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How to Motivate Employees' Environmental Citizenship Behavior through Perceived Interpersonal Circle Power? A New Perspective from Chinese Circle Culture

Lingyun Mi *, Ting Xu, Xiaoli Gan, Hong Chen *, Lijie Qiao and Hanlin Zhu

School of Management, China University of Mining and Technology, Xuzhou 221116, China

* Correspondence: milingyun@cumt.edu.cn (L.M.); hongchenxz@163.com (H.C.)

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Abstract: Employees' spontaneous environmental citizenship behavior (ECB) is a key factor in facilitating the low-carbon transition of enterprises. However, little research has focused on the impact of interpersonal interactions on ECB. To explore how ECB is affected by special interpersonal circles in Chinese organizations, we propose a new concept: perceived interpersonal circle power (PICP). From the two dimensions of PICP, leader-oriented perceived interpersonal circle power (PICP-L) and colleague-oriented perceived interpersonal circle power (PICP-C), we establish a mechanism model to explore the effect of PICP on ECB. A structural equation model was used to test our hypotheses through 332 questionnaires, and the results show that PICP-L and PICP-C differ significantly in the directions and strengths of their effects on ECB. PICP-C has a direct positive driving effect on environmental engagement behavior (EEB) and environmental helping behavior (EHB). High PICP-C can also encourage EEB via affective organizational commitment (AOC). Conversely, PICP-L has no significant effect on EEB. More unexpectedly, PICP-L has a significant negative influence on EHB. This study provides a new direction for future theoretical research on ECB, as well as a new opportunity for policy-making and enterprise management practices to promote employees' ECB.

Keywords: environmental citizenship behavior; Chinese circle culture; interpersonal relationship; perceived interpersonal circle power; affective organizational commitment; structural equation model

1. Introduction

The Paris Climate Change Agreement clearly states that the main goal of the global response to climate issues is to control the increase of global temperature within 1.5 °C by the end of the century. To reach this, zero emissions of carbon dioxide should be achieved by 2050 [1]. Enterprises are an important carrier for realizing this low-carbon development goal [2]. Therefore, great attention has been paid to facilitate the realization of enterprise environmental goals through the promotion of environmental standards and regulatory policies [3,4] and green technology [5,6]. However, formalized systems within organizations cannot effectively promote all types of environmental behaviors [7]. For instance, behaviors that contribute to organizations' cleaner production and reduction of environmental impact, such as conscious double-sided printing, readily turning off electrical appliances, taking the initiative to propose environmental recommendations and helping colleagues reduce environmental impacts, may not be explicitly included in the formal management system [8]. While these activities may seem trivial at the individual level, they tend to have a significant cumulative impact on the overall environmental performance of the organization [9–11]. In addition, the active participation of employees is one of the important factors affecting the successful integration of environmental standards and policy systems [8]. It can be seen that the success of an enterprise's

important environmental program may depend on employees' environmental citizenship behavior (ECB) beyond any formal reward and performance evaluation system. Therefore, it is crucial to explore the antecedents of such behaviors [12].

Previous literature has explored the drivers of employees' proactive environmental behavior from many aspects [13,14]. This includes individual levels such as attitude, values and pro-environment personal norms [15,16], perceived behavioral control [17], and environmental knowledge [18]. In addition, at the organizational level, organizational support [10], perceived supervisory support [12], leadership style [19], perceived colleague support and colleague commitment [20] have also been proven to promote employees' active environmental behavior. These studies provide some basis for our understanding of ECB. In the workplace, each employee is embedded in a network of formal or informal interpersonal circles. For example, a leader's circle formed by interaction with the leader or a colleague's circle formed by interaction with colleagues. Employees in different positions in the circle have different subjective perceptions of their own power. Will this perceived power have an impact on their ECB? To the authors' understanding, little is known about this question. It is a particularly important question in the context of Chinese society, where the phenomenon of interpersonal circles in organizations is more widespread and unique. Therefore, it is necessary to explore new ways to promote employees' ECB from the aspect of interpersonal circle power.

In Chinese society, interpersonal relationships are characterized by a special difference order pattern [21]. This kind of relationship structure is self-centered and forms a series of circles that gradually expand from the inside to the outside; the strength of the interpersonal relationships gradually weakens from the inner circle to the outer circle. This structure is similar to the pattern created on the surface of the water by throwing a stone into the water, in which ripples are pushed out farther and farther and become thinner and thinner [21]. It is the same as the interpersonal circle structure in the workplace. Employees may be in a leader's interpersonal circle with the formal leader as the core because of the superior-subordinate relationship or a colleague's interpersonal circle caused by interactions with colleagues. No one in the organization is an independent individual who exists apart, and everyone is embedded in different types of interpersonal circles. Just as the ripples formed by the water surface interact, the choices and decisions made by each employee in the interpersonal circle will be influenced by others in the circle [22], which in turn will influence others. Although some scholars have found that employees in different positions within an interpersonal circle exhibit significant differences in organizational trust and organizational citizenship behavior (OCB) performance [23–25], these studies did not reveal the deep psychological drivers of these differences. In addition, in the circle culture of Chinese enterprises, the closer employees approach to the inner circle, the greater influence on the behavior of others in the circle. When individuals perceive that they are at or close to the core people in interpersonal circles and can influence others' decision-making within the circle, will they take the initiative to implement ECB because of this sense of power? Do the mechanisms by which employees' sense of power influence ECB differ significantly among different types of interpersonal circles? Our research aims to answer these questions.

This research has three main contributions. First, to the best of our knowledge, this study is the first one to propose the concept of perceived interpersonal circle power (PICP) from the perspective of China's unique circle culture and to discuss the influence of differences in PICP on employees' ECB. Second, a mechanism model for the effects of PICP on ECB is established in this study, and the action paths, direction, and intensity of the effects of two different PICPs, namely, leader-oriented PICP (PICP-L) and colleague-oriented PICP (PICP-C), on ECB are analyzed. This is an important supplement to previous studies on the antecedents of employees' environmental behaviors in the workplace. Finally, this study provides a new approach and powerful suggestions for policy makers and business managers to exploit the influence of circle culture to promote ECB. These recommendations will help managers identify and discover the role of core figures in different types of interpersonal circles in the workplace in promoting green development, and better promote enterprises' environmental reputation and performance by building a green environmental circle culture.

The paper is arranged as follows. Section 2 presents the theoretical model and hypotheses. The research method is provided in Section 3. Section 4 introduces the data analysis process and results, and the discussion, conclusions and policy implications are discussed in Section 5.

2. Theoretical Model and Hypotheses

2.1. The Concept of Perceived Interpersonal Circle Power (PICP)

The interpersonal circle phenomenon widely exists in Chinese enterprise organizations. Employees in the workplace will form different interpersonal circles due to work interactions and non-work contacts. Each interpersonal circle will be centered on a core person, forming a circle structure that is gradually alienated from the inner circle to the outer circle [25]. Each person in the interpersonal circles has different influence on the behavior and decision of others. The closer one is to the center of the circle, the more power he or she has on others' behavior. Previous studies have involved the types of interpersonal circles or the impact of objective characteristics such as the individual's different positions in the circle on employees' behavior [26,27]. For example, Luo et al.'s research divided interpersonal circles in Chinese organizations into five types and found that employees in different positions showed significant differences in organizational trust and organizational citizenship behavior [24,25]. These studies focus on the objective differences in the behavioral performance of different characters in interpersonal circles, but do not explain the subjective psychological motivation for these differences. Employees in the circle's different positions have different subjective perceptions of their own power. If a person thinks that he or she is at the center or has a close relationship with the core members in an interpersonal circle, he or she may develop a sense of power. This sense can be the motivation for some behaviors in interpersonal circles. To describe this subjective perception of employees' power in their interpersonal circles, we proposed a new concept of PICP, and defined the connotation and structure of this concept through one-on-one interviews and questionnaires.

We conducted one-on-one interviews with 38 managers and employees at China's key national university. They were randomly selected from class of 2016 and class of 2017 MBA students, they have a high level of education and have at least 5–8 years of working experience in enterprises. Before the interviews, we clearly informed the intention of the interview and explained that all their personal replies would only be used for academic purposes in order to eliminate their privacy concerns. After the interviews, we sorted out and summarized the interview statements in a timely manner. Finally, we found that the interpersonal circles mentioned by employees fall into two categories: leaders' circles interacting with leaders and colleagues' circles interacting with colleagues. Therefore, PICP is divided into two dimensions: PICP-L and PICP-C. PICP-L refers to employees' psychological cognition of whether he or she is in the formal leader's interpersonal circle and how far away he or she is from the formal leader. PICP-C refers to employees' psychological cognition of whether he or she has high informal power in the colleague's circle during or outside work time. On this basis, we developed a two-dimensional scale of PICP. The connotation of this concept and the validity of the two-dimensional structure are confirmed in the reliability and validity test of the scale. This study will explore a new way to promote employees' ECB from the perspective of PICP.

2.2. Relationship between PICP and Environmental Citizenship Behavior (ECB)

ECB refers to the environmental behavior that employees voluntarily carry out outside of their core job tasks within the organization [14]. These behaviors, which are not rewarded by the organization's formal reward system because they reflect the environment-oriented civic spirit of employees, contribute to the improvement of enterprises' environmental performance. According to the interview results with 38 employees and the study of Boiral [28], ECB can be divided into two categories: environmental engagement behavior (EEB) and environmental helping behavior (EHB).

Employees with high power perception believe that they have high power over the behavior and decision-making of others in their own interpersonal circles, which indicates that they have acquired

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more interpersonal resources in leaders' or colleagues' interpersonal circles. Studies have pointed out that access to internal interpersonal resources contributes to employees' internal interpersonal need fulfillment, which makes them more satisfied with their work and further encourages OCB [29]. OCB is a kind of civic behavior actively implemented by employees in the workplace that is conducive to corporate performance. ECB, by contrast, is an environmentally friendly citizenship behavior that employees actively implement in the workplace. Although there are some differences in their goal orientation, both behaviors reflect the civic spirit of employees in the organization. Therefore, we have a reason to infer that employees with high PICP will also have positive performance in terms of ECB.

Employees' PICP-L is their subjective judgment of the closeness of their relationship with their leaders. As their relationship with the leader gets closer, their PICP-L will be higher. Leader–member exchange (LMX) theory [30] points out that the relationships between leaders and subordinates can fall into one of two different levels, with a distinction between insiders and outsiders. Members of the inner circle can be called "heart" members; these subordinates will receive more attention and favor from leaders and enjoy more resources that are unique to the inner circle. According to the principle of reciprocity in social exchange theory [31], such members tend to have stronger identification of their roles because they have more support from leaders and are willing to perform more extra-role behaviors beyond their own personal interests. Studies on LMX have confirmed that a high-quality exchange relationship has a significant positive effect on employees' OCB [32–35]. Therefore, it is reasonable to conclude that employees with higher levels of PICP-L are more likely to implement ECB. Thus, this study proposed the following hypotheses:

Hypothesis 1 (H1). *PICP-L has a positive effect on ECB.*

Hypothesis 1a (H1a). *PICP-L has a positive effect on EEB.*

Hypothesis 1b (H1b). *PICP-L has a positive effect on EHB.*

An interpersonal circle is not a structure with closed boundaries; its boundary is unstable and vague and has a certain openness and flexibility; the roles in a circle are interchangeable [36]. Employees can enter the interpersonal circle they desire by showing more active "courtship" behaviors to elicit the long-term exchange of favors [37]. We believe that employees at the center of colleagues' groups who are motivated by the possibility of moving closer to the leaders' circles for greater personal development will achieve this goal by engaging in more non-employment-related work [24]. At the same time, as the central figures of their colleagues' interpersonal circles, they will act as role models for other employees, which will exert positive behavioral pressure on these other employees. Since ECB is a kind of pro-environment extra-role behavior, we assert that the higher the PICP-C value that employees have, the more likely they are to implement ECB. Hence, we can propose these hypotheses:

Hypothesis 2 (H2). *PICP-C has a positive effect on ECB.*

Hypothesis 2a (H2a). PICP-C has a positive effect on EEB.

Hypothesis 2b (H2b). *PICP-C has a positive effect on EHB.*

2.3. Mediation of Affective Organizational Commitment (AOC)

AOC as proposed by Allen and Meyer [38] refers to employees' psychological commitment to the organization formed by their willingness to stay in the organization. It is a kind of resonance generated by employees' feelings for the organization. This commitment is a direct reflection of the employees' commitment to stay in the organization because of an emotional attachment to the organization rather than for other reasons, and AOC is argued to be a truer commitment than other types of organizational commitment [39]. AOC is also considered to have the strongest correlation with

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positive behaviors, such as OCB, of employees in the organization [40], and AOC is a main concern in this study. We believe that employees with higher emotional dependence on the organization will psychologically establish an emotional bond with the organization, identify with their organization and be willing to take the initiative to do things beyond their job obligations to improve the environmental performance and environmental reputation of the organization. In addition, some previous studies also support the relationship between AOC and ECB [10,41]. Therefore, we speculate that AOC is an important predictor of ECB.

On the other hand, the higher the value of PICP-L, the higher the employee's AOC may be. There are two reasons for this effect. First, formal leaders in an organization have more power resources, which can meet the power needs of employees close to them. The theory of power needs states that power motivation is an important indicator of an employee's performance in an organization [42]. Under this premise, employees tend to perform well to meet their power needs. In this long-term exchange process, the employee is bound to have closer ties with the organization, which will enhance the employee's commitment to the organization. The higher an employee's PICP-L, the higher the possibility that the employee's power needs will be met. Second, based on the reciprocity principle of social exchange theory, the "insiders" of an interpersonal circle in an organization, who have high-quality exchange relations with leaders, can gain more trust and opportunities from the leader. They will reciprocate the benefits of this relationship with higher AOC [38,43,44]. Based on the foregoing, we assumed that AOC plays an intermediary role between PICP and employees' ECB. Therefore, the following hypotheses are proposed:

Hypothesis 3 (H3). *AOC mediates the positive relationship between PICP-L and ECB.*

Hypothesis 3a (H3a). AOC mediates the positive relationship between PICP-L and EEB.

Hypothesis 3b (H3b). AOC mediates the positive relationship between PICP-L and EHB.

The other kind of interaction relationship in an organization, in addition to the interaction relationship between leaders and subordinates, is between colleagues. Positive relationships between coworkers can positively predict employees' interpersonal citizenship behavior [45,46]. Moreover, peer support in an organization can further promote eco-helping by promoting employees' commitment to their colleagues [20]. Thus, the relationship distance and interaction between colleagues have important impacts on employees' extra-role behavior.

In colleagues' interpersonal circles, which are formed by the interactions between colleagues in the organization, members at the core of the circle are often regarded as informal leaders. Although informal leaders do not hold formal power in organizations, they can have more emotional exchanges with other colleagues in the circles, as well as with leaders, thus influencing others in the circles. Such informal influence can also meet the power needs of employees. In addition, research on social networks in organizations has found that employees at the center of the network have higher work freedom and closer ties with colleagues, which enhance their confidence and ability and increases their AOC [47,48]. Therefore, we hypothesize that employees with high PICP-C have higher AOC and exhibit more ECB. Thus, we posit the following:

Hypothesis 4 (H4). AOC mediates the positive relationship between PICP-C and ECB.

Hypothesis 4a (H4a). AOC mediates the positive relationship between PICP-C and EEB.

Hypothesis 4b (H4b). AOC mediates the positive relationship between PICP-C and EHB.

Based on the above discussion, the conceptual framework is depicted in Figure 1.

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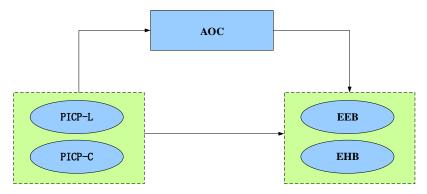


Figure 1. Conceptual model of this study. Notes: PICP-L: leader-oriented perceived interpersonal circle power; PICP-C: colleague-oriented perceived interpersonal circle power; AOC: affective organizational commitment; EEB: environmental engagement behavior; EHB: environmental helping behavior.

3. Method

3.1. Sample and Procedure

The respondents were randomly selected employees of four different types of enterprises (state-owned enterprises, private enterprises, Sino-foreign joint enterprises and foreign-owned enterprises) and were provided a self-administered questionnaire via email. To avoid common method bias, we conducted two surveys at two different points in time. We first contacted the human resources directors of the 4 companies and explained our research purpose. After receiving their support, we obtained 416 employees' email addresses. We sent an email to these employees that included a measurement of PICP and AOC. We explained to them that the questionnaires were used anonymously, that is, we would not associate anyone's name or other privacy information with the final questionnaire data and only the data provided for our research was retained to eliminate the concerns of employees. A total of 377 valid questionnaires were received in the survey. Approximately 2 months after the first survey, we sent a questionnaire regarding ECB and personal basic information to the 377 employees who responded to the first email, and 332 valid questionnaires were returned. The effective response rate of the two surveys was 79.81%. At the time of the survey, all participants worked in non-green industries. The final sample characteristics are shown in Table 1.

| Variable | Category | No. | Percentage | Variable | Category | No. | Percentage |
|----------------------|---------------------------------|-----------|------------|------------------------|------------------------|-------|------------|
| C 1 | Male | 179 | 53.9% | | state-owned enterprise | 103 | 31.0% |
| Gender | Female | 153 | 46.1% | Enterprise | private enterprise | 112 | 33.7% |
| Marryage | Married | 170 | 51.2% | state-owned enterprise | 71 | 21.4% | |
| Marryage | Unmarried | 162 | 48.8% | | foreign enterprise | 46 | 13.9% |
| | <20 | 3 | 0.9% | | Grassroots employee | 150 | 45.2% |
| | 20–30 | 226 68.1% | | | junior manager | 93 | 28.0% |
| Age | 31–40 | 83 | 25.0% | Position | middle manager | 81 | 24.4% |
| 8- | 41–50 | 18 | 5.4% | | top manager | 8 | 2.4% |
| | >50 2 0.6% | 0.6% | | <1 | 64 | 19.3% | |
| | Below junior high school | 0 | 0 | | 1–3 | 68 | 20.5% |
| Educational level | High school or secondary school | 11 | 3.3% | | 3–5 | 70 | 21.1% |
| | associate degree | 34 | 10.2% | Tenure in the | 5–10 | 80 | 24.1% |
| | bachelor degree | 202 | 60.9% | organization | 10–15 | 22 | 6.6% |
| | graduate degree | | 25.6% | - | 15–20 | 20 | 6.0% |
| | - | | | | >20 | 8 | 2.4% |

Table 1. Demographic characteristics of the sample (N = 332).

3.2. Measures

All items in this study were measured on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). The measurements of AOC and ECB were based on established scales. We adopted Meyer and Allen's [38] scale to measure AOC, and ECB was measured by the scale proposed by Boiral

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and Paillé [28]. It should be noted that we developed the PICP scale based on existing research. After studying the relevant literature, we developed the PICP scale with reference to the LMX measurement scale and the emotional network measurement scale of Zhang and Luo's [17] relationship circle. Then, we repeatedly discussed and modified the scale and consulted relevant experts and formed our final measurement items.

4. Results

4.1. Reliability and Validity of Constructs

Before analyzing the model and testing the hypotheses, we examined the reliability and validity of the scales. The results are shown in Table 2. Cronbach's alpha coefficient was used to test the reliability of the scales, and the results demonstrated that the coefficient values of all scales met the critical value of 0.7. Therefore, the scales had good reliability. The KMO (Kaiser–Meyer–Olkin) test and the Bartlett's spherical test of the data were carried out using SPSS 24.0. The results show the KMO values of all the scales are above the critical value of 0.7, and the corresponding Bartlett's tests are statistically significant (sig. = 0.000). In addition, the total variance interpretation rates of the PICP, AOC and ECB scales were 59.709%, 66.995%, and 74.838%, respectively, all higher than 50%, indicating that the scales could be used for factor analysis.

Table 2. Reliability and validity.

| Items | Loadings |
|--|----------|
| PICP-L | |
| Cronbach's alpha coefficient (α) = 0.819 composite reliability (C.R.) = 0.794 | |
| I know clearly whether my immediate supervisor is satisfied with what I do. | 0.569 |
| My immediate supervisor knows what potential I have. | 0.714 |
| My immediate supervisor will use his power to help me solve my problems in work. | 0.607 |
| My immediate supervisor will use his or her own resources to protect my interests. | 0.653 |
| I have a good relationship with my immediate supervisor. | 0.751 |
| PICP-C | |
| $\alpha = 0.825 \text{ C.R.} = 0.827$ | |
| I am a good event organizer during nonworking hours. | 0.713 |
| Colleagues are happy to share with me their happy and unhappy things in life. | 0.665 |
| Many colleagues attach great importance to my point of view when making decisions. | 0.674 |
| I will participate not only in the activities of my own department but also in activities of other departments. | 0.683 |
| When there is a need to communicate with other departments, everyone will think of me first. | 0.759 |
| AOC | |
| $\alpha = 0.835 \text{ C.R.} = 0.825$ | |
| I would be very happy to spend the rest of my career with this organization. | 0.679 |
| I enjoy discussing my organization with people outside it. | 0.605 |
| I truly feel that this organization's problems are my own. | 0.834 |
| This organization has a great deal of personal meaning for me. | 0.810 |
| EEB | |
| $\alpha = 0.856 \text{ C.R.} = 0.857$ | |
| I spontaneously propose some energy saving and environmental protection advice to the leaders or relevant departments. | 0.744 |
| I actively participate in environmental events organized in and/or by my company. | 0.749 |
| I volunteer for projects, endeavors or events that address environmental issues in my organization. | 0.787 |
| I spontaneously participate in environmental actions that contribute positively to the image of my organization. | 0.817 |
| ЕНВ | |
| $\alpha = 0.876 \text{ C.R.} = 0.878$ | |
| I am willing to take the time to remind my colleagues to be green at work. | 0.853 |
| I recommend a more environmentally friendly working method to my colleagues, even when it is not my direct responsibility. | 0.871 |
| I will persuade our company or colleagues to buy environmentally friendly products. | 0.794 |

Owing to the fact that the data are self-reported, common method bias need to be tested. The Harman's single factor test shows that the contribution rate of the maximum factor is 37.87%, which is less than 50%. Therefore, we believe that any effect is unlikely to cause serious confusion, indicating that common method bias is unlikely to become a problem in this study [49].

Next, we tested the scales with AMOS 22.0. We compared a one-factor model in which all items measured the same factor; a two-factor model in which PICP was measured as one factor and AOC and ECB were measured as a factor; a three-factor model in which PICP, AOC, and ECB

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each represented one factor; and a five-factor model consisting of PICP-L, PICP-C, AOC, EEB and EHB. The final results report that the fitting index of the five-factor model reached the optimal level (CMIN/DF (chi-square statistic/degree of freedom) = 1.694 (<3); RMR (root mean square residual) = 0.046 (<0.05); GFI (goodness of fit index) = 0.919 (>0.9); NFI (normed fit index) = 0.919 (>0.9); IFI (incremental fit index) = 0.965 (>0.9); TLI (Tucker–Lewis index) = 0.958 (>0.9); CFI (comparative fit index) = 0.965 (>0.9); RMSEA (root mean squared-error of approximation) = 0.046 (<0.08)) indicating good discriminant validity among the variables. Confirmatory factor analysis of the five-factor model showed that the standardized factor loading of all items was greater than 0.5 (see Table 2). According to the recommendations of Fornell & Larcker [50], the composite reliability (C.R.) values of all scales were greater than 0.7. Hence, the scales had good convergent validity. Overall, the tests of reliability and validity supported the credibility of the scales that we used.

4.2. Descriptive Analysis and Correlation Analysis

Descriptive statistical analysis was performed to obtain an overall understanding of the data, and the correlation between the variables was calculated to clarify the correlation strength. The results show that there is a significant correlation between the three variables, which provided the basis for the following analysis. Table 3 lists the mean, standard deviation, and correlation values for all study variables.

| Variable | Mean | Standard Deviation | 1 | 2 | 3 | 4 |
|-----------|-------|---------------------------|----------|----------|----------|----------|
| 1. PICP-L | 3.608 | 0.663 | | | | |
| 2. PICP-C | 3.498 | 0.708 | 0.575 ** | | | |
| 3. AOC | 3.767 | 0.813 | 0.445 ** | 0.494 ** | | |
| 4. EEB | 3.232 | 1.008 | 0.319 ** | 0.551 ** | 0.396 ** | |
| 5. EHB | 3.168 | 1.065 | 0.261 ** | 0.523 ** | 0.331 ** | 0.733 ** |

Table 3. Mean, standard deviation and correlations of the variables.

Notes: N = 332; significant at p < 0.01; ** p < 0.01.

4.3. Hypotheses Testing

Our research controlled for demographic variables, including employees' gender, age, marital status, educational level, organizational tenure and position. Previous studies have shown that these factors may have an impact on individuals' environmental behavior [51,52].

To validate our hypotheses, we tested the complete model by using a structural equation model. The final results show that the overall fitness of the model is acceptable (CMIN/DF = 1.560; RMR = 0.045; GFI = 0.927; AGFI = 0.903; NFI = 0.927; IFI = 0.972; TLI = 0.966; CFI = 0.972; RMSEA = 0.041). The direct effects of PICP and ECB are summarized in Table 4.

| Path | Standardization Coefficient | Non-Standardized Coefficient | Standardized Error | C.R. | <i>p</i> -Value |
|------------|--------------------------------|---------------------------------|-----------------------|--------|-----------------|
| PICP-L-EEB | -0.204 | -0.310 | 0.174 | -1.781 | 0.075 |
| PICP-L-EHB | -0.272 | -0.451 | 0.195 | -2.314 | 0.021 |
| PICP-C-EEB | 0.714 | 0.921 | 0.153 | 6.021 | *** |
| PICP-C-EHB | 0.758 | 1.006 | 0.168 | 6.359 | *** |

Table 4. Model coefficients for the hypothesized direct effects.

Notes: *** p < 0.001.

Specifically, the relationship between PICP-L and ECB does not support our assumptions. First, the direct effect of PICP-L on EEB is not significant ($\beta = -0.204$, p = 0.075); while it shows a significant effect on EHB, the direction is negative ($\beta = -0.272$, p = 0.021). Thus, H1a and H1b have not been verified. PICP-C shows positive effects on both EEB ($\beta = 0.714$, p < 0.001) and EHB ($\beta = 0.758$, p < 0.001). Thus, the results support H2a and H2b.

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According to the procedures explained by scholars [53,54], we used the bias-corrected non-parametric percentile bootstrap method to test the mediating effects of AOC by repeating the sample 5000 times with a 95% confidence interval. The specific results are represented in Table 5.

| Path | Standardized | Bootstrapping 95% | p-Value | |
|----------------|-----------------|-------------------|---------|---------|
| | Indirect Effect | Lower | Higher | p-varue |
| PICP-L-AOC-EEB | 0.063 | -0.002 | 0.312 | 0.060 |
| PICP-L-AOC-EHB | 0.042 | -0.019 | 0.287 | 0.157 |
| PICP-C-AOC-EEB | 0.048 | 0.004 | 0.160 | 0.038 |
| PICP-C-AOC-EHB | 0.032 | -0.010 | 0.151 | 0.090 |

Table 5. Model coefficients for the mediation of AOC.

As shown in Table 5, the indirect effects of PICP-L and both of the dimensions of ECB are not significant because the bootstrapping 95% CI interval straddles 0~(-0.002~to~0.312~and-0.019~to~0.287). Thus, H3a and H3b are not supported. The 95% CI of the moderately adjusted index for the indirect effect of PICP-C on EEB is 0.004~to~0.160 (excluding zero), thus supporting H4a. The direct effect interval between the two does not include 0~(0.614~to~1.283), and therefore AOC plays a partial intermediary role between PICP-C and EEB. In addition, the mediating effect of PICP-C through AOC on EHB is not verified because its bootstrapping 95% CI contains 0~(-0.010~to~0.151).

In summary, the path effect diagram after fitting and correcting by the structural equation model is shown in Figure 2.

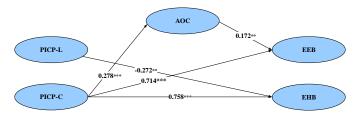


Figure 2. The results of the proposed model. Notes: PICP-L: leader-oriented perceived interpersonal circle power; PICP-C: colleague-oriented perceived interpersonal circle power; AOC: affective organizational commitment; EEB: Environmental engagement behavior; EHB: environmental helping behavior. ** p < 0.01; *** p < 0.001.

5. Discussion and Implications

5.1. Discussion

This study is the first to explore the antecedents of employees' ECB from the perspective of China's unique circle culture. We propose the new concept of PICP, establish a mechanism model for the effects of PICP on ECB, and analyze the different paths, directions and strengths of the effects of PICP-L and PICP-C on ECB. This study is an important supplement to previous research on the antecedents of employees' environmental behavior in the workplace and provides a new way for policy makers and business managers to promote employees' ECB and, in turn, the green development of enterprises.

Our results suggest that PICP-C can contribute to an increase in ECB. The higher the PICP-C value, the more willing employees are to implement ECB. ECB may be an important way for employees to demonstrate their interpersonal power as well as establish and maintain a good reputation among colleagues. Previous studies have pointed out that perceived coworker support, commitment to colleagues, and intention to help others can promote EHB in the workplace [20,55]. Our research extends this research in another respect by confirming that in addition to the positive influence of other colleagues on EHB, employees who perceive themselves to have higher power in colleagues' circles will actively implement more EHB, and this promoting effect also applies to employees' EEB.

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Our final results also show that PICP-C has a relatively strong effect on ECB. Therefore, the core figures in colleagues' interpersonal circles are important forces driving the increase in ECB in the workplace. Providing incentives for these people should be the focus when promoting ECB.

However, to our surprise, PICP-L has no significant effect on EEB. Moreover, PICP-L inhibits the generation of EHB, in contrast to our hypothesis. Our analysis of the reasons for this discrepancy states that people with high PICP-L may obtain more resources in leaders' circles, and thus their motivation for gaining attention through extra-role behavior is diminished. Studies have found that for interpersonal circles in Chinese organizations, the core members of circles have a lower level of OCB directed toward organizations than peripheral members [24]. As resource masters and opportunity distributors, the main task of the core members of a circle is to strive for more benefits for their own interpersonal circles rather than pursue extra-role behaviors. Employees within a leader's circle also tend to pay more attention to their interactions with the leader and thus they have less motivation for behaviors beyond work performance [23]. Another possible reason, we assume, is that the power needs of employees with high PICP-L are more easily met because they are closely related to leaders at the core of power, have a stronger ability to influence leaders' decision-making, and thus have a higher organizational status and an increased influence on other people's behavior. McClelland's theory of power needs [42] points out that power need is an important motivation for employees' work behaviors. Employees with a high need for power will be less gregarious as their power increases, which means they have a lower need for strong interpersonal relationships. Past research has also shown that the best managers have high power needs and low social needs [56]. Therefore, we believe that this reduction in sociability may be the reason why employees with high PICP-L are reluctant to help their colleagues carry out environmental behaviors, thus leading to a reduction of EHB. The third possible reason is that most of the enterprises we surveyed were non-green and had not formulated specific environmental protection systems and policies. In terms of the implementation of environmental protection behaviors, a lack of strong organizational support will also lead to the failure of employees with strong PICP-L to show more ECB [57–60].

Moreover, this study provides a more in-depth test of the relationship between PICP and ECB. The final results show that AOC plays a mediating role between PICP-C and EEB. Employees with stronger PICP-C will have higher AOC, and this emotional attachment to the organization will be further transformed into employees' EEB. This finding echoes relevant research on social network structure [48], which confirms that employees in the center of interpersonal interactions have higher AOC. It also demonstrates the feasibility of social exchange theory in explaining employees' ECB [31], as employees' AOC will be further translated into practical actions that are beneficial to the organization. This result highlights the necessity of enhancing the central character's AOC in colleagues' circles. However, contrary to our expectations, AOC does not play a role in the relationship between PICP-L and ECB, which requires further exploration in the future.

5.2. Conclusions and Implications

Based on the previous analysis and discussion, the main conclusions of this study are as follows. Employees' PICP is an important antecedent influencing ECB. However, there are significant differences in the directions and action paths of the effects of PICP-L and PICP-C on ECB. The impact of PICP-C on ECB supports our hypothesis of significant facilitation of both EEB and EHB (β = 0.714 and β = 0.758). However, the effect of PICP-L on ECB does not support our hypothesis. PICP-L has no significant effect on EEB (p = 0.075) and has a negative effect on EHB (β = -0.272).

The impact of employees' PICP on ECB is partially mediated by AOC. PICP-C can significantly promote AOC and promote employees' EEB through AOC. However, PICP-L does not improve employees' AOC, and its effect on ECB is not affected by AOC.

According to our conclusions, the following recommendations are put forward:

First, for relevant policy-making institutions, it is necessary to continuously strengthen the supervision of corporate environmental performance. It is also important to give full play to the exemplary role of corporate leaders and managers at all levels, and form environment-oriented leaders' interpersonal circles to drive the ECB of insiders. According to our research results, if environmental performance is not required in the performance evaluation of enterprises, the leaders and key figures in leaders' interpersonal circles can become the restraining force for employees' ECB. To turn this obstacle effect into a motivation effect, relevant policy-making departments can start from the following three aspects: (1) Strengthen the supervision of enterprises' environmental performance, and encourage them to pay attention to environmental performance actively while focusing on financial performance. Encourage managers at all levels of enterprises to place environmental performance in an important position and then drive other members in the leaders' interpersonal circles to pay active attention to environmental performance. (2) Explore the establishment of enterprise leaders' environmental commitment system or guide them to publicly express their willingness to go green. Promoting an environmentally oriented culture in leaders' interpersonal circles through the environmental attitudes of leaders will encourage employees within the circle to take the initiative to become environmentally friendly. (3) Establish an environmental honor mechanism and increase the honor incentive for green enterprises, especially for enterprise leaders. For example, the ECB of core figures in leaders' circles can be motivated by honor mechanisms such as "green enterprise certificate", "environmental star enterprise" or "green entrepreneur".

Second, at the enterprise practice level, managers need to fully identify and explore the positive roles of core figures in colleagues' interpersonal circles in promoting ECB. Since PICP-C can significantly promote EEB and EHB, corporate leaders and managers at all levels need to pay close attention to the interpersonal influence of core figures in colleagues' circles. Enterprises can establish diversified environmental honor mechanisms such as an "environmental protection star", "environmental team" honor system and environmental integral system to encourage core figures in colleagues' circles to fully exert their positive role in promoting ECB.

The phenomenon of interpersonal circles is widespread in Chinese corporations. Therefore, when organizing corporation culture, organizational managers should focus on building a positive environmental circle culture and avoiding negative interactions between circles. Organizations can create and strengthen a green circle culture through training employees on environmental protection concepts and giving full play to the effects of interpersonal circle power on employees' ECB. Moreover, the findings highlight the important intermediary role of AOC. Therefore, organizations can enhance the relationships among colleagues through team-building activities to increase the AOC of employees and further promote the environmental performance of the organization.

5.3. Limitations and Future Research

Although this study provides new insights for research on ECB and circle culture within organizations, there are still some deficiencies that need to be addressed in follow-up research. First, our research is conducted in the context of Chinese culture, which is characterized as a "high relationship" culture. In China, the various interpersonal circles to which employees belong are their main carriers of social relationships and greatly influence their behaviors. Considering the differences in people's understanding and dependence on interpersonal circles in different cultures, future research needs to extend the sample to other cultures to test whether the influence of PICP on ECB varies among different cultural backgrounds.

A second limitation is that the data were collected through questionnaires, which are inevitably and subjectively influenced by the participants. Although our analysis results show that the influence of common method bias is unlikely to become a problem, we must admit that the data are self-reported. Consequently, in the future research, some measures can be taken to reduce subjective bias such as high self-evaluation and social desirability. First, we could have a try to add a variable that measures

participants' social desirability or whether they have overly favorable opinions on themselves (e.g., narcissism). Then, we put it into the research model as the control variable to test and control the possible self-overestimation. If the participants' optimistic evaluation of themselves is a factor that might lead to the inflated correlation among variables, then separating the variables, which reflect this factor from the model, will make the correlation approach the real level [61,62]. Second, for the measurement of employee behaviors, we can investigate and evaluate from different sources (leaders or colleagues) to reduce the self-overestimation problems that might exist in individual self-reports. Although our results indicate that common method bias is unlikely to be a problem, it is still worth measuring employee behavior from different sources in future research.

Third, PICP is a new concept proposed by this study. Although the measurement has referred to many related studies, more research and tests are needed in the future to continuously improve the connotation and extension of the concept. In addition, we considered only the relationships among PICP, AOC and ECB; the final results show that there may also be some other impact mechanisms at work. In the future, we need to explore and examine the other factors affecting PICP and ECB to enrich and improve our research model.

Finally, in this study, we did not consider the possible impacts of environmentally friendly leaders and environmental enterprises, which could provide us with a new study topic in the future.

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