

Authentic Leadership, Organizational Commitment and Innovative Behavior In Chinese Construction Industry: The mediating effect of Organizational Identification and moderating effect of Positive Psychological Capital*

중국 건축 기업에서 진성리더십, 조직몰입과 혁신행동:
조직동일시의 매개효과와 긍정심리자본의 조절효과

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〈목 차〉

I. Introduction	3.2 Measures
II. Literature review	IV. Empirical results
2.1 Authentic leadership, organizational commitment and innovative behavior	4.1 Preliminary results
2.2 The mediating role of organizational identifications	4.2 Test of hypothesis
2.3 The moderating role of positive psychological capital	V. Conclusions
III. Methodology	Reference
3.1 Sample and procedures	국문요약

Abstract : In recent years, China's construction industry has been developing rapidly, so the requirements for the comprehensive quality and innovation ability of employees have become higher and higher. However, at present, the quality of employees in China's construction enterprises is generally low, and the innovative vitality and efficiency of employees are not high. Moreover, the long working hours and high intensity of the construction industry have led to a rising trend of employee turnover year by year. Therefore, how to choose the right leadership style, enhance employees' organizational commitment and innovative behavior has become the core of human resource management work in construction companies.

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Based on the social exchange theory, COR theory, and social identity theory, this study aims to investigate the impact of authentic leadership on organizational commitment and innovative behaviors through organizational identification in China's construction industry. And positive psychological capital was added as a moderating variable. Total of 393 employees and 62 teams from construction enterprises were used as survey samples, and multi-level data analysis using SPSS 26.0 and Mplus 8.0 was employed. The results showed that authentic leadership was positively related with organizational commitment and innovative behavior while authentic leadership enhanced organizational commitment and innovative behavior through organizational identification. Moderating effects of positive psychological capital was also found. This study discusses the theoretical and practical implications of these results. First, This study extends the study of the outcome variables of authentic leadership in the construction company by studying organizational commitment and innovative behavior of employees from the organizational level across levels. Second, This study uses authentic leadership in the Chinese context as an entry point for research to complement research on the impact of authentic leadership styles on employees' organizational commitment. Third, this study expanded the mediating role of organizational identification between authentic leadership and innovation behavior. Fourth, this paper identified the moderating role of psychological capital between authentic leadership and organizational commitment and innovative behavior in the Chinese context, and the findings complement related research on psychological capital. Also, this paper puts forward the recommendations for human resource management. And considers the limitations and possible future research directions.

Key Words : Authentic leadership, Organizational commitment, Innovative behavior, Organizational identification, Positive psychological capital

I . Introduction

The construction industry is the pillar industry of a country or region, accounting for 3–10% of China’s gross national product (Xing, 2018). It is also a labor-intensive industry with many employees, high industrial relevance, and large economic contribution which can bring huge economic and social benefits to the country as if it reflects the living standard and quality of population. After forty years of reform and opening-up, China’s urbanization process has accelerated, infrastructure has been constantly updated, and construction enterprises have developed at a high speed. In 2019, China’s National Bureau of Statistics showed the total output value of the construction industry reached 248,446 billion yuan, a 5.7% increase from the previous year. This shows that the industrial prospect of the construction industry is also getting broader and broader, which greatly promotes the industrialization and urbanization process in China. Construction industry is developing towards green construction and overall development of the construction industry is good, and it is developing towards green construction and intelligent construction. On the other hand, construction enterprises are facing problems including low quality of employees because of their laborious job characteristics (You, 2014; Xing, 2018). In recent years, the staff turnover of construction enterprises has been on the rise, bringing negative results such as paying a greater cost in skills training without satisfactory results, causing serious waste of enterprise resources (Huang, 2016).

According to social exchange theory, when the leadership of a company creates beneficial opportunities for the company’s employees, this is likely to elicit positive feelings for the company among those employees, who are then more motivated to enthusiastically contribute to the company, increasing overall performance levels and outcomes. Therefore, it is especially important to study the aspects of organizational commitment and innovative behavior for employees in construction companies, and authentic leadership types, respectively.

II . Literature Review

2.1 Authentic leadership, Organizational commitment and innovative behavior

George (2003) defined authentic leaders as to have clear goals, have a strong sense of self-discipline, lead others according to their nature, can build enduring organizations, and are willing to serve the public (Liang, 2014). Avolio et al. (2004) stated authentic leadership is the leader’s ability to influence employee attitudes and behaviors through key psychological processes such as identification, hope, positive emotions, optimism, and trust (Wei, 2020). The authentic leadership approach focuses on the importance of moral integrity in disciplining and guiding (Wei, 2020), thus they have high ethical standards (Avolio et al., 2004). Such authentic leader behavior utilizes and promotes positive psychological competencies and a positive ethical climate in order to foster greater

self-awareness, intrinsic ethics, and relational transparency, while promoting positive self-development (Gigol, 2020).

Meyer & Allen (1984), proposed a three-component commitment model that includes affective, continuance, and normative commitment (Lee, 2020). Affective commitment is the degree to which an employee identifies himself with the organization and feels loyal to the organization (Kim, 2018). Continuance commitment is the degree of investment in the organization, individuals compare the benefits of staying in the organization and the losses they will suffer when leaving the organization, and their willingness to stay in the organization (Liang, 2014). Normative commitment means that individuals are bound by long-established social norms and a sense of social responsibility (Veeriah et al., 2017) and they believe that they should stay in the organization. The more employees with a high degree of organizational commitment there are, the more positive the results of job performance will be (Hong & Chung, 2014).

The results of the previous studies proved that authentic leadership has a significance on organizational commitment (e.g., Alkadash, 2020; Hadian & Afshari, 2019; Rego et al., 2016). Authentic leaders demonstrate their commitment to the organization transparently to their employees. Thus, they serve as role models for employees, and employees build enthusiasm and commitment to the organization by building a transparent relationship with an authentic leader (Hlongwane & Olivier, 2017). According to Won & Goo (2020) authentic leaders reduce

turnover by influencing employees' organizational commitment. When employees are able to discern high morality, integrity, and honesty from their supervisor, they are capable of developing positive expectations, increasing their trust, motivation, and feeling psychological stability (Avolio et al., 2005; Bang & Ahn, 2017). Such that, applying social exchange theory, if leaders give employees generous compensation and job support, employees may perceive that the leader's behavior is beneficial to them and willing to reciprocate to the organization as organizational commitment is one form of reciprocation. Hence:

Hypothesis 1. Authentic leadership will be positively related to employees' organizational commitment.

West (1989) argued innovative behavior of employees consists of employees applying the new ideas and methods they generate to their work in order to improve their performance (Zhang, 2018). Rego et al. (2012) consider innovative work behavior as the ability of individuals to make changes, such as adopting new work procedures, ideas, and techniques to optimize and accomplish work. Such that innovative behavior involves making changes in work-related procedures or implementing new ideas and techniques that ultimately improve the effectiveness and efficiency of work (Novitasari et al., 2020; Kim et al., 2020). Therefore, employee innovation behavior can be defined as the practical activities in which employees actively search for innovative opportunities,

generate innovative ideas and put them into practice (Wei, 2020).

Both leadership attitudes and behaviors have an impact on employees' innovative behaviors. Zhang (2018) confirmed that authentic leadership perceptions had a significant positive impact on employees' innovative behavior, and that the four dimensions of authentic leadership perceptions, self-awareness, internalized moral perspective, balanced processing and relational transparency, all showed a positive impact on employees' innovative behavior. Such previous studies found the positive impact of authentic leadership on employees' innovative behavior (e.g., Chaudhary & Panda, 2018; Laguna et al., 2019; Kim et al., 2020) as it encourages members to communicate openly and leads to increased creativity. In the presence of authentic leaders, members are willing to express new ideas and try to gain the support of their leaders or colleagues to make their ideas happen. According to social exchange theory, if subordinates perceive justice and fairness from their leaders, they will pay back to the organization with positive actions such as proposing new ideas. Therefore, leaders with an authentic leadership motivate employees' creative abilities and behaviors by improving their psychological security, stimulating their positive self-motivation, enhancing their organizational identification (Wei, 2020).

Hypothesis 2. Authentic leadership will be positively related to employees' innovative behavior.

2.2 The mediating role of Organizational identification

Organizational identification is a fundamental concept in the study of organizational behavior (Albert et al., 2000). Song et al. (2018) argues organizational identification as a form of social identity and reflects the individual's alignment with the organization in terms of values. Organizational identification is an individual's psychological recognition and sense of belonging to the organization (Wang, 2020), and it encourages employees to exhibit higher levels of altruistic, cooperative, and supportive behaviors and to put more effort into the organization (Demir, 2015). It reduces the ambiguity caused by the multiple identities of employees have and increases their sense of purpose; organizational identification also satisfies the employees' desire for self-improvement and motivates them to show positive work attitudes and behaviors including organizational commitment (Li, 2016) innovative behavior (Rego et al., 2012).

As mentioned previously, followers' identification with their leaders can extend to their identification with the organization (Sluss et al., 2012) as the leader is seen by his or her followers as a representative of the organization. Therefore, when followers identify with the leader, they eventually identify with the organization as well (Fallatah et al., 2017). According to Fallatah et al. (2017) authentic leadership has a positive impact on graduate nurses' perceptions of leadership and organizational identification when they recognize that organization is aligned with their beliefs and values

and develop a strong sense of organizational identification (Zhu et al., 2012). The qualities of authentic leaders (e.g., expressing true feelings, treating employees sincerely, etc.) cause employees to feel cared for by their leaders (Banks et al., 2016). In contrast, authentic leaders are more caring and open-minded, and employees usually recognize this leadership style more, such that leaders play a great role in improving employees' self-coordination, prompting them to better integrate into their work and enhancing their sense of identification with the organization.

Hypothesis 3. Authentic leadership will be positively related to employees' organizational identification.

Organizational identification was considered as part of organizational commitment until the 1980s and it can be distinguished in terms of concepts and stability. Organizational identification is based on social identity theory and represents the sharing of organizational values and purposes. It is the result of interaction between the organization and organizational members and can be classified as an effective, continuance, and normative commitment (Wang, 2020). Bergami and Bagozzi (2011) argue that organizational identification has a significant effect on organizational commitment and when employees identify with the organization, they tend to accept and internalize the organization's behavioral norms and values. Employees with a high level of identification are willing to integrate their personal growth with the development of

the organization and contribute to the achievement of organizational goals while striving to achieve their personal development goals (Tong, 2019). According to social identity theory, when members identify with their organizations, they internalize the organization's values and behavioral norms as their own code of conduct and values, which in turn increases members' commitment to the organization (Wei, 2017). That is, employees who identify with the organization experience an increase in job satisfaction, which in turn leads to an increase in organizational commitment. The higher the organizational identification of employees, the stronger the positive correlation between authentic leadership and organizational commitment (Jim, 2013). Thus, we posited the following hypotheses:

Hypothesis 4. Organizational identification will be positively related to organizational commitment.

Hypothesis 5. Organizational identification will mediate the relationship between authentic leadership and organizational commitment.

Organizational identification refers to employees having a self-perception of the state of the organization's behavior and the leadership's code of conduct, and an identification with this behavior and code of conduct (Xiao, 2019). The higher the employees' organizational identification, the more willing they will be to think from the organization's perspective, which in turn leads to high performance and organizational citizenship behaviors (Du & Wang,

2019). Li & Shi (2015), demonstrated that the higher the employees' perception of the organization, the stronger the employees' enthusiasm and ability to work, so the innovation ability will become stronger with it. Gumusluoglu et al. (2017) conducted the questionnaire based on social identity theory, and the results confirmed that when employees identify strongly with their team, it promotes innovative behavior in the team.

On the other hand, the leader's moral character can leave a better impression in the employees' minds, which is the first step for employees to achieve organizational recognition. Wang (2020) concluded that authentic leaders positively influence employees' innovative behavior through organizational identification. Employees tend to view their supervisors as the face of the organization and thus they view their leaders' behavior as the organization's behavior or as an important reflection of organization (Xu, 2017). In the study we propose that authentic leaders enhance relationship transparency, create a fair atmosphere in the organization, and provide a safe and trusting environment for employees to innovate, so that employees identify more with their organizational identification, making them more willing to participate in more innovative behaviors. In summary, authentic leaders will further influence employees' innovative behaviors through the mediating role of organizational identification. Thus:

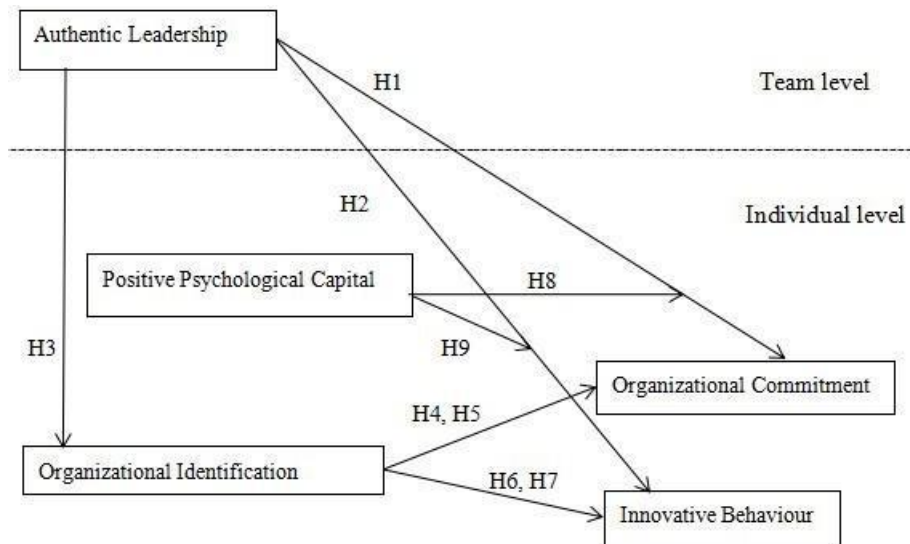
Hypothesis 6. Organizational identification will be positively related to innovative

behavior.

Hypothesis 7. Organizational identification will mediate the relationship between authentic leadership and innovative behavior.

2.3 The moderating role of Positive Psychological Capital

Luthans (2002) proposed the concept of positive psychological capital as a concept in positive psychology, relating to positive organizational behavior. According to Yang & Li (2020) psychological capital is the positive psychological state which is mainly reflected in confidence in facing challenging tasks and inference of positive factors; and the ability to recover quickly in the face of adversity and problems. Rego et al. (2009) argued that with authentic leadership, employees will have higher psychological capital, and this psychological resource will make them more creative. Rego et al. (2016) found that authentic leaders have a positive impact on the psychology of their followers through their leader's behavioral patterns, which leads to higher levels of self-efficacy, optimism, and resilience. Schulz confirmed that psychological capital plays a positive role in improving organizational commitment and job satisfaction. Such that, improved psychological capital leads to improved civic behavior and also enhances positive employee attitudes toward work (Avey et al., 2011). Same results were confirmed with Nguyen and Ngo (2020), Sürücü et al. (2020), Tong (2020) and Cao (2020) research findings. Overall, employees



This figure shows the research model based on proposed hypotheses.

Figure 1. Conceptual model

with high psychological capital are more likely to perceive organizational support from authentic leaders which increases employees’ loyalty and sense of belonging to the company and increases their organizational commitment (Luthans & Norman, 2008). Hence the hypothesis as follows:

Hypothesis 8. Positive psychological capital will have a moderating effect on authentic leadership and organizational commitment. When positive psychological capital is high, the relationship between the two variables will be strengthened.

Employees’ psychological capital exerts an impact on employees’ work behaviors and employees’ attitude towards work (Nguyen & Ngo, 2020; Sürücü et al., 2020). Sun and Huang (2019); Mutonyi (2021) indicated a positive

relationship between psychological capital and innovative behaviors. The higher the self-efficacy, the more confident they are, and the more innovative behaviors they exhibit. Ha (2018) findings showed that high self-efficacy increases innovative behaviors of employees (Kevil et al., 2017). Because employees perceive their innovative efforts as effective when they have higher psychological capital, resilient individuals are likely to innovate because they have greater risk tolerance and are more willing to accept change. According to Fang et al. (2019) when leaders focus on employees’ needs, motivation, and communication, employees become more optimistic and confident in their work, thereby leading to organizational identification (Randel et al., 2017).

From the perspective of COR theory, employing innovative behaviors as an additional

work requirement for employees can accelerate the depletion of employee resources; if resources are not replenished, employees may not initiate innovation to avoid falling into resource loss (Halbesleben, 2011). Psychological capital, as an important psychological resource, contains a unique resource that is predictable and inter-venable, helping to mitigate the depletion of resources in the employee innovation process. Positive psychological capital is a value-added resource in the work process of employees, exerting a positive impact on the development of their innovative behaviors. Thus:

Hypothesis 9. Positive psychological capital will have a moderating effect on authentic leadership and innovative behavior. When positive psychological capital is high, the relationship between the two variables will be strengthened.

III. Methodology

3.1 Samples and procedures

Data were collected from ten Chinese construction companies located in Beijing, Shanghai, and Guangzhou provinces through an online questionnaire from January 2021 to February 2021. In order to avoid the common variance, a paired questionnaire was completed by the immediate team leader and employees. The team leaders were first grouped according to their departments and informed of the group number to which the team leader belonged. The leaders were asked about authentic leader-

ship questions, and the employees were asked about organizational identification, organizational commitment, innovative behavior, and positive psychological capital questions. A total of 70 team leaders and 465 employees were included in the returned questionnaires. Questionnaires that could not be matched properly due to missing group numbers were eliminated, and if the number of valid team questionnaires was less than three, the whole team questionnaire was treated as invalid. Also, questionnaires that were suspected of not being answered carefully were eliminated. Final sample consisted of 393 matched responses and 62 team leader responses with an average team size of 6.3 employees, with 88.6% and 84.5% return rate.

In the questionnaire, male employees accounted for 51.9% (N = 204) and female employees 48.1% (N = 189). Most participants were 20–30 (including 30) years old with 51.1%; 30–40 (including 40) years old, accounting for 34.6%; 40–50 (including 50) years old were 10%; over 50 years old were 4.3%. 58.3% of the employees held bachelor's degrees, followed by 16.5% with master's degrees. The organizational tenure of most employees was 1–3 years (42.7%), followed by 4–6 years (33.8%). For team leaders, males made up 69.4% (N = 43) and females made up 30.6% (N = 19). The age of team leaders was mainly from 30–40 (including 40 years old), which accounted for 79.0% of the sample. In terms of educational background, those with bachelor's degrees constituted 67.8%. The working years are mainly more than 7 years, accounting for 75.8% of the total.

3.2 Measures

3.2.1 Independent variable

Authentic leadership was assessed with 16 items in 4 dimensions by Walumbwa et al. (2008). Relational transparency (5 items), Internalized moral perspective (4 items), Balanced processing (4 items) and Self-awareness (3 items). Participants were asked to respond to the statement using a five-point Likert-type scale ranging from 1 = strongly agree to 5 = strongly disagree. Sample items included "I encourage everyone to speak their mind."

3.2.2 Mediating variable

Organizational identification was assessed using the scale developed by Smidts et al. (2001). It contains five items, including, for example, "When talking about the company I work for, I often say 'we' instead of 'they'." Participants were asked to respond to the statement using five-point Likert-type scales ranging from 1 (strongly disagree) to 5 (strongly agree).

3.2.3 Moderating variable

In order to obtain the degree of Positive psychological capital, items of Luthans et al. (2007) were used. The scale contains 16 items in four dimensions: self-efficacy (4 items), hope (4 items), resilience (4 items) and optimism (4 items). Sample items include: "I feel confident helping to set targets/goals in my work area." Participants were asked to respond to the statement using five-point Likert-type scales

ranging from 1 (strongly disagree) to 5 (strongly agree).

3.2.4 Dependent variables

Organizational commitment measured by using items of Meyer & Allen (1990) with 12 items, including affective commitment (4 items), normative commitment (4 items) and continuance commitment (4 items). Sample items included, for example, "I feel like part of the family at my organization." and "I think job-hopping is immoral." Participants were asked to respond to the statement using a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Innovative behavior was assessed by the six items developed by Scott (1994). Items that were rated on a Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). A sample item was "I search out new technologies, processes, techniques, and/or product ideas," and "I search and secure resources for idea implementation."

3.2.5 Control variables

Based on previous studies, demographic variables were selected as control variables for the questionnaire at the individual level and team level. Individual-level control variables included employees' gender, age, education, and years of experience in the company. While team-level control variables included leaders' gender, age, education, and years of experience in the company. (Gender: "Male" = 1, "Female" = 2; Educational level: "College" = 1, "Bachelor" = 2, "Master" = 3, "Doctor" = 4).

IV. Empirical Results

4.1 Preliminary analysis

SPSS 26.0 was used to analyze the reliability of the questionnaire to ensure the consistency of the items. The reliability was measured based on Cronbach's alpha coefficient: Authentic leadership 0.954, organizational identification 0.888, organizational commitment 0.932, innovative behavior 0.898, positive psychological capital 0.951. As all variables' coefficient were greater than 0.8 internal consistency and stability of the variables are relatively good (George & Mallery, 2003)

In structural validity, KMO value was 0.982, greater than 0.7, $p < 0.05$, indicating that the employee questionnaire data is suitable for factor analysis (Kaiser, 1974). The factor loadings of organizational identification were from 0.592 to 0.719, organizational commitment from 0.503 to 0.723, innovative behavior from 0.509 to 0.662, and positive psychological capital were from 0.507 to 0.765. Values of factor loadings were above 0.5, with each item in the corresponding factor (Hair et al., 1995) demonstrating that the employee questionnaire has good structural validity. In the team level questionnaire, KMO measure value was 0.936, Bartlett's spherical approximate chi-square value was 807.643, and the test value was significant. As for factor loadings of authentic leadership, factor loadings were between 0.711 and 0.973.

Analysis indicated that the average variance extracted (AVE) values ranged from 0.538 to 0.627, greater than 0.50 (Hair et al., 2009). In

addition, values for composite reliability (CR) ranged from 0.886 to 0.951, higher than 0.70 (Nunnally, 1978). The factor loading coefficient of each item on its corresponding latent variable was basically greater than 0.60. These standardized estimates had strong statistical significance under the condition of $P < .001$. Therefore, the results supported convergent validity among the study variables. The model fit was assessed by the comparative fit index (CFI) using Mplus 8.0, the root mean-square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). The employee questionnaire results were as follows: $\chi^2/df = 1.579$, $\chi^2 = 1098.679$, $df = 696$, CFI = 0.964, TLI = 0.962, RMSEA = 0.038, SRMR = 0.032. The team leader questionnaire results were as follows: $\chi^2/df = 1.14$, $\chi^2 = 119.077$, $df = 104$, CFI = 0.981, TLI = 0.978, RMSEA = 0.043, SRMR = 0.048. Therefore, these results provided evidence of the study variables.

Since multiple explanatory variable models exist in this paper, SPSS 26 was used to test the presence of multicollinearity among the variables. As a result, VIF was less than 5; therefore, it can be considered that there was no collinearity problem. At the individual level, organizational identification had a significant positive effect on organizational commitment ($r = 0.629$, $P < 0.01$), and innovative behavior ($r = 0.654$, $P < 0.01$). Also, positive psychological capital was positively related to organizational commitment ($r = 0.704$, $P < 0.01$) and innovative behavior ($r = 0.614$, $P < 0.01$). The results of the correlation analysis were consistent with the direction of the hypothesis and provided pre-

Table 1. The result of model fit

Table 1 presents the index to assess the model fit in individual level and team level, respectively.

Model	χ^2	df	χ^2/df	CFI	TLI	RMSEA	SRMR
	-	-	< 3	> 0.90	> 0.90	< 0.080	< 0.080
Individual level	1098.679	696	1.579	0.964	0.962	0.038	0.032
Team level	119.077	104	1.140	0.981	0.978	0.043	0.048

p < .001

Table 2. Descriptive statistics and correlations

Table 2 presents the mean (M), standard deviation (SD), and shows the correlations of the variables used in this study, including if the correlations are significant or not by marking symbols described below the table.

Individual	M	SD	1	2	3	4	5	6	7	8
1. Gender	1.48	0.5								
2. Age	1.67	0.824	-0.089							
3. Education	3.07	0.866	0.074	-.198**						
4. Tenure	2.57	0.846	-.143**	.567**	-0.003					
5. OI	3.6	0.891	0.136**	-.108*	-.151**	-.202**	-0.781			
6. OC	3.44	0.845	0.039	0.012	-.170**	-0.037	.629**	-0.733		
7. IB	3.53	0.915	0.098	-0.042	-.167**	-0.094	.654**	.673**	-0.773	
8. PPC	3.52	0.836	0.073	-0.026	-.191**	-0.099	.573**	.704**	.614**	-0.739
Team	M	SD	1	2	3					
1. Tenure	3.69	0.589								
2. Team size	7.34	0.922	-0.077							
3. AI	3.22	0.901	0.036	-0.029	-0.792					

*p < .05, **p < .01, ***p < .001.

Square root of AVE presented along the diagonal.

AL = Authentic Leadership; OI = Organizational Identification, OC = Organizational Commitment, IB = Innovative Behavior, PPC = Positive Psychological Capital; For level 1, N = 393; For level 2, N = 62 [Gender: "Male" = 1, "Female" = 2; Age: "20-30 (including 30 years old)" = 1, "30-40 (including 40 years old)" = 2, "40-50 (including 50 years old)" = 3, "Over 50" = 4; Educational level: "College" = 1, "Bachelor" = 2, "Master" = 3, "Doctor" = 4; Work experience: "Less than 1 year" = 1, "1-3 years" = 2, "4-6 years" = 3, "More than 7 years" = 4.

liminary support for hypothesis validation. In addition, a rigorous AVE method was used to evaluate the discriminant validity (Fornell & Larcker, 1981). The square root of AVE for each factor was greater than the correlation coefficient of each pair of variables. Therefore, as shown in table 2, the questionnaires in this

research have discriminant validity.

4.2 Test of hypothesis

The research model is multileveled, consisting of a team and an individual level. In table 3 results of null models revealed that for organizational commitment, ICC is 0.435, which indi-

Table 3. Null model test

Table 3 presents the results of null models

	Organizational commitment	Innovative behavior
	Null model test	Null model test
ICC	0.435	0.410

Table 4. The main effect between AL and OC

Table 4 shows the main effect between authentic leadership and organizational commitment with estimate, standard error, t-value, 95% confidence interval and p-values.

Between Level	Estimate	S.E.	T-Value	95% CI	P-Value
OC on AL	0.471	0.059	7.935	(0.354,0.587)	0.000

* $p < .05$, ** $p < .01$, *** $p < .001$

AL = Authentic Leadership; OC = Organizational Commitment

Table 5. The main effect between AL and IB

Table 5 shows the main effect between authentic leadership and innovative behavior with estimate, standard error, t-value, 95% confidence interval and p-values.

Between Level	Estimate	S.E.	T-Value	95% CI	P-Value
IB on AL	0.516	0.061	8.460	(0.397,0.636)	0.000

* $p < .05$, ** $p < .01$, *** $p < .001$

AL = Authentic Leadership; IB = Innovative Behavior

Table 6. The main effect between AL and OI

Table 6 shows the main effect between authentic leadership and organizational identification with estimate, standard error, t-value, 95% confidence interval and p-values.

Between Level	Estimate	S.E.	T-Value	95% CI	P-Value
OI on AL	0.589	0.067	8.774	(0.457,0.720)	0.000

* $p < .05$, ** $p < .01$, *** $p < .001$

AL = Authentic Leadership; OI = Organizational Identification

cates that 43.5% of the total variance in organizational commitment resides between teams. For innovative behavior, ICC is 0.410, indicating 41% of the total variance in innovative behavior resides between teams. All dependent variables indicated a high degree of between-group correlation and thus allowed for cross-level analysis. An intercept model was run to test the main effects of this study.

Hypothesis 1. illustrated that authentic leadership is positively related to organizational commitment. As shown in table 4, authentic leadership had a positive effect on organizational identification (estimation = 0.471, SE = 0.059, $p < 0.01$), supporting hypothesis 1.

Hypothesis 2. proposed that authentic leadership is positively related to innovative behavior. As shown in table 5, auth-

Table 7. Mediating effect of OI for OC

Table 7 shows the direct mediating effect of proposed variables with estimate, standard error, t-value, 95% confidence interval and p-values.

	Estimate	S.E.	T-value	95% CI	P-Value
AL → OC	0.471	0.059	7.935	(0.354, 0.587)	0.000
OI → OC	0.742	0.038	19.480	(0.667, 0.817)	0.000
AL → OI → OC	0.437	0.058	7.589	(0.324, 0.550)	0.000
AL → OC (direct effect)	0.034	0.037	0.930	(0.038, 0.106)	0.001

*p < .05, **p < .01, ***p < .001

AL = Authentic Leadership, OI = Organizational Identification, OC = Organizational Commitment

Table 8. Mediating effect of OI for IB

Table 8 shows the mediating effect of organizational identification with estimate, standard error, t-value, 95% confidence interval and p-values.

	Estimate	S.E.	T-value	95% CI	P-Value
AL → IB	0.516	0.061	8.460	(0.397, 0.636)	0.000
OI → IB	0.766	0.041	18.880	(0.686, 0.845)	0.000
AL → OI → IB	0.451	0.056	7.988	(0.340, 0.651)	0.000
AL → IB (direct effect)	0.065	0.040	1.643	(0.013, 0.143)	0.000

*p < .05, **p < .01, ***p < .001

AL = Authentic Leadership, OI = Organizational Identification, IB = Innovative Behavior

entic leadership had a significant effect on innovative behavior (estimate = 0.516, SE = 0.061, $p < 0.001$), which supports hypothesis 2. As shown in table 6, authentic leadership is significantly related to organizational identification (estimate = 0.589, SE = 0.067, $p < 0.001$), which supports hypothesis 3.

In table 7, organizational identification is significantly related to organizational commitment (estimate = 0.742, SE = 0.038, $p < 0.001$), which supports hypothesis 4. Furthermore, as shown in table 7, authentic leadership has a significantly positive indirect influence on organizational commitment through organizational

identification (estimate = 0.437, SE = 0.058, and $p < 0.01$) and hypothesis 5 is supported.

The results in table 8 show that organizational identification is significantly related to innovative behavior (estimate = 0.766, SE = 0.041, and $p < 0.01$), which supports hypothesis 6. In Hypothesis 7, it hypothesized that organizational identification mediates the relationship between authentic leadership and innovative behavior and results supported the hypothesis as shown in table 8 (estimate = 0.451, SE = 0.056, and $p < 0.01$).

In Hypothesis 8, it was proposed that positive psychological capital moderates the authentic leadership and organizational commitment and hypothesis is supported with

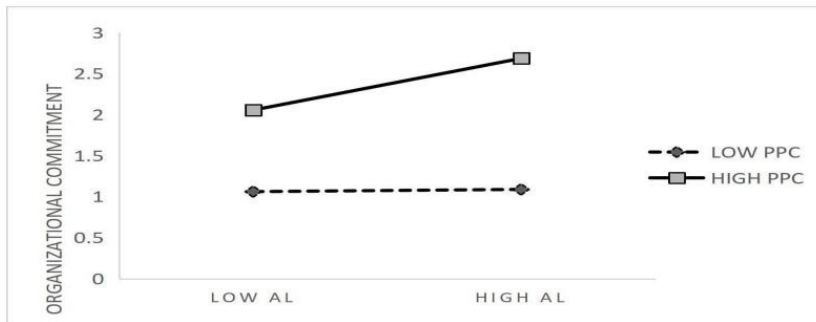
Table 9. Moderating effect of Positive Psychological Capital

Table 9 represents the moderating effect with interaction variables and estimate, standard error, t-value, 95% confidence interval and p-values are shown.

	Estimate	S.E.	T-value	95% CI	P-Value
PPC*AL → OC	0.335	0.080	4.185	(0.178, 0.492)	0.000
PPC*AL → IB	0.368	0.103	3.578	(0.166, 0.570)	0.000

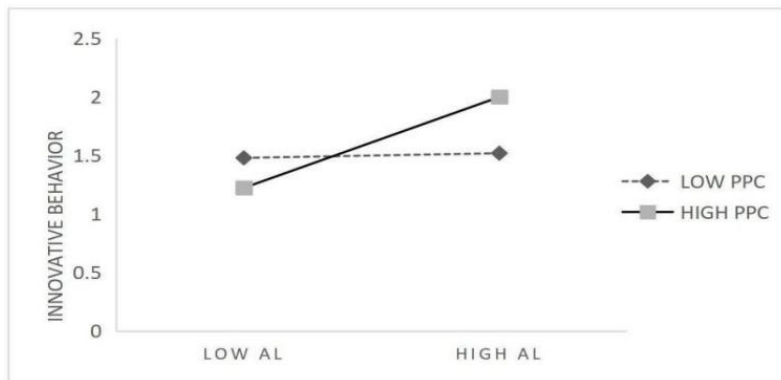
*p < .05, **p < .01, ***p < .001

AL = Authentic Leadership; PPC = Positive Psychological Capital; OC = Organizational Commitment; IB = Innovative Behavior.



This figure presents the moderating effect of positive psychological capital in the relationship between authentic leadership and organizational commitment.

Figure 2. Moderating effect of PPC in the relationship between AL and OC



This figure presents the moderating effect of positive psychological capital in the relationship between authentic leadership and innovative behavior.

Figure 3. Moderating effect of PPC in the relationship between AL and IB

interaction effect (interaction effect = 0.335, $p < 0.01$). Figure 2 shows high positive psychological capital, authentic leadership had a strong

positive effect on organizational commitment, but a non-significant relationship when positive psychological capital was low. As shown in

table 9, the results showed that authentic leadership x positive psychological capital had a significant positive effect on innovative behavior (estimate = 0.368, $p < 0.01$), thus, positive psychological capital will enhance the positive effect of authentic leadership on innovative behavior. Figure 3 shows a stronger relationship between authentic leadership and innovative behavior when positive psychological capital is high (vs. low). Hence, Hypothesis 9 is supported.

V. Conclusion

Focusing on construction industry employees in China, this study examined authentic leadership influences on personal organizational commitment, and innovative behaviors through organizational identification at individual and team levels through a cross-level study. The results showed that authentic leadership is positively related to organizational commitment and innovative behavior, authentic leadership positively related to organizational identification. Organizational identification also mediated the relationship between authentic leadership and organizational commitment and relationship between authentic leadership and innovative behavior. Similarly, results revealed the moderating role of the positive psychological capital. As hypothesized, authentic leadership is related to organizational commitment when employees experience high levels of positive psychological capital. Furthermore, this study takes positive psychological capital as a moderating variable to verify that authentic leadership can promote employees' innovative behaviors.

Theoretical and practical implication as followed: First, this paper extends the study of outcome variables of authentic leadership. Most previous studies have focused on studying individual-level variables (Gigol, 2020; Monzani et al., 2016; Park et al., 2018) or the effects of authentic leadership for educators or doctors (e.g., Rego et al., 2016; Alkadash, 2020), little research has been done on employees in the construction industry. At present, China's construction industry is moving toward environmental protection and construction worker safety, so the demand for technical innovation ability of construction company staff is increasing. However, due to the long working hours and high work intensity in the construction industry, the turnover rate of employees in the construction industry is also increasing. Therefore, how to enhance employees' organizational commitment and innovative behavior has become the core of human resource management efforts in construction industry. This study extends the study of the outcome variables of authentic leadership in the construction company by studying organizational commitment and innovative behavior of employees from the organizational level across levels. Second, the authentic leadership effect on employee organizational commitment is consistent with Rego et al. (2016), Won & Goo (2020). In line with social identity theory, members who identify with the organization determine their behavioral tendencies (Wei, 2017; Wang, 2020) and employees who identify more with the organization have a higher commitment to the organization. This study uses authentic leadership in the Chinese

context as an entry point for research to complement research on the impact of authentic leadership styles on employees' organizational commitment. Third, the relationship between authentic leadership and innovation behavior is consistent with Chaudhary and Panda (2018); Laguna et al. (2019); Kim et al. (2020). Also, findings expanded the mediating role of organizational identification between authentic leadership and innovative behavior. Fourth, most of the existing empirical studies on the effectiveness of psychological capital originate from Western contexts (Luthans et al., 2007; Sürücü et al., 2020) and analyzes positive psychological capital as a mediating effect (Rego et al., 2016; Sameer, 2018). Results identified the moderating role of psychological capital between authentic leadership and organizational commitment and innovative behavior and the findings complement related research on psychological capital.

This paper suggests following recommendations for human resource management. First, companies need to clarify the connotation of authentic leadership and root this theory in the minds of leaders (Won & Goo, 2020; Liang, 2014). Second, it is necessary to create a harmonious team atmosphere and enhance the organizational identification (Wei, 2017). Through authentic leadership behaviors, employees can be made to care for trust in the organization, thus enhancing their organizational identification. Third, it is important to enhance the psychological capital of employees through professional and technical training, team building.

Due to objective factors and subjective limitations, the study has some shortcomings

to be explored in the future. First, data could not cover all regions, which may have some influence on the sample results. Also, in this paper, only the employees of the construction industry are selected as the research subjects. The characteristics of employee innovation in other industries not specifically studied, as well as the organizational commitment, and innovation of employees in different industries and regions, are to be explored in the future. Second, the questionnaire was self-reported, thus accuracy may be lacking and reliability can be lower. In future studies, the development of more efficient measurement methods should be considered. Third, study uses a cross-sectional approach and has limitations in analyzing the causal relationships between each variable. Longitudinal studies are necessary in future studies in order to better understand the impact of authentic leadership.

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중국 건축 기업에서 진성리더십, 조직몰입과 혁신행동: 조직동일시의 매개효과와 긍정심리자본의 조절효과*

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국문요약

최근 중국의 건축업은 급속히 발전하고 있으며 구성원들의 종합적인 자질과 창의력에 대한 요구가 높아지고 있다. 그러나 현재 중국 건축업 종업원의 자질이 전반적으로 낮고 혁신능력과 효율이 높지 않다. 또 건축업 직원들은 근로시간이 길고 업무강도가 높아서 이직률도 꾸준히 증가하고 있다. 구성원의 조직몰입과 혁신 행동을 향상시키기 위해서 적절한 리더십을 어떻게 선택할 것은 건축업 인력 관리 업무의 핵심이 되고 있다.

이 연구의 목적은 사회교환이론, 사회 정체성 이론, COR 이론과 사회인지 이론 기반으로 중국 건축분야에서 팀장의 진성리더십이 팀원의 조직몰입, 혁신 행동에 어떤 영향을 미치는지를 탐구한다. 진성리더십에서 조직동일시를 통해 조직몰입, 혁신 행동에 대한 영향을 연구한다. 진성리더십과 조직 몰입, 혁신 행동의 관계에서 긍정심리자본의 조절 효과를 중심으로 연구한다. 이 연구의 데이터는 설문조사 형태로 중국 주요 도시의 건축업에서 393 부 팀원과 62 부 팀장의 설문조사 결과 수집했고 SPSS 26.0과 Mplus 8.0 분석 방법을 사용하였다. 분석 결과에 따르면 진성리더십은 조직 몰입과 혁신 행동에 긍정적인 영향을 미치고 진성리더십은 조직 동일시에 유의한 정(+)의 영향을 미친다. 조직 동일시는 진성리더십과 조직몰입, 혁신 행동 사이의 관계에서 부분적인 매개 역할을 한다는 것을 보여준다. 긍정심리자본은 진성리더십과 조직몰입간의 관계 그리고 진성리더십과 혁신 행동의 관계를 조절하며, 긍정심리자본 수준이 높아질수록 진성리더십이 조직 몰입과 혁신 행동에 미치는 영향력은 증가하였다. 연구결과에 근거하여 본 연구의 이론과 실무적 시사점을 제시하였다. 첫째, 본 연구는 건축업 직원을 대상으로 진성리더십의 효과에 대한 다수준 접근으로 실증적 분석을 더함으로 기존의 진성리더십에 대한 연구의 범위를 확장했다. 둘째, 중국 배경에서 진성리더십이 조직몰입에 대한 연구를 보완했다. 셋째, 진성리더십과 혁신행동 사이에서 조직 동일시의 매개효과를 검증함으로써 관한 기존의 연구를 확대하는 데 있어 시사점을 제공했다. 넷째, 중국 배경에서 긍정심리자본의 조절효과를 입증하고 기존연구의 확장을 기하였다는 데 의의가 있다. 그리고 본 연구는 인적자원 관리에 대한 제안도 제시하였다. 마지막으로, 본 연구의 한계와 향후 연구의 방향을 논의하였다.

키워드: 진성리더십, 조직몰입, 혁신행동, 조직 동일시, 긍정심리자본

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