

# The Impact of Paternalistic Leadership Styles on Employee Engagement in the Pharmaceutical Distribution Industry: The Mediating Role of Psychological Capital

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## ABSTRACT

The COVID-19 pandemic has brought great challenges to health workers. In view of the impact of paternalistic leadership styles on employee psychology and engagement, this study aims to explore the relationship between paternalistic leadership styles and employee engagement during the COVID-19 pandemic and the mediating role of psychological capital. Paternalistic Leadership Questionnaire (PLQ), Psychological Capital Questionnaire (PCQ) and Employee Engagement Scale (EES) were used to investigate 557 employees of pharmaceutical distribution enterprises in Shanghai. Statistical software was used for data analysis. Correlation analysis showed that the benevolence, morality and strictness of paternalistic leadership style were significantly positively correlated with the level of psychological capital and engagement, while the autocracy of paternalistic leadership style showed a significant negative correlation with it. Regression analysis showed that paternalistic leadership styles could significantly predict psychological capital and employee engagement, and psychological capital could also significantly predict employee engagement. The results of the mediation effect showed that psychological capital played a complete mediating role between morality, strictness and autocracy of paternalistic leadership style and employee engagement, while psychological capital played a partial mediating role between benevolence and employee engagement in paternalistic leadership style. The four styles of paternalistic leadership in the pharmaceutical distribution industry have a significant impact on employee psychological capital and employee engagement. These findings provide a certain reference value and supplement for the pharmaceutical distribution industry to adjust the management style of leaders, improve the psychological capital of employees, and enhance their level of work engagement.

## KEYWORDS

Paternalistic leadership style; Psychological capital; Employee engagement; Mediating effect

## 1. Introduction

The ravages of COVID-19 pandemic in the past two years had not only made people bear huge physical and mental pressure but also brought great challenges to medical workers. The demand for medical supplies soared, making the suddenness, contagion, uncertainty, unconventionality and other

problems in the pharmaceutical industry particularly prominent. The pharmaceutical circulation enterprises, as suppliers and service providers of traditional Chinese medicine relief materials in the entire chain, with their particularities also bore great pressure (Fang et al., 2020). In this context, besides possessing solid professional knowledge, employees in the pharmaceutical circulation industry needed to adjust their psychological state to continue providing good service behavior and service quality.

Some studies have found that employee engagement has a significant positive impact on their service behavior and quality (Zhu, 2010). Jack Welch, former CEO of GE, also lamented in his corporate management practice: "Employee engagement, customer satisfaction, and cash flow are the three metrics that inform you practically everything you need to know about your organization's total performance." It can be seen that to make an enterprise achieve benign development, the majority of employees are the main carriers of the core competitiveness of enterprises, and play the role of the main creators of corporate wealth or value. Therefore, the significance of studying employee engagement is self-evident. Engagement is closely related to job performance (Ma, 2017; Christian et al., 2011; Shuck, 2011), which means highly engaged employees not only have an important impact on the performance indicators of enterprises (Liu, 2007), but also have a corresponding impact on employee turnover rates (Bu, 2020). Highly engaged employees make the vast majority of the organizational profits and are one of the main drivers of organizational growth (Harter et al., 2002).

Enhancing the professional engagement of medical distribution workers is necessary because it ensures the normal delivery and docking of medical supplies. As a typical form of leadership, paternalistic leadership has a relevant impact on employee psychology and engagement. Through the investigation of the leadership behavior in Taiwanese enterprises, Silin (1976) found it completely different from that in western enterprises. Leaders are more like "parents", featured as a high degree of centralization, superior and subordinate distance, etc. Subsequently, Redding (1990) explored the leadership style of Chinese business executives in Hong Kong, Taiwan and Southeast Asia, and pointed out that there are several characteristics of paternalistic leadership prevalent in these Chinese enterprises, namely requiring subordinates to obey the leadership, clear hierarchy, and leadership being the role model and teacher of subordinates. Westwood (1997) proposed a paternalistic head model for Chinese family businesses, and pointed out that this is characterized by didactic leadership, unclear leadership intentions, emphasis on reputation and power. Some researchers have pointed out that the traditional paternalistic leadership style is described as a construct composed of three dimensions: authority, morality, and benevolence (Pizzolitto et al., 2022; Cheng et al., 2000). However, by combining traditional Confucianism and Legalism with modern development, it is necessary to subdivide authoritative leadership into autocratic leadership, which controls people, and strict leadership, which controls things (Chou et al., 2010; Mao et al., 2020).

Based on the above literature, this paper classifies paternalistic leadership styles into four dimensions, which are benevolent, moral, autocratic and strict. Specifically, the benevolent leadership style is to treat employees as family members, give them encouragement and support, and care and forgive subordinates more (Quick et al., 2007); moral leadership focuses on the rule of morals and etiquette, in which the leader himself has excellent moral qualities like honesty and integrity, is impartial and leads by example, and demonstrates outstanding personal morals and self-disciplined behavior (Sun, 2014); autocratic leaders, who tend to hold power closely and dislike empowering employees, also tend to be autocratic when making decisions, and can devalue the abilities of their subordinates, disregard their contributions, and are often associated with the "dark side" of leadership (Pizzolitto et al., 2022; Chiang et al., 2021; Li, 2018); the strict leader is more work-oriented, emphasizing control over tasks and work processes, demanding high performance from subordinates and maintaining organisational norms, often in the form of task monitoring, adherence to principles and goal setting.

However, in the research literature on authoritative style, which is not subdivided into autocracy and strictness, the conclusions are widely divergent. For example, some studies have concluded that benevolent and moral leadership can have a significant positive impact on employees' constructive behavior, while authoritative leadership and constructive behavior show a significant negative relationship (Mao et al., 2020; Xiao, 2014). Some studies have found the opposite conclusion, that authoritative leadership also positively contributes to employees' constructive behavior (Pizzolitto et al., 2022; Shen & Mu, 2018; Wu et al., 2016). When authoritative leadership is refined into autocratic and strict leadership, the findings of their studies are relatively more consistent. For example, Yu (2015) noted that autocratic leadership had a significant positive predictive effect on employee silent behavior, while strict leadership had a significant negative predictive effect on employee silence. Similarly, Zhang and Sun (2020) examined the effect of dual authoritative leadership (autocratic leadership and strict leadership) on employee constructive behavior and found that autocratic leadership had a significant negative effect on employee constructive behavior, while strict leadership had a significant positive effect on employee constructive behavior.

In terms of employees' counterproductive behaviors, Dang (2020) found it positively correlate with the autocratic dimension and negatively correlate with strict dimension of authoritative style leadership. Besides, strict leadership had a more significant impact than autocratic leadership, which means strict leadership style would reduce the harm of employees' negative behaviors to the organisation and might even serve to encourage positive behaviors. It was also found that the autocratic leadership style has a negative effect on employees' work engagement, while the strict style has an opposite effect (Jing, 2018; Sun, 2014).

Positive leadership styles affect employee cognition and attitudes, and transmit positive emotions to individuals, bringing positive psychological experiences (Helland & Winston, 2005), allowing employees to feel valued, thus promoting their psychological capital elements such as self-confidence, hope, resilience and optimism. Studies have shown that psychological capital can significantly positively predict good employee work attitudes and employee behaviors (Avey et al., 2011). Mental capital is regarded as a number of psychological traits possessed by individuals, including the individual's self-dignity and self-perception (Goldsmith et al., 1997). Subsequently, Seligman and Csikszentmihalyi (2000) proposed the concept of positive psychology, stating that the promotion of positive psychology movements should shift the focus to exploring the advantages and values of the human psyche. In subsequent studies, the researchers expanded the concept of psychological capital to the field of organizational management on the basis of analyzing and comparing the characteristics of psychological capital, economic capital, human capital and social capital (Luthans et al., 2004).

Compared with human capital and social capital, employees' psychological capital has a more significant impact on their job satisfaction and organizational commitment, which helps to improve their engagement (Seligman & Csikszentmihalyi, 2000). Regarding employee psychological capital as a personal resource, self-efficacy, self-esteem, and optimism all have a predictive effect on employee engagement levels (Luthans et al., 2004). Individuals with a higher level of psychological capital can better mobilize personal resources, generate positive attitudes, and reinforce employee engagement (Larson & Luthans, 2006). Numerous studies have found that psychological capital is important for promoting individual mental development (Xanthopoulou et al., 2009), employee creativity (Sweetman et al., 2011; Huang & Luthans, 2014; Rego et al., 2012), problem solving and innovation (Luthans et al., 2011), coping with work-family conflict (Karatepe & Karadas, 2015) and has a positive impact on customer satisfaction and service quality (Mathe et al., 2014). From the perspective of the pattern of influence, psychological capital acts as an intermediary variable. For example, Hu (2019) found that psychological capital plays a mediating role between inclusive leadership and work performance. Wang (2020) also found that psychological capital plays a complete mediating role between job satisfaction and task performance, innovation performance and peripheral performance. Employees with more

positive psychological capital are less likely to feel burnout or exhaustion at work. This is because the abundant psychological capital resources support them to maintain a good state and show dedication even when sometimes the work is tedious.

During COVID-19, China has taken lockdown measures to better control the pandemic, leading to the suspension of business in some companies, whereas pharmaceutical supplies are needed to protect the national health. The contradictory situation of the pharmaceutical distribution industry, which has to meet both the needs of the pandemic control and the development of national health, makes it a great opportunity and challenge for the pharmaceutical distribution industry to pursue its development in this context. The paternalistic leadership style has its roots in thousands of years of traditional Chinese culture, especially the influence of three thousand years of imperial history and the politicised Confucianism and the law, art and power of Legalism (Cheng et al., 2000). In the Chinese culture context, the paternalistic leadership style is more conducive to corporating management of employees. At the same time, some studies point out that paternalistic leadership style is more conducive to enterprise management in collectivist countries (Koçak & Küçük, 2021; Nal & Sevim, 2020).

This study therefore aims to examine the impact of paternalistic leadership styles on employee engagement in the Chinese pharmaceutical distribution industry in the context of the COVID-19. In addition, although some studies have explored the relationship between paternalistic leadership and employee engagement, paternalistic leadership and psychological capital, as well as the relationship between psychological capital and employee engagement (Tang, 2011; Wang & Qin, 2020; Zhou et al., 2018), no study has explored the relationship among the above three so far, and it is unclear whether paternalistic leadership can affect employee engagement through the mediating role of psychological capital. Therefore, another purpose of this study is to explore the role of psychological capital in the influence of paternalistic leadership style on employee engagement.

Based on the above considerations, this study discusses the general status of paternalistic leadership style (benevolent, moral, autocratic and strict), employees' psychological capital and their engagement in pharmaceutical distribution enterprises, the relationship among them, and puts forward the following three hypotheses:

H1: There is a correlation between the benevolent, moral, autocratic and strict leadership styles of paternalistic leadership, the psychological capital and employee engagement.

H2: The four styles of paternalistic leadership can predict employee psychological capital and employee engagement; The psychological capital of employees can predict their engagement.

H3: Paternalistic leadership style influences employee engagement by influencing employees' level of psychological capital.

## **2. Material and methods**

### **2.1 Participants**

This study investigated 5 typical and well-known pharmaceutical distribution companies in Shanghai, China, which are located in an area that is one of the most important sources of pharmaceutical supply in China. A total of 623 employees were selected from these five companies, among which 279 employees were male participants and 278 employees were female participants. As 66 employees did not complete all the questions, they were excluded from the formal analysis, and a total of 557 valid questionnaires were obtained, with a validity rate of 89.4%. Informed consent was obtained from all participants. The Research Ethics Committee approved the study protocol of Northwest Normal University (China).

### **2.2 Measures**

#### **2.2.1 Paternalistic leadership questionnaire**

This study used the Paternalistic Leadership Scale and Authoritative Leadership Scale compiled by Cheng et al. (2003) and Chou et al. (2010) to examine individual evaluations of corporate leadership

styles. For the evaluation of virtuous and benevolent leadership styles in leadership styles, which were selected from the paternalistic leadership scale compiled by Cheng et al. (2003) on the topics of virtuous leadership (5 topics) and benevolent leadership (5 topics), the authoritative leadership in this scale did not distinguish between the strict type and the autocratic type, so the corresponding 5 questions were not adopted.

For the inspection of the autocratic leaders and strict leaders, the authoritative leadership scale compiled by Chou et al. (2010) was selected, but the corresponding topics were adjusted. The adjustment principle is to still retain the three sub-concepts of the autocratic leadership (domination arbitrariness, depreciation and reprimand, and decoration concealment) and the three sub-concepts of strict leadership (task monitoring, performance requirements, and normative shaping), but delete the repetitive questions in these 6 sub-concepts that express almost exactly the same meaning, so that the number of sub-concepts in each sub-concept is relatively balanced, namely each sub-concept is measured by 2 sub-concepts, and the word expression of individual topics is appropriately fine-tuned. Therefore, the paternalistic leadership scale used in this study was finally formed, which includes moral leadership (5 questions), benevolent leadership (5 questions), autocratic leadership (6 questions), and strict leadership (6 questions). The higher the overall score of the questionnaire is, the more likely it is to be led by parentalism. In this study, the scale showed good reliability and validity. The Cronbach's  $\alpha$  coefficient of Parental Leadership Scale was 0.742, and the Cronbach's  $\alpha$  coefficients of each sub-scale were 0.876 for benevolence, 0.891 for morality, 0.881 for autocracy and 0.871 for strictness.

### **2.2.2 Psychological capital questionnaire**

This study used the Psychological Capital Questionnaire (PCQ-24) compiled by Luthans et al. (2005), which includes four dimensions of confidence, hope, optimism and tenacity, with a total of 3 items, of which the 8th, 11th and 19th items are titled reverse scoring. The total score of the questionnaire was used to indicate the individual's psychological capital level, and the higher the total score was, the higher the individual's psychological capital level was. In this study, the questionnaire showed good reliability. The Cronbach's  $\alpha$  coefficient of the psychological capital questionnaire was 0.940, and the Cronbach's  $\alpha$  coefficients of each subscale were 0.895 for self-efficacy, 0.903 for hope, 0.877 for optimism, and 0.871 for resilience respectively.

### **2.2.3 Employee engagement scale**

Employee engagement was measured using the Utrecht Work Engagement Scale, a work engagement scale called UWES developed by Schaufeli et al. (2002). As revised, the scale eventually contains a total of 9 items that exist as a single dimension. The higher the score was, the higher the individual's work engagement was. In this study, the questionnaire showed high reliability, with a Cronbach's  $\alpha$  coefficient of 0.953 for the Employee Engagement Scale.

### **2.2.4 Data analysis**

The scientific statistical analysis software SPSS 25.0 was used to conduct the common method deviation test, correlation analysis, difference test and regression analysis, and AMOS 23.0 software was used to construct the equation model.

## **3. Results**

### **3.1 Common method deviation test**

Common Method Variance (CMV) refers to the use of the same measurement tool that leads to spurious common variation between traits, resulting in Common Method Bias (CMB), commonly found in data measured on the self-pronouncing scale (Tang & Wen, 2020). Self-reporting questionnaires were used to measure participants' abilities, so there might be a common methodological bias. Harman's one-factor test was generally used for the presence of common method bias problem (Podsakoff et al., 2003). The criterion for this is that when the variance interpretation rate of the first factor in the Harman one-factor test results exceeds 40%, it can be considered that there is a large

deviation from the common method in the survey results, otherwise, the common method deviation is small. The results of the study showed that when the first factor in the study was not rotated, the variance interpretation rate of the first factor in this study was 34.536% and 12.076% respectively, which were below the critical standard, so it can be considered that there is no serious common method bias effect in the results of this questionnaire.

### 3.2 Multivariate collinear judgement

Since the questionnaire used in this study to measure paternalistic leadership was a synthesis of two primitive scales, the tolerance and Variance Inflation Factor (VIF) of this scale were used to test whether there was a collinearity problem between the four styles of benevolent leadership, moral leadership, autocratic leadership, and strict leadership. The judgment index is that when the tolerance is closer to 0, the more serious the multivariate collinearity problem is; If the VIF value is above 10, it means that there is a linear coincidence problem between the variables. As shown in Table 1, the tolerance of each dimension is greater than 0.4, while the VIF is below 3, and it is not greater than the common standard value of 10, so it is judged that there is no obvious multivariate collinearity problem between the independent variables in this study.

Table 1 Multiple collinear diagnosis of each variable of the paternalistic leadership scale

| Variables             | Collinear statistics |                                   |
|-----------------------|----------------------|-----------------------------------|
|                       | Tolerance            | Coefficient of variance expansion |
| Benevolent Leadership | 0.647                | 1.545                             |
| Moral leadership      | 0.622                | 1.606                             |
| Autocratic leadership | 0.677                | 1.476                             |
| Strict leadership     | 0.606                | 1.650                             |

### 3.3 Paternalistic leadership scale test

Validity refers to the ability to measure the degree to which a test expects to measure psychological or behavioral characteristics (Wu, 2010). In this study, paternalistic leadership was measured by using a combination of the paternalistic leadership scale and authoritative leadership scale compiled by Cheng et al. (2003) and Chou et al. (2010) to examine the evaluation of corporate leadership style by individuals. It is assumed that the scale is composed of four dimensions, namely moral leadership (5 questions), benevolent leadership (5 questions), autocratic leadership (6 questions), and strict leadership (6 questions).

First of all, we used exploratory factor analysis to examine the structural validity of the questionnaire, and found that the parental leadership scale  $KMO=0.941>0.9$ , and the Bartlett sphericity test result  $p<0.001$ , so it is suitable for factor analysis. Secondly, the principal component analysis method was used and the orthogonal rotation is performed by the method of maximum variance. As shown in Table 2, when the eigenrobas are greater than 1 as the standard, a total of 4 factors are extracted, and the cumulative variance interpretation rate of the factors is 65.066%. At the beginning of the questionnaire, the hypothesis of four dimensions was satisfied.

Table 2 Total variance of the original variables explained by the paternalistic leadership scale

| Ingredients | Initial Eigenvalues |                        |                | Sum of squared rotational loads |                        |                |
|-------------|---------------------|------------------------|----------------|---------------------------------|------------------------|----------------|
|             | Total               | Percentage of variance | Accumulation % | Total                           | Percentage of variance | Accumulation % |
| 1           | 8.722               | 39.643                 | 39.643         | 3.827                           | 17.397                 | 17.397         |
| 2           | 2.156               | 9.802                  | 49.445         | 3.633                           | 16.512                 | 33.909         |
| 3           | 1.796               | 8.165                  | 57.610         | 3.469                           | 15.768                 | 49.677         |
| 4           | 1.640               | 7.456                  | 65.066         | 3.386                           | 15.389                 | 65.066         |
| 5           | 0.659               | 2.993                  | 68.059         |                                 |                        |                |



Table 2 Table of total variance of the original variables explained by the paternalistic leadership scale (Continued)

| Ingredients | Initial Eigenvalues |                        |                | Sum of squared rotational loads |                        |                |
|-------------|---------------------|------------------------|----------------|---------------------------------|------------------------|----------------|
|             | Total               | Percentage of variance | Accumulation % | Total                           | Percentage of variance | Accumulation % |
| 6           | 0.568               | 2.584                  | 70.643         |                                 |                        |                |
| 7           | 0.551               | 2.505                  | 73.148         |                                 |                        |                |
| 8           | 0.525               | 2.386                  | 75.534         |                                 |                        |                |
| 9           | 0.503               | 2.286                  | 77.820         |                                 |                        |                |
| 10          | 0.480               | 2.182                  | 80.002         |                                 |                        |                |
| 11          | 0.466               | 2.118                  | 82.120         |                                 |                        |                |
| 12          | 0.443               | 2.013                  | 84.133         |                                 |                        |                |
| 13          | 0.413               | 1.877                  | 86.010         |                                 |                        |                |
| 14          | 0.411               | 1.867                  | 87.877         |                                 |                        |                |
| 15          | 0.395               | 1.795                  | 89.672         |                                 |                        |                |
| 16          | 0.372               | 1.691                  | 91.363         |                                 |                        |                |
| 17          | 0.350               | 1.589                  | 92.952         |                                 |                        |                |
| 18          | 0.343               | 1.560                  | 94.512         |                                 |                        |                |
| 19          | 0.333               | 1.513                  | 96.025         |                                 |                        |                |
| 20          | 0.313               | 1.421                  | 97.446         |                                 |                        |                |
| 21          | 0.302               | 1.371                  | 98.817         |                                 |                        |                |
| 22          | 0.260               | 1.183                  | 100.000        |                                 |                        |                |

After the above steps, as shown in Table 3, the final number of valid factors extracted is 4, the questionnaire items are still 22, and no items are deleted. Among them, the topic is fitted from 11-16 to factor 1, the topic 17-22 is fitted to factor 2, the topic 6-10 is fitted to factor 3, and the topic 1-5 is fitted to factor 4. The contribution rate of the factor cumulative variance was 65.066%, and each project had a large load on the corresponding factors, which was 0.687~0.793.

Table 3 Component matrix after rotation

|      | Ingredients |       |       |       |
|------|-------------|-------|-------|-------|
|      | 1           | 2     | 3     | 4     |
| X1_1 |             |       |       | 0.725 |
| X1_2 |             |       |       | 0.759 |
| X1_3 |             |       |       | 0.762 |
| X1_4 |             |       |       | 0.770 |
| X1_5 |             |       |       | 0.784 |
| X2_1 |             |       | 0.727 |       |
| X2_2 |             |       | 0.764 |       |
| X2_3 |             |       | 0.791 |       |
| X2_4 |             |       | 0.777 |       |
| X2_5 |             |       | 0.793 |       |
| X3_1 | 0.747       |       |       |       |
| X3_2 | 0.724       |       |       |       |
| X3_3 | 0.721       |       |       |       |
| X3_4 | 0.758       |       |       |       |
| X3_5 | 0.764       |       |       |       |
| X3_6 | 0.761       |       |       |       |
| X4_1 |             | 0.700 |       |       |
| X4_2 |             | 0.757 |       |       |
| X4_3 |             | 0.769 |       |       |
| X4_4 |             | 0.687 |       |       |
| X4_5 |             | 0.700 |       |       |
| X4_6 |             | 0.698 |       |       |

First, The maximum variance method is used for factor rotation, and the factor loading results after rotation are shown in the following table. For easy observation, the values with load values below 0.5 are removed from the table. From the data in the table, it can be seen that each factor index belongs to

the corresponding dimension, and the load value is lower than 0.5 in another dimension. The questionnaire has good differentiation and aggregation. In addition, the commonality of the observation indicators is higher than 0.5, and the factors have a good representation of the topic.

Secondly, Confirmatory Factor Analysis (CFA) was used to test the structure validity of the questionnaire, a research method used to measure whether the correspondence between factors and measurement terms (scale items) was consistent with the investigator's predictions. Based on the exploratory factor analysis of the above, a total of four factors were extracted, namely benevolent, moral, autocratic and strict. A four-factor model of the questionnaire was analyzed using AMOS 23.0 for validation factors. The results show that the fitted indexes in the model all conform to the fitting index, and the four-factor model fits well,  $\chi^2/df = 1.463$ , GFI is 0.954, CFI is 0.985, IFI is 0.985, and RMSEA is 0.029. The specific model is shown in Figure 1.

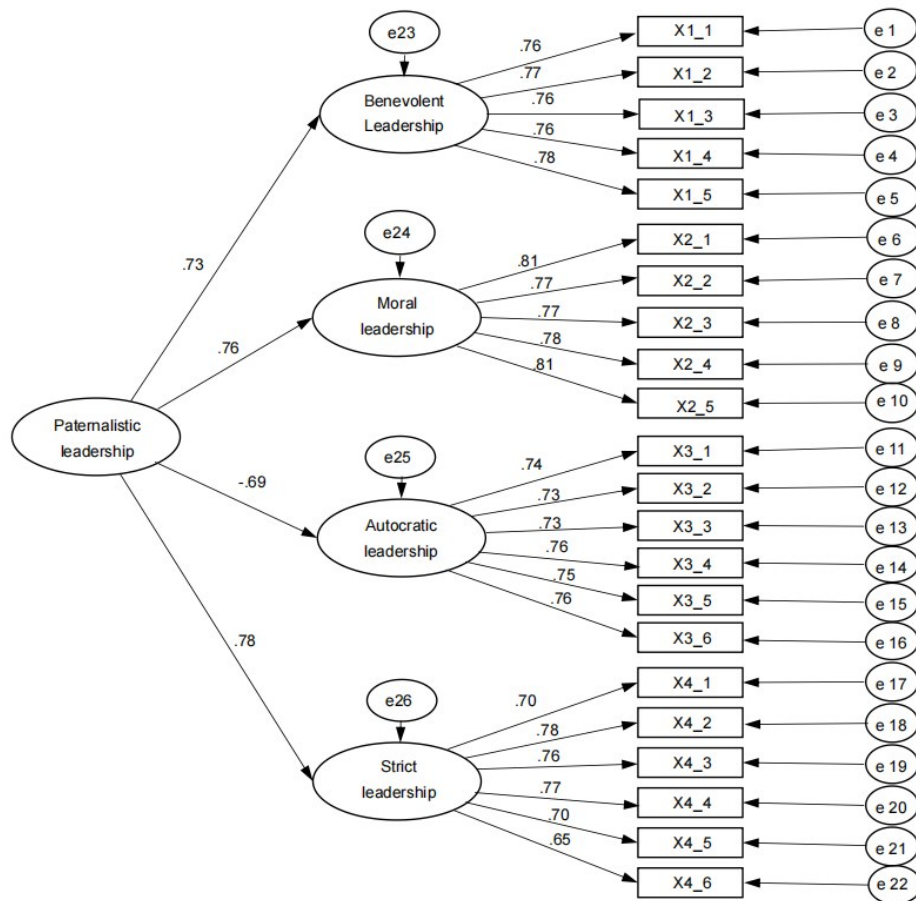


Figure 1 Parent-based questionnaire validated factor analysis model

Finally, in order to measure the aggregation validity and combinatorial reliability of the parental questionnaire, the convergence validity refers to the degree of similarity of measurement results when the same feature is determined using different measurement methods, namely different measurement methods should be aggregated together in the determination of the same feature. Composite reliability refers to the reliability of a combined variable (a new variable made from the sum of more than one variable). As shown in Table 4, according to the criteria of  $AVE > 0.5$ ,  $CR > 0.7$ , it is found that the aggregation validity and combinatorial reliability in the model are better.



**Table 4** Paternalistic scale model composite reliability and average variance extraction

|                 |      | Estimate | S.E.  | p      | CR    | AVE   |
|-----------------|------|----------|-------|--------|-------|-------|
| Benevolent type | X1_1 | 0.757    |       |        |       |       |
|                 | X1_2 | 0.773    | 0.057 | <0.001 |       |       |
|                 | X1_3 | 0.758    | 0.056 | <0.001 | 0.876 | 0.586 |
|                 | X1_4 | 0.758    | 0.058 | <0.001 |       |       |
|                 | X1_5 | 0.781    | 0.057 | <0.001 |       |       |
| Moral type      | X2_1 | 0.808    |       |        |       |       |
|                 | X2_2 | 0.770    | 0.046 | <0.001 |       |       |
|                 | X2_3 | 0.775    | 0.048 | <0.001 | 0.892 | 0.622 |
|                 | X2_4 | 0.778    | 0.046 | <0.001 |       |       |
|                 | X2_5 | 0.811    | 0.045 | <0.001 |       |       |
| Autocratic type | X3_1 | 0.740    |       |        |       |       |
|                 | X3_2 | 0.727    | 0.057 | <0.001 |       |       |
|                 | X3_3 | 0.731    | 0.056 | <0.001 |       |       |
|                 | X3_4 | 0.758    | 0.059 | <0.001 | 0.881 | 0.553 |
|                 | X3_5 | 0.749    | 0.056 | <0.001 |       |       |
|                 | X3_6 | 0.757    | 0.056 | <0.001 |       |       |
| Strict type     | X4_1 | 0.704    |       |        | 0.871 | 0.531 |

### 3.4 Variance testing

#### 3.4.1 Gender differences in paternalistic leadership, psychological capital, and engagement

An independent sample t-test of paternalistic leadership, psychological capital and employee engagement levels of participants with different genders was conducted (Table 5). It was found that paternalistic leadership and its sub-dimensions had no significant differences in gender ( $p>0.05$ ). As a whole, psychological capital had significant difference in gender ( $p<0.05$ ). In its sub-dimensions, self-efficacy had no significant difference in gender ( $p>0.05$ ), while the other three dimensions (optimism, hope, resilience) had significant differences in gender ( $p<0.05$ ). Employee engagement had significant difference in gender ( $p<0.05$ ).

**Table 5** Gender differences in paternalistic leadership, psychological capital and engagement

|                          | Male  |       | Female |       | t      | p     |
|--------------------------|-------|-------|--------|-------|--------|-------|
|                          | M     | SD    | M      | SD    |        |       |
| Paternalistic leadership | 67.94 | 10.66 | 67.68  | 10.89 | 0.284  | 0.777 |
| Benevolent type          | 15.95 | 5.35  | 15.66  | 5.55  | 0.616  | 0.538 |
| Moral type               | 16.47 | 5.68  | 16.40  | 5.66  | 0.124  | 0.902 |
| Autocratic type          | 16.28 | 6.26  | 16.63  | 5.92  | -0.678 | 0.498 |
| Strict type              | 19.24 | 4.53  | 18.97  | 4.74  | 0.675  | 0.500 |
| Psychological capital    | 82.86 | 19.83 | 78.74  | 19.66 | 2.464  | 0.014 |
| Self-efficacy            | 20.67 | 6.25  | 20.20  | 6.56  | 0.877  | 0.381 |
| Optimism                 | 20.80 | 6.45  | 19.59  | 6.50  | 2.209  | 0.028 |
| Hope                     | 20.39 | 5.90  | 19.29  | 5.70  | 2.239  | 0.026 |
| Resilience               | 21.00 | 5.67  | 19.67  | 5.69  | 2.763  | 0.006 |
| Employee engagement      | 30.86 | 6.70  | 29.42  | 6.80  | 2.521  | 0.012 |

#### 3.4.2 Age differences in paternalistic leadership, psychological capital, and engagement

A one-way ANOVA was performed on participants of different ages at levels of parental leadership, psychological capital, and employee engagement. The results showed significant differences in age between paternalistic leadership and its sub-dimensions ( $p<0.05$ ). There were also significant differences in age between psychological capital and employee engagement ( $p<0.05$ ). See Table 6 for the post-hoc multiple comparison of means.

**Table 6** Age differences in paternalistic leadership, psychological capital and engagement

|                          | 25 years old and below |       | 26-35 |       | 36-50 |       | 51 years old and above |       | F         | LSD post hoc test |
|--------------------------|------------------------|-------|-------|-------|-------|-------|------------------------|-------|-----------|-------------------|
|                          | M                      | SD    | M     | SD    | M     | SD    | M                      | SD    |           |                   |
| Paternalistic Leadership | 66.41                  | 11.74 | 66.60 | 10.85 | 67.79 | 11.04 | 70.80                  | 8.90  | 4.178***  | 4>3>2、1           |
| Benevolent type          | 14.34                  | 5.87  | 14.82 | 5.61  | 16.29 | 5.33  | 17.64                  | 4.41  | 8.932***  | 4>3>2、1           |
| Moral type               | 15.71                  | 6.12  | 15.56 | 5.66  | 16.65 | 5.80  | 18.06                  | 4.76  | 5.220**   | 4>3、2、1           |
| Autocratic type          | 18.30                  | 4.58  | 17.93 | 6.30  | 15.58 | 6.08  | 14.32                  | 4.87  | 11.917*** | 1、2>3、4           |
| Strict type              | 17.71                  | 6.34  | 18.29 | 4.88  | 19.27 | 4.52  | 20.78                  | 3.97  | 7.917***  | 4>3>2、1           |
| Psychological Capital    | 72.73                  | 20.90 | 75.32 | 18.83 | 82.59 | 18.94 | 92.54                  | 16.12 | 25.409*** | 4>3>2、1           |
| Self-efficacy            | 17.71                  | 6.34  | 19.26 | 6.60  | 20.86 | 6.10  | 23.54                  | 5.21  | 16.974*** | 4>3>2、1           |
| Optimism                 | 18.45                  | 6.75  | 18.30 | 6.39  | 20.99 | 6.21  | 23.28                  | 5.57  | 17.964*** | 4>3>2、1           |
| Hope                     | 17.74                  | 6.19  | 18.36 | 5.67  | 20.23 | 4.76  | 23.10                  | 4.76  | 21.294*** | 4>3>2、1           |
| Resilience               | 18.82                  | 6.09  | 19.41 | 5.21  | 20.50 | 6.02  | 22.62                  | 5.13  | 9.817***  | 4>3、2、1           |
| Employee engagement      | 26.56                  | 7.43  | 27.88 | 7.02  | 31.46 | 5.37  | 34.41                  | 5.20  | 34.931*** | 4>3>2、1           |

**Note:** In the post hoc test, 1 indicates 25 years and younger; 2 indicates 26-35 years; 3 indicates 36-50 years; and 4 indicates 51 years and older. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

### 3.4.3 Academic differences in paternalistic leadership, psychological capital, and engagement

A one-way ANOVA was performed on participants with different academic backgrounds (levels of educational attainment) at the levels of paternalistic leadership, psychological capital, and employee engagement. The results showed that there were no significant differences in academic qualifications in parental leadership and its dimensions, psychological capital and its dimensions, and employee engagement in the study. See Table 7 for the mean and multiple post hoc comparisons.

**Table 7** Academic differences in paternalistic leadership, psychological capital and engagement

|                          | High School and below |       | Junior College |       | Undergraduate |       | Master and above |       | F     | LSD post hoc test |
|--------------------------|-----------------------|-------|----------------|-------|---------------|-------|------------------|-------|-------|-------------------|
|                          | M                     | SD    | M              | SD    | M             | SD    | M                | SD    |       |                   |
| Paternalistic Leadership | 67.75                 | 9.95  | 68.84          | 10.20 | 66.52         | 10.94 | 67.54            | 12.18 | 1.029 | /                 |
| Benevolent type          | 17.69                 | 5.27  | 16.00          | 5.42  | 15.51         | 5.39  | 15.20            | 5.69  | 1.868 | /                 |
| Moral type               | 17.28                 | 5.34  | 16.90          | 5.41  | 15.85         | 5.96  | 16.34            | 5.59  | 1.597 | /                 |
| Autocratic type          | 15.80                 | 6.70  | 16.55          | 6.10  | 16.33         | 6.13  | 16.89            | 5.71  | 0.269 | /                 |
| Strict type              | 18.94                 | 4.30  | 19.39          | 4.37  | 18.83         | 4.68  | 19.11            | 5.55  | 0.563 | /                 |
| Psychological Capital    | 87.91                 | 18.47 | 81.80          | 19.10 | 78.63         | 20.37 | 81.17            | 20.69 | 2.486 | /                 |
| Self-efficacy            | 21.88                 | 6.19  | 20.65          | 6.42  | 19.79         | 6.45  | 21.17            | 6.15  | 1.679 | /                 |
| Optimism                 | 21.47                 | 5.52  | 19.99          | 5.44  | 19.33         | 6.10  | 20.25            | 6.13  | 2.250 | /                 |
| Hope                     | 22.91                 | 6.20  | 20.30          | 6.45  | 19.83         | 6.49  | 19.71            | 6.67  | 1.551 | /                 |
| Resilience               | 21.66                 | 5.67  | 20.85          | 5.51  | 19.68         | 5.80  | 20.05            | 6.07  | 2.267 | /                 |
| Employee engagement      | 32.13                 | 4.84  | 29.87          | 6.94  | 29.97         | 7.02  | 30.77            | 6.12  | 1.274 | /                 |

### 3.4.4 Differences in years of work in paternalistic leadership, psychological capital, and engagement

A one-way ANOVA analysis was performed on participants with different working years at the levels of parental leadership, psychological capital, and employee engagement. The results showed that there was no significant difference in working years between virtuous leaders ( $p > 0.05$ ), and there was a significant difference in working years between parental leadership and the remaining sub-dimensions ( $p < 0.05$ ). There were also significant differences in psychological capital and employee engagement in working years ( $p < 0.05$ ). See Table 8 for the mean and multiple post hoc comparisons.

**Table 8** Differences in working years in paternalistic leadership, psychological capital and engagement

|                          | 5 years and below |       | 6-15 years |       | 16 years and above |       | F         | LSD post hoc test |
|--------------------------|-------------------|-------|------------|-------|--------------------|-------|-----------|-------------------|
|                          | M                 | SD    | M          | SD    | M                  | SD    |           |                   |
| Paternalistic Leadership | 67.30             | 11.12 | 67.55      | 11.03 | 69.82              | 8.70  | 8.379***  | 3>2、1             |
| Benevolent type          | 14.80             | 5.62  | 16.00      | 5.38  | 17.24              | 4.91  | 6.198**   | 3、2>1             |
| Moral type               | 16.31             | 5.87  | 16.13      | 5.79  | 17.80              | 4.47  | 2.881     | /                 |
| Autocratic type          | 17.44             | 6.30  | 16.54      | 6.10  | 14.10              | 4.94  | 8.928***  | 1、2>3             |
| Strict type              | 18.75             | 4.83  | 18.88      | 4.70  | 20.71              | 3.72  | 5.865**   | 3>2、1             |
| Psychological Capital    | 76.40             | 20.32 | 80.33      | 19.22 | 91.95              | 16.74 | 18.456*** | 3>2>1             |
| Self-efficacy            | 19.22             | 16.62 | 20.34      | 6.30  | 23.38              | 5.36  | 12.339*** | 3>2、1             |
| Optimism                 | 18.87             | 5.99  | 19.55      | 5.73  | 22.99              | 4.78  | 12.358*** | 3>2>1             |
| Hope                     | 18.88             | 6.80  | 20.17      | 6.30  | 23.11              | 5.68  | 15.511*** | 3>2、1             |
| Resilience               | 19.44             | 5.87  | 20.27      | 5.62  | 22.48              | 5.21  | 8.138***  | 3>2、1             |
| Employee engagement      | 27.44             | 7.26  | 30.31      | 6.10  | 35.34              | 4.70  | 44.044*** | 3>2>1             |

**Note:** In the post hoc test, 1 indicates 5 years and below; 2 indicates 6-15 years; 3 indicates 16 years and above.

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

### 3.4.5 Differences in paternalistic leadership, psychological capital, and engagement across different affiliations

A one-way ANOVA was performed on participants in different affiliations at the levels of paternalistic leadership, psychological capital, and employee engagement. It was found that only psychological capital, optimism and hope differed significantly regarding the affiliation ( $p < 0.05$ ). See Table 9 for the mean and multiple post hoc comparisons.

**Table 9** Affiliation differences in paternalistic leadership, psychological capital and engagement

|                          | Warehousing department |       | Transportation department |       | Quality department |       | Finance Department |       | Administration department |       | F      | LSD post hoc test |
|--------------------------|------------------------|-------|---------------------------|-------|--------------------|-------|--------------------|-------|---------------------------|-------|--------|-------------------|
|                          | M                      | SD    | M                         | SD    | M                  | SD    | M                  | SD    | M                         | SD    |        |                   |
| Paternalistic leadership | 68.49                  | 10.66 | 67.40                     | 10.91 | 66.89              | 10.10 | 67.67              | 12.36 | 67.56                     | 11.00 | 0.171  | /                 |
| Benevolent type          | 15.53                  | 5.44  | 16.07                     | 5.45  | 16.11              | 5.67  | 16.37              | 5.17  | 15.52                     | 5.42  | 0.417  | /                 |
| Moral type               | 16.61                  | 5.55  | 16.24                     | 5.73  | 16.55              | 5.68  | 16.22              | 6.17  | 16.29                     | 5.85  | 0.128  | /                 |
| Autocratic type          | 16.84                  | 5.96  | 16.34                     | 6.35  | 15.33              | 6.76  | 16.22              | 4.93  | 16.85                     | 5.42  | 0.966  | /                 |
| Strict type              | 19.52                  | 4.60  | 18.75                     | 4.78  | 18.91              | 4.36  | 18.85              | 5.21  | 18.90                     | 4.74  | 0.774  | /                 |
| Psychological Capital    | 82.95                  | 19.75 | 78.89                     | 19.66 | 79.88              | 19.32 | 86.74              | 21.33 | 76.50                     | 19.67 | 2.451* | 4>5<br>1>5        |
| Self-efficacy            | 20.86                  | 6.36  | 20.27                     | 6.01  | 20.03              | 6.48  | 21.56              | 7.21  | 19.34                     | 7.09  | 1.010  | /                 |
| Optimism                 | 20.81                  | 6.43  | 19.53                     | 6.77  | 20.01              | 5.94  | 22.14              | 5.95  | 19.06                     | 6.70  | 2.042* | 4>5               |
| Hope                     | 20.27                  | 5.83  | 19.23                     | 5.88  | 19.86              | 5.85  | 21.78              | 5.97  | 19.00                     | 5.47  | 1.835* | 4>2               |
| Resilience               | 21.02                  | 5.65  | 19.85                     | 5.49  | 19.99              | 5.96  | 21.26              | 6.09  | 19.10                     | 5.90  | 2.093  | /                 |
| Employee engagement      | 30.11                  | 7.10  | 30.02                     | 6.42  | 30.67              | 6.30  | 32.19              | 6.28  | 29.05                     | 7.30  | 1.133  | /                 |

**Note:** In the post hoc test, 2 indicates the transportation department; 4 indicates the finance department; and 5 indicates the administration department. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

### 3.5 Analysis of paternalistic leadership, psychological capital, and engagement

The relevant analysis of paternalistic leadership, psychological capital and employee engagement of employees in the pharmaceutical circulation industry showed that paternalistic leadership was significantly positively correlated with psychological capital and engagement. In terms of sub-

dimensions, benevolence, morality, and strictness were significantly positively correlated with psychological capital and its sub-dimensions and engagement, but the autocratic leadership was significantly negatively correlated with psychological capital and its sub-dimensions and engagement. Psychological capital and its subdimensional dimensions showed a significant positive correlation with employee engagement, so hypothesis 1 was validated. See Table 10 for details.

**Table 10** Correlation analysis of paternalistic leadership, psychological capital and engagement of pharmaceutical distribution employees

|                          | 1      | 2       | 3       | 4       | 5      | 6      | 7      | 8      | 9      | 10     | 11 |
|--------------------------|--------|---------|---------|---------|--------|--------|--------|--------|--------|--------|----|
| Paternalistic Leadership | 1      |         |         |         |        |        |        |        |        |        |    |
| Benevolent type          | .733** | 1       |         |         |        |        |        |        |        |        |    |
| Moral type               | .764** | .514**  | 1       |         |        |        |        |        |        |        |    |
| Autocratic type          | -.104* | -.442** | -.435** | 1       |        |        |        |        |        |        |    |
| Strict type              | .663** | .480**  | .521**  | -.503** | 1      |        |        |        |        |        |    |
| Psychological capital    | .421** | .471**  | .472**  | -.484** | .483** | 1      |        |        |        |        |    |
| Self-efficacy            | .305** | .344**  | .353**  | -.393** | .390** | .802** | 1      |        |        |        |    |
| Optimism                 | .436** | .484**  | .479**  | -.465** | .469** | .823** | .514** | 1      |        |        |    |
| Hope                     | .294** | .352**  | .354**  | -.388** | .347** | .813** | .536** | .570** | 1      |        |    |
| Resilience               | .323** | .341**  | .335**  | -.313** | .351** | .806** | .532** | .560** | .552** | 1      |    |
| Employee engagement      | .417** | .456**  | .415**  | -.389** | .437** | .680** | .540** | .601** | .559** | .501** | 1  |

Note: \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

### 3.6 The examination of the mediating effect of psychological capital

This study used Amos 23.0 to examine whether psychological capital mediates between the various dimensions of paternalistic leadership and employee engagement. In this study, the structural equation model was established using the Bootstrap method (setting 5000 repeated sampling and 95% confidence interval) to examine the mediating role between parental leadership and employee engagement of various dimensions of psychological capital, and found that the model fit well:  $\chi^2/df = 1.261$ , CFI=0.980, GFI=0.899, rmSEA=0.022. The results of the standardized path analysis are shown in Figure 2, where psychological capital is used as an intermediary variable between the dimensions of parental leadership and employee engagement.

First of all, the results of path analysis showed that the direct path of benevolent leadership to employee engagement was significant ( $\beta = 0.10$ ,  $P < 0.05$ ); the direct path of moral leadership to employee engagement was not significant ( $\beta = -0.01$ ,  $P > 0.05$ ); the direct path of autocratic leadership to employee engagement was not significant ( $\beta = 0.07$ ,  $P > 0.05$ ); and the direct path of Strict Leadership to employee engagement was not significant ( $\beta = 0.06$ ,  $P > 0.05$ ). Secondly, the direct path of benevolent leadership to psychological capital was significant ( $\beta = 0.22$ ,  $P < 0.05$ ); the direct path of moral leadership to psychological capital was significant ( $\beta = 0.19$ ,  $P < 0.05$ ); the direct path of autocratic leadership to psychological capital was significant ( $\beta = -0.26$ ,  $P < 0.05$ ); and the direct path of strict leadership to psychological capital was significant ( $\beta = 0.19$ ,  $P < 0.05$ ). Finally, it was found that the direct path of psychological capital to employee engagement was significant ( $\beta = 0.72$ ,  $P < 0.01$ ).

Therefore, psychological capital played a partial mediating role between benevolent leadership and employee engagement, where the mediating effect value was 0.156, the confidence interval of 95% was [0.070, 0.246], 0 was not included, and the proportion of the intermediary effect to the total effect was  $0.156 / (0.156 + 0.103) = 60.23\%$ ; Psychological capital played a fully mediated role between virtuous leadership and employee engagement, where the mediating effect value was 0.138, the confidence interval of 95% was [0.052, 0.230], 0 was not included, and the proportion of intermediary effect to total effect was  $0.138 / (0.138 - 0.013) = 100\%$ ; Psychological capital played a fully mediating role between autocratic leadership and employee engagement, where the mediating effect value was -0.188,

the confidence interval of 95% was  $[-0.269, -0.114]$ , 0 was not included, and the proportion of the intermediary effect to the total effect was  $-0.188 / (-0.188 + 0.066) = 100\%$ ; Psychological capital played a fully mediating role between strict leadership and employee engagement, where the mediation effect value was 0.137, the confidence interval of 95% was  $[0.045, 0.224]$ , 0 was not included, and the proportion of the intermediary effect to the total effect was  $0.137 / (0.137 + 0.056) = 70.98\%$ .

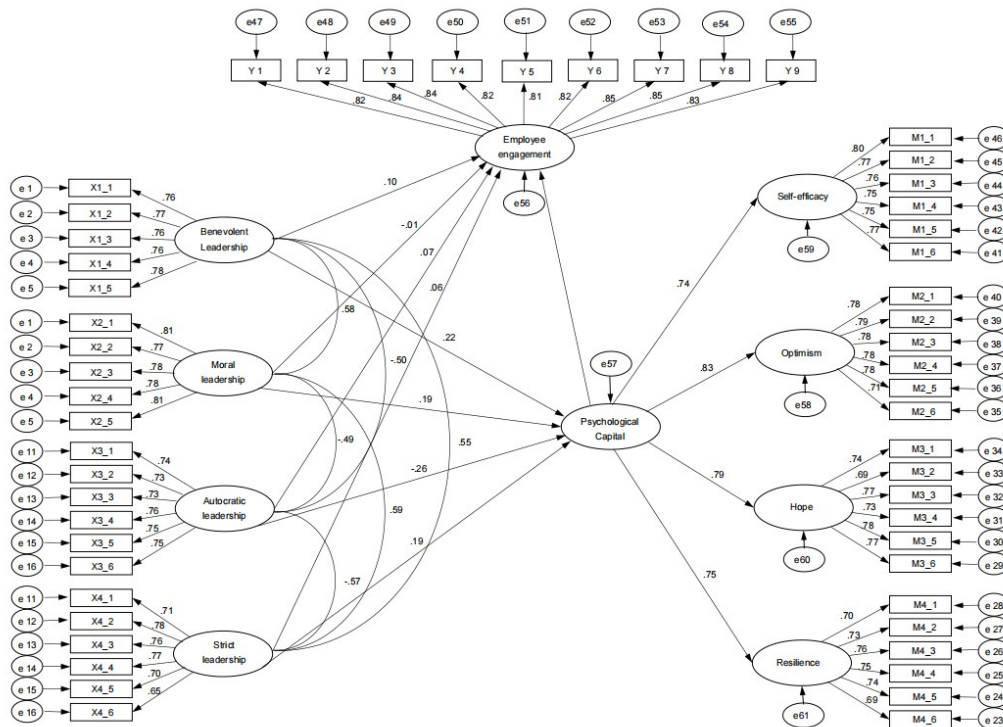


Figure 2 A model of the mediating effect of psychological capital between paternalistic leadership and engagement

#### 4. Discussion

In this study, the relationship between paternalistic leadership, psychological capital and employee engagement was discussed, as well as whether psychological capital mediated the relationship between paternalistic leadership and employee engagement, using employees from five large and medium-sized pharmaceutical distribution companies in Shanghai.

Firstly, the gender differences in total psychological capital and engagement scores were significant in terms of demographic variables, with males generally being higher than females. These results may result from the fact that female employees in large cities have a more stressful life and work than males, and usually take on more family burdens or tedious tasks at work than males, therefore score lower than males in terms of psychological capital and engagement (Lv, 2009; Wang et al., 2012).

In terms of age and years of experience, as age or years of experience increase, the autocratic scores all show a decreasing trend, while the rest of the variables and the mean values of the corresponding sub-dimensions show an increasing trend. This is probably due to the fact that with the increase of age or years of experience, employees' psychological maturity increases and they tend to be more peaceful, therefore are more able to understand and recognize the management style of their leaders; at the same time, the level of psychological capital and dedication of employees also increases with age or years of experience, which may result from the fact that employees in the finance and warehousing departments do not have any special technical requirements in relation to other departments, so their psychological

capital levels are significantly higher than those of the other departments as they are less stressed.

Secondly, the results of the two-by-two correlations between the variables show that autocratic leadership is a relatively negative leadership style that also brings negative experiences to employees (Sun, 2014; Attridge, 2009) and is therefore significantly negatively correlated with the rest of the variables or dimensions, while benevolent, virtuous and strict leadership styles are significantly and positively correlated with psychological capital and employee engagement, suggesting that good leadership style is one of the main factors that promote high psychological well-being, higher performance and engagement of employees (Xiao, 2014; Liu & Wang, 2015). In addition, this study found that psychological capital showed a significant positive correlation with employee engagement, which is consistent with previous research findings that psychological capital, as a positive psychological state of individuals, will help to stimulate employees' creativity (Huang & Luthans, 2014; Rego et al., 2012), and consequently enhance individuals' professional engagement and promote their work performance and enhance individual career engagement (Wu et al., 2020; Luthans et al., 2005).

Thirdly, the mediating effects of the structural equation model revealed that benevolent leadership had a significant direct positive predictive effect on employee engagement, while the other three styles of paternalistic leadership, namely moral, strict and autocratic, did not have a significant direct predictive effect on employee engagement. In addition, the four different styles of paternalistic leadership had a significant predictive effect on employees' psychological capital, as well as on employees' psychological capital on their engagement.

Finally, this study found that psychological capital mediates the relationship between paternalistic leadership and employee engagement. The results of the mediating effect test showed that both the direct and mediating effects of benevolent leadership were significant, while the direct path effects of the remaining three styles of paternalistic leadership on employee engagement were not significant, but the mediating effects were all significant, which may result from employees, the caring and support of a "motherly" leader has a more direct impact than a "fatherly" management image (Mao et al., 2020; Tang, 2011; Xiao, 2014), and the impact of benevolent leaders on employees' engagement behavior is shown in a direct way. However, the various styles of paternalistic leadership generally influence the level of employee engagement most of all through the mediate of psychological capital; it is believed that this internal mechanism can be explained by the interpersonal social exchange theory mentioned earlier in this paper, i.e. positive leadership styles (benevolent, moral and strict) tend to establish high quality exchange relationships with employees, bringing them positive emotional experiences and high quality of service, self-commitment and self-demand are reflected in greater confidence and optimism at work, hope for the future and resilience in the face of setbacks.

Numerous studies have shown that leadership styles can have a significant impact on employees' psychological capital (Fang & Wang, 2016; Zhang, 2014; Walumbwa & Hartnell, 2011). However, studies have focused on transformational, inclusive, and charismatic leadership styles proposed in Western cultural contexts (Liu, 2021; Mao & Tan, 2015; Zhou et al., 2018); fewer studies have explored the combination of paternalistic leadership and employee psychological capital based on traditional cultural values and ideologies that are prevalent in Chinese companies (Tang, 2011; Wang & Qin, 2020), while a number of overseas studies have supported the strong correlation or predictive effect of cultural background on psychological capital across regions (Cascio & Luthans, 2014; Luthans et al., 2008; Wernsing, 2014; Youssef, 2011); the results of the regression analyses and mediating effects tests in this study also verified that paternalistic leadership, typical in China, significantly predicted and influenced employees' psychological capital, which is additive to the research related to leadership style and psychological capital under the influence of local culture.



## 5. Limitations and future directions

This study has the following shortcomings that need to be improved in future studies. The range of selected sample institute is limited to Shanghai, which means the representativeness of the data may not be enough due to geographical limitations, and future studies can expand the area and scope of sample selection. Secondly, the data used in this study is based on horizontal study design, which may cause the causal relationship analysis of the role of paternalistic leadership on employee psychological capital and engagement not rigorous enough. Future research can consider a longitudinal study with a certain time span, examining the different styles of parental leadership and the influence mechanism on employee psychological capital and engagement in a long period of time, and making corresponding analysis and judgment according to internal and external environment changes of the enterprise.

In addition, the use of a single self-evaluation method is likely to cause homology error (common method deviation). In order to reduce the homology error, a variety of research methods can be combined, such as the combination of self-evaluation and other evaluations, the pairing between leaders and subordinate data, or the conversion of questions and others, so as to prevent the occurrence of homology error to the greatest extent. Finally, the data collection of this study is a questionnaire method, the accuracy and the error generated by the sample when filling out the questionnaire may be difficult to effectively control, and the experimental method or natural observation method can be considered to explore a more accurate and realistic method of causal relationship between variables, so as to test the research hypothesis in the future.

## 6. Conclusion

The four styles of paternalistic leadership in the pharmaceutical distribution industry have a significant impact on employee psychological capital and employee engagement. Among the paternalistic leadership styles, the autocratic leadership style has a negative impact on employee engagement, while the other three paternalistic styles have a positive impact. Psychological capital partially mediates the relationship between the benevolent style of paternalistic leadership and employee engagement, and fully mediates the relationship between the other three paternalistic styles and employee engagement. These findings provide a certain reference value and supplement for the pharmaceutical distribution industry so as to adjust the management style of leaders, improve the psychological capital of employees, and enhance their level of work engagement.

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## Disclosure Statement

### Author contributions

Li Chen contributed to the conceptualization, funding acquisition, project administration, supervision, and writing—review and editing. Jiangxin Liu contributed to the investigation, methodology, and English writing—original draft. Weifeng Qiu contributed to the data curation, visualization, and writing—original draft. Meiling Han contributed to the formal analysis and validation. All authors have read and agreed to the published version of the manuscript.

### Consent to participate

Informed consent was obtained from all individual participants included in the study.

### Conflict of interest

The authors have no competing interests to declare that are relevant to the content of this article.

### Ethical approval

Approval was obtained from the ethics committee of Northwest Normal University. The procedures used in this study adhere to the tenets of the Declaration of Helsinki.

### Data availability statement

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

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