to help employees to establish goals, ignite their work enthusiasm and enhance their hope, thus maintaining a positive mindset and optimistic mood. Enterprises’ leaders should also pay more attention to what employees are really concerned about, managing to meet and develop employees’ high-level needs through individualized consideration. Also, through encouraging employees to believe in their own competence, enterprises’ leaders can help employees to overcome difficulties and setbacks, thus facilitating their ability to innovate.

Furthermore, the present study found that knowledge workers’ psychological capital partially mediated the effects of the two leadership styles on their work engagement. According to this finding, to maintain organizational competitive advantage, high-tech enterprise leaders should pay attention to fostering employees’ psychological capital, as well as giving priority to transformational leadership. On one hand, enterprises’ leaders should manage to improve employees’ self-efficacy, hope, optimism and resilience through transformational leadership behaviors such as inspirational motivation, intelligence stimulation and individualized consideration. On the other hand, high-tech enterprises should also pay attention to implementing the Employee Assistance Program (EAP) to train knowledge workers to form positive attributional styles, facilitating them to properly handle events in the workplace.

7. Limitations and future research
Several limitations in the present study should be mentioned. First, although adopting two-wave lagged design, the present study collected all the data from a single source, i.e. subjects’ self-report, thus the CMV should be a concern. In spite of our efforts to reduce CMV and the results of Harman’s single-factor test indicating no significant CMV, if possible, follow-up research had better collect data from more sources.

Second, considering the higher-order psychological capital structure has a synergistic effect, the present study explored psychological capital only as a higher-order structure, rather than based on its dimensions. However, after all, dimension-based research helps us to understand more specifically how leadership affects employees’ work attitude and outcomes. Future research can combine the higher-order-based and the dimension-based research approaches to explore the mediating role of psychological capital, so as to better understand how employees’ psychological capital influences the impact of leadership styles on knowledge workers’ work engagement.

Third, although realizing the considerable impact of culture on leadership, we only focused on the mediating effect of psychological capital, rather than as well as on the effect of national or organizational culture. Thus, the findings contribute little to our understanding how culture influences leadership styles. Future research thereby can take culture into account, constructing more complicate and valuable research model beyond our current design.
Finally, with regard to improving employees’ psychological capital, given the obvious effectiveness of the EAP approach on changing employees’ emotion, attitude and cognition, future researchers can also carry out experiments to examine the effectiveness of the EAP intervention on employees’ psychological capital and then to evaluate the mediating effects of psychological capital before and after intervention.

8. Conclusion
This study focused on the mechanism underlying the influence of leadership styles on knowledge workers’ work engagement from the perspective of psychological capital.

The results showed that while both transformational leadership and transactional leadership positively influenced knowledge workers’ psychological capital and work engagement, compared to transactional leadership, transformational leadership had a greater predictive power; furthermore, knowledge workers’ psychological capital not only positively predicted their work engagement but also partially mediated the effects of the two leadership styles on their work engagement. Our findings contribute to the understanding of the mechanism for facilitating work engagement among knowledge workers, thus are helpful for high-tech enterprise leaders to adopt effective and targeted measures to improve employees’ work engagement.

References


Further reading


Corresponding author
Yongzhan Li can be contacted at: liyongzhan@126.com

For instructions on how to order reprints of this article, please visit our website: www.emeraldgrouppublishing.com/licensing/reprints.htm
Or contact us for further details: permissions@emeraldinsight.com