

A Study on Paradoxical Leadership and Multiple Path Mechanisms of Employees' Bootleg Innovation

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Purpose: Based on the social cognitive theory and cognitive-affective system theory, the purpose of this study is to explore how and when paradoxical leadership enhances employees' bootlegging innovation. To achieve this purpose, the authors proposed a double-chain mediation model in this study.

Methods: Data with 342 questionnaires were collected for effective matching between employees and leaders at two time nodes. The hypotheses were validated by structural equation modeling and bootstrap approaches.

Results: Results indicate that paradoxical leadership has a significant and positive impact on employees' bootleg innovation. In addition, psychological capital and thriving at work play a partial mediating role between paradoxical leadership and employees' bootlegging behaviors respectively and a chain mediating role between the two together. Moreover, there is no significant difference among the three mediating paths.

Conclusion: The present research advances our understanding of bootleg innovation with a focus on the specific role of paradoxical leadership. Our findings, and especially those related to the role of psychological capital and thriving at work, reveal the influence mechanisms of paradoxical leadership on employees' bootleg innovation. At the same time, it is useful for understanding what leadership style can effectively stimulate employees' bootleg innovation.

Keywords: paradoxical leadership, bootleg innovation, psychological capital, thriving at work

Introduction

With the increasingly fierce market competition, there is an organizational atmosphere that innovation, which is originally the responsibility of R&D departments, has been discussed by everyone in the organization. Enterprises in low-resource tend to only retain and support those innovative behaviors in line with the organization's strategic direction. However, even though they do not have formal allocation of resources, some employees are motivated that their ideas can bring benefits to their enterprises and carry out innovation privately and secretly. "Bootlegging" has been defined as the innovation carried out by the motivated employees who without the authorization of their organization, who believed that bootlegging innovation is conducive to increasing incremental innovation.¹⁻³ A recent study has highlighted the potential for "bootlegging innovation" to emerge in management practices that support emerging innovation initiatives, enhance the novelty of innovation portfolios, and guide the practice of innovation in specific directions.⁴ In practice, Wang Xiaochuan, founder of Sogou, successfully developed the Sogou Explorer despite the opposition of his boss Zhang Chaoyang;⁵ Shuji Nakamura insisted on his own ideas, bypassed corporate norms and instructions of leaders and developed the LED technology in an abandoned laboratory, which won him the Nobel Prize. It has been proven that employees' bootleg innovation plays a vital role in the development and advancement of enterprises. As the information publisher and resource distributor of the organization, the leader is an important environmental factor affecting employee's behavior.⁶ Therefore, what kind of leadership style can effectively stimulate employees' bootlegging innovation, break the technical bottleneck, has attracted the attention of many scholars and entrepreneurs.

Studies have confirmed that positive leadership can stimulate employees' constructive intention and improve their psychological security, which is an important antecedent to promote employees' bootleg deviance, such as leader moral humility,⁶ coaching leadership⁷ and empowering leadership.⁸ As the demand for tension in contradictory management in the innovation process has become increasingly evident, most of these previous studies discussed the one and another leadership styles as antecedents of bootlegging, while both of which appear to be powerless in dealing with issues with "paradoxical properties",⁹ such as change versus stability¹⁰ and immediate benefits versus long-term development.¹¹ Bootlegging features inherent uncertainties and contradictions, as it integrates the two different concepts of deviance and innovation, with the former referring to behaviors bypassing established social norms¹² and the latter to behaviors of putting forward and implementing a new idea within an enterprise.¹³ The nature of Bootlegging reflects the dilemma that employees face in the practice of organizational innovation in weighing "autonomy" versus "institutional regulation". The fact that employees' bootlegging innovation requires both the completion of their own work and the need to go beyond their work cannot be ignored. Thus, how to ensure that employees can switch freely between procedural and creative work is an unresolved issue in current leadership style researches.¹⁴ Zhang proposed the concept of paradoxical leadership based on western leadership theories and traditional Chinese philosophy of yin and yang, which follows the logic of covering "both sides of a coin" and describes seemingly contradictory but interrelated leadership behaviors that can simultaneously meet the contradictory demands of work situations. Paradoxical leadership emphasizes both regulation and employees' self-motivation of innovation, which conveys the dilemma idea of acceptance of contradictory and opposing elements. This composite leadership approach might be more effective because it can go beyond the single perspective constrain and deal flexibly with conflicts in the organization.¹⁴ Previous research has shown that, "bootlegging innovation" has typically been associated with the stress response of employees, which is led by the activation and stress management of their leaders.^{15,16} Various clues suggest that paradoxical leadership may facilitate employees' bootlegging innovation. In sum, understanding the influence of paradoxical leadership on bootlegging innovation represents a future research opportunity, thus prompting our question: Can paradoxical leadership promote employees' bootlegging innovation, and if so, how and why?

In light of the above, this study intends to answer these questions from two aspects. First, based on risk behavior theory, Globocnik found that, managerial support mediates the relationship between individual risk propensity and employees' bootlegging innovation positively and negatively.¹⁷ Li and Ye, based on social cognitive theory, found that time leadership as a supportive leadership style was effective in enhancing self-efficacy and driving employees to bootlegging innovation.¹⁸ Jansen et al, suggested paradoxical leadership includes not only the performance dimension but also the support dimension.¹⁹ So distinguishing the performance and support dimensions of leadership behaviors corresponds to the situation where leaders both encourage innovation and set innovation norms, which sheds light on how to analyze the way paradoxical leadership promotes employees' bootlegging behaviors in this paper. Second, this study attempts to draw on the cognitive-affective system theory by selecting psychological capital variable from the cognitive perspective and thriving at work from the affective perspective, to explore the multiple internal transformation mechanisms between paradoxical leadership and employees' bootlegging. On the one hand, paradoxical leadership that acts as the most direct external environment individuals come into contact with, exerts many effects on individuals' cognition and affection and ultimately influences their behaviors. Psychological capital is an individual's perception (cognition) of the mental state, and thriving at work is manifested as an individual's psychological and emotional state (affection) toward an organization. Integrating the two perspectives can help more clearly demonstrate the process mechanism by which paradoxical leadership influences employees' bootlegging. This may produce two independent transmission paths: "paradoxical leadership - psychological capital - bootleg innovation" and "paradoxical leadership - thriving at work - bootleg innovation". On the other hand, Westbrook et al pointed out that there is a certain progressive relationship between cognition, affection and behaviors, and that an individual's cognition can influence their attitude and behaviors by activating affections.²⁰ Therefore, the aforementioned two mediating paths are not isolated from each other. According to Spreitzer and Porath's integrated model of personal growth, employees' psychological factors play a role in motivating and creating thriving at work.²¹ Employees with high psychological capital tend to engage in challenging tasks, have the courage to keep moving toward their goals, and ultimately achieve success and "thrive" at work. Therefore, paradoxical leadership may have an impact on

employees' bootlegging through a chain mediation model, that is "paradoxical leadership - psychological capital - thriving at work - bootleg innovation". Following these three logical lines, this study explores the synchronous mediating roles of psychological capital and thriving at work in ambidextrous behaviors of leaders and employees involved in paradoxical leadership, discusses the continuous mediating roles of psychological capital and thriving at work on this basis and thus open the black box of the role of paradoxical leadership in influencing employees' bootlegging, in the hope of enriching and expanding existing research findings on paradoxical leadership and bootlegging behaviors and providing decision-making guidance for the application of paradoxical leadership.

Theoretical Background

Paradoxical Leadership

Differ from previous leadership styles in the unique context, paradoxical leadership (PL) meets the dual needs of organizational structuring and employee personalization by integration seemingly opposing but relevant behaviors,¹⁴ aiming to solve the "either/or" dilemma of leadership in a contingency perspective.

Paradoxical leadership has been regarded as a way to effectively promote dual innovative behaviors in employees and as the leadership style that combines high performance expectations (task-oriented) with strong managerial support (support-oriented).^{9,22} Therefore, how paradoxical leaders meet the dual needs of their followers is becoming an important research direction.²³ Drawing on previous research findings, the practical concerns and behavior perspective, this paper subdivides paradoxical leadership into two dimensions, performance expectations and management support, to define paradoxical leadership as a leadership style that seeks high performance goals and gives adequate support to subordinates at the same time.²⁴ Performance expectations refers to the paradoxical leaders in the organization who set standards, work norms, and requirements for employees based on their decision-making power and control, which are further enforced to achieve high task performance and goals. "Management support" is a paradoxical leadership that centers on subordinates, gives them authority, maintains their discretion, and encourages their innovation. The performance and support dimensions reflect to the two dimensions of leadership behavior theory respectively: "caring for the task" and "caring for the subordinate", showing a contradictory but unified relationship.

Bootleg Innovation

Bootlegging innovation has received attentions from scholars in multiple perspectives. Augsdorfer,¹ Cricoulo² and some scholars define "bootlegging" as "an autonomous", clandestine innovation behavior carried out by an individual that is expected to benefit the organization.¹ The definition emphasizes the autonomous, covert, and informal nature of their behaviors. Mainemelis,²⁶ Lin³⁸ and others scholars believe that "creative deviance" refers to the act of disobeying a superior's order and continuing to innovate after the employee's innovation has been rejected by the superior. Thus, it can be seen bootleg innovation is "legal in purpose" because it aims at organizational innovation, but "illegal in action" because it is unconventional.²⁵ Therefore, our study defines bootleg innovation as a set of behaviors conducted by employees secretly to implement their rejected innovative plans from the organization in hope of creating more profit for the organization and self-value. Scholars tend to consider that bootleg innovation enables the organization to achieve the ultimate goal of innovation for the benefit of the company.^{3,26}

Psychological Capital

Previous research on psychological capital has been conducted from the following four perspectives, including the trait perspective;^{27,28} the state perspective;^{29,30} the integrative perspective;^{31,32} and the resource perspective.³³ Currently, scholars argue that the former perspectives ignore the stability of personality trait-like variables and diminish the meaning and value that psychological capital as an independent psychological variable. In turn, they tend consider perspective of psychological capital as resource because it is easier to be developed and intervened than the stable and unchangeable traits and states.

Based on the resource perspective, this paper considers psychological capital as a psychological cognitive element that individuals perceive as a resource element that can be further developed and utilized, and adopts the dimensions of psychological capital by Luthans et al which are “self-efficacy, hope, resilience, and optimism”.³²

Thriving at Work

Thriving at work was first proposed by Spreitzer et al, which refers to the dual experience of vitality and learning at work.³⁴ Spreitzer believes that vitality and learning are mutually reinforcing and cannot be separated. If employees are continuously learning and lacking in energy, there is a risk that they will not be able to sustain a high level of work energy during the learning process. Conversely, if employees are energetic but do not learn, they may be stuck in a situation of stagnation. In addition, Porath and Erez argue that thriving at work is not a static state, but a dynamic process, not a stable emotional experience that changes over time and is vulnerable to the work environment.³⁵

As a result, thriving at work can provide employees with work direction and regulation, prompting them to quickly integrate into the new work environment and move steadfastly toward their goals, and ultimately promoting their individual career development.³⁶ Since the two-dimensional structure of thriving at work proposed by Spreitzer et al has been widely studied and affirmed, we use the definition in this paper.³⁴

Hypotheses

Paradoxical Leadership and Bootleg Innovation

The traditional Chinese culture emphasizes on Consciousness of Rule by man, the way superiors act in the organization is easily perceived by subordinates, and the way subordinates behave is also influenced by the leadership style implicitly. First, the performance dimension of paradoxical leadership leads superiors to set higher work goals and performance requirements for their subordinates.¹⁹ Behind such high-performance goals are hidden a series of pressures and tensions perceived in the diverse internal and external organizational environment, lack of resources, and from processes and structures, which create certain obstacles for employees to achieve their innovation goals. According to Creative Deviance Theory, individuals who are hindered and convinced of the value of their ideas may pursue their goals through unconventional bootlegging innovations.²⁶ Secondly, some leaders adopt strict punishments after knowing the bootlegging innovation of their employees to maintain the authority of the leaders and the uniform management of the organization,³⁷ and this approach may contribute to the reduction of bootlegging innovation in the organization.³⁸ Therefore, employees' perception of leadership style and leaders' attitudes toward bootlegging innovations can also influence their bootlegging innovation. The support dimension of paradoxical leadership emphasizes the establishment of supportive situational relationships between superiors and subordinates. When employees receive the paradoxical leadership's message of openness, tolerance of inclusion, they believe that the bootlegging innovation can be tolerated and forgiven by the leadership, and their perception of the risk of bootlegging innovation will be reduced, so they will continue to perform this behavior. Studies have shown that leaders adopting forgiveness management strategies can promote bootlegging innovation among employees.³⁸ Based on this, this paper proposes the following hypothesis.

H1: Paradoxical leadership has a positive impact on employees' bootleg innovation.

The Mediating Role of Psychological Capital

In cognitive psychology, cognitive frameworks, or intellectual maps, are human ways of thinking that are used to explain, reason, elaborate, and construct all cognitive tasks. The cognitive framework of capital is oriented to tap into capital to deal with cognitive tasks. Psychological capital refers to an internal state that combines self-confidence, resilience, hope, and positive optimism, and can be developed through interventions. According to the social information processing model, it is known that in organizational settings, the emotions, attitudes and behaviors of leaders are an important source of information for employees, who selectively interpret the information transmitted by leaders and use the information obtained to construct and interpret events. Thus, paradoxical leadership (social information source) affects employees' psychological capital (cognition) and thus their bootleg innovation behavior (behavior implementation).

According to Jia, paradoxical leadership conveys the demand and confidence for “high performance” to enhance employees’ intrinsic motivation. In addition, “supportive management behaviors”, such as communicating with employees, discussing work plans, and providing timely and effective job training and feedback, will effectively weaken employees’ previously undesirable psychological emotions and continuously enhance their self-efficacy.³⁹ Paradoxical leaders share leadership power with employees through “supportive” management behaviors and can also focus on personal centeredness, which helps to counteract the effects of paradoxical leadership on employees’ psychological well-being. Paradoxical leadership is able to maintain a “take-it-or-leave-it” emotional relationship with employees, which is conducive to enhancing employees’ sense of identity in the organization, creating an atmosphere of mutual trust between superiors and subordinates, and enhancing employees’ inner pleasure.⁴⁰ Paradoxical Leadership, while emphasizing “high performance” and strict adherence to work requirements and rules, also gives support to employees and allows them to be flexible and make mistakes, so that subordinates can see the hope and more possibilities to achieve their goals, cultivating their belief in the success and enhancing their optimism. Therefore, paradoxical leadership will help to enhance the psychological capital of employees.

Innovative activities are high-risk and employees with positive psychological capital have higher intrinsic motivation to engage in innovative activities.⁴¹ Psychological capital has four dimensions: self-efficacy, optimism, hope and resilience.³² Compared with a single dimension, psychological capital integrated by four dimensions may have more significant integration effects.⁴² Employees with high self-efficacy believe in their perceived creativity and are willing to take the potential risk of bootleg innovation; employees with high hope level are willing to set high goals in the face of the future and are eager to practice difficult work in unconventional behavioral ways (eg, bootleg innovation);⁴³ employees with high optimism not only effectively reduce the perceived threat of bootleg innovation, but also handle the pressure and challenges implied by bootleg innovation with calmness and ease; employees with a high level of resilience have a persistent pioneering spirit, and even if they are lack of innovation resources, they will continue to explore ways to get out of the dilemma and effectively use their initiative by bootleg innovation.⁴⁴

In summary, paradoxical leadership helps employees generate positive psychological capital. Psychological capital as a positive resource perception can help employees better deal with various problems and difficulties in the innovation process, compensate for the loss of psychological resources caused by the high-risk nature of innovation behavior, and promote the occurrence of bootleg innovation behavior. Based on this, this paper proposes the following hypothesis:

H2: Psychological capital mediates the relationship between paradoxical leadership and employees’ bootleg innovation.

The Mediating Role of Thriving at Work

Spreitzer et al propose that thriving at work is a new research perspective in which individuals actively focus on their subjective work experiences and consciously contribute to their own development and progress at work, rather than passively achieving a state of satisfaction.³⁴ The most distinctive feature that distinguishes employees’ thriving at work from other concepts is the combination of the learning and vitality. Employees may demonstrate vitality on the job, but over time that vitality may fade if they do not have opportunities to learn and grow in ways that replenish that vitality. Likewise, employees who continue to learn on the job but lack the energy to apply their knowledge and skills are clearly not conducive to performance improvement. These two dimensions of thriving at work interact with each other and together contribute to individuals experiencing their own vitality and growth and feeling a sense of continuous improvement and progress.

Supportive behaviors of supervisors have a positive effect on employees’ thriving at work.⁴⁵ Based on Self Determination Theory, this study argues that employees enhance their internal motivation by satisfying three basic psychological needs: autonomy, competence, and relationship,⁴⁶ which in turn enhances employees’ thriving at work. Paradoxical leadership firstly adopts a “dual management approach” by recognizing employees’ work ability, allowing them to work independently, fostering their initiative, and providing constructive advice, thus giving them psychological freedom, enhancing their work dynamics, and satisfying their autonomy needs; secondly, paradoxical leaders are flexible in treating employees with different characteristics in a “personalized care” management style,²⁴ motivating employees to acquire knowledge and skills through learning, overcoming difficulties at work, and satisfying employees’ needs for

competence. Finally, paradoxical leader appreciates the new ideas and concepts of his subordinates, is willing to think from each other's perspective, and establishes a close relationship with employees that is both close and distant to meet their relationship needs.

At the same time, Koch and Leither claimed that in addition to a series of planned actions, innovation activities also require a certain degree of disorder and emergence (vitality) as well as self-creation, organization and guidance (learning).⁴⁷ Employees with a high thriving at work are fully engaged in their work and expect to contribute to the organization and realize their self-worth.³⁴ In the face of structural tensions such as institutional rigidity and lack of resources in the organization, employees with high thriving at work promote bootlegging innovative behaviors through two dimensions: vitality and learning. First, vitality, as the affective basis for the occurrence of innovative behavior,⁴⁸ facilitates employees' innovative work.⁴⁹ Vitality not only enhances employees' intrinsic motivation for bootleg innovation, but also builds intellectual and social resources for employees,⁵⁰ thus providing the internal drive and various elements needed for bootleg innovation. Second, learning is a prerequisite for innovative behavior.⁵¹ Learning enables employees to acquire the necessary knowledge and skills quickly and effectively, laying the foundation for bootleg innovation activities, effectively alleviating the stressful experience of high-risk bootleg innovation, and enhancing employees' insight through deeper understanding, accumulation and application of existing knowledge and skills, facilitating the discovery of new opportunities and novel ways of working.⁵² Individuals with a sense of self-efficacy devote more time to unconventional activities and participate in bootleg innovation activities with full vitality through continuous learning.^{53,54} Thus, a high thriving at work is conducive to bootlegging and innovative behavior of employees. Based on this, this paper proposes the following hypothesis.

H3: Thriving at work mediates the relationship between paradoxical leadership and employees' bootleg innovation.

The Chain Mediating Role of Psychological Capital and Thriving at Work

The cognitive-affective system theory unifies the cognitive and affective factors of individuals into the personality system, and believes that all cognitive and affective units in the personality system are the internal motivation for external situations to influence individuals' behavior, which means that external situations interact with the cognitive and affective units in the personality system to ultimately determine individuals' behavioral choices. Some scholars believe that individuals' cognition and affection interact with each other, and the cognitive information processing process will further strengthen individuals' emotional experience. The theory has good explanatory power in predicting individual behavior and is popular in the field of organizational research.

Individual psychological factors are very complex and interact with each other. Some scholars argue that there is a bias between considering only the effects produced by a single psychological factor and the actual situation, and that multiple mediating effects produced by different psychological factors should be considered. On one hand, the typical elements of psychological capital, such as self-confidence, optimism, hope, and resilience, have potential interactive cognitive and motivational processes³² and belong to the cognitive units of the cognitive-affective system. On the other hand, thriving at work embodies a positive affective state and belongs to the affective unit in the cognitive-affective system. Therefore, this study will explain the multiple mediating effects of paradoxical leadership on employees' bootleg innovation based on the cognitive-affective system theory. This theory suggests that the environment in which an individual is placed can influence the individual's attitude or behavior by stimulating the cognition or affection alone; also, the cognition can ultimately have an impact on the individual's attitude or behavior by activating the corresponding affection.⁵⁵ It has been shown that task focus, psychological capital, and spirit of adventure can contribute to thriving at work.⁴³ In line with such thinking, a chain mediation model in which paradoxical leadership (context) affects psychological capital (cognition), which in turn affects thriving at work (affection), and finally acts on bootleg innovation (behavior) is constructed. This study expects psychological capital to increase employees' thriving at work.

The employees' perception of their own psychological capital is further strengthened by the "dual management style" of paradoxical leadership. When employees perceive a high level of psychological capital, they are more confident in successfully completing tasks given to them by their supervisors (self-efficacy), are flexible in using a result-oriented approach and planning multiple paths to achieve their goals (hope), are persistent and well-managed when in trouble (resilience), and always have a positive attitude toward problems and do not feel negative about irreversible factors (optimism).⁴³ Combining these factors, it

can be suggested that individuals with high psychological capital perceptions have a high level of task focus and are able to perform tasks well, which leads to career success and a thriving state of “vitality” and “learning” in the affective unit. According to Spreitzer and Porath, thriving at work cannot be created without psychological stimulation and creation. Specifically, a high level of optimism can positively increase employees’ expectations of future organizational innovation and learning, and continuously help employees regulate their own learning status and improve their work dynamics.²¹ A high level of resilience not only enables employees to maintain vitality, but also exercises their own learning ability, and the process of overcoming novel and challenging problems is also a stage in which resilience operates efficiently. Self-efficacy is the subjective assessment of an individual’s ability to complete a task.⁵⁶ High levels of self-efficacy motivate employees not to worry about the negative evaluation of the tasks they perform, strengthening work dynamics. Employees with high levels of hope have clear goals for knowledge acquisition, sharing and innovation, in addition to having specific ways to establish knowledge as a basis for reaching their goals, which in turn promotes learning.⁵⁷ Thus, the cognitive unit (psychological capital) can significantly and positively influence individual learning behavior and increase employee dynamics through the ability to implement, expand, and apply knowledge, which in turn influences the affective unit (thriving at work). The higher the level of individual psychological capital, the more employees are willing to express their inner thoughts, more inclined to share their knowledge with colleagues, show more learning behaviors, release more energy, and invest more time and energy in their work. It is thus clear that the cognitive unit (psychological capital) and the affective unit (thriving at work) play a continuous mediating role between paradoxical leadership and bootleg innovation behavior. Based on this, this paper proposes the following hypothesis.

H4: Psychological capital and thriving at work play a continuous mediating role between paradoxical leadership and employees’ bootleg innovation.

Research Methodology

Sample

The survey samples were collected on-site or online. The on-site versions were distributed to two technology companies in Hefei, which is a Science and Technology Innovation Pilot City in China. Due to the impact of the epidemic, we also collected some data from more than a dozen enterprises in Shanghai, Beijing, and Shenzhen through online questionnaires, mainly covering IT, machinery manufacturing, biomedical and other industries. For the on-site investigation, the sample questionnaires were re-collected immediately. For the online investigation, the completed questionnaires were sent to the author via EMAIL.

For sample selection, we communicated several times with the top management team of the companies, to better identify that employees who participated in the research are engaged in innovation-related activities, such as product development, technical services, quality control and other departments. These employees were selected as the sample because they often generate creative ideas in their work, and thereafter fit well with the purpose of this study.

In order to further dispel the psychological concerns of the respondents, the purpose of the survey was clearly explained to the respondents before the survey, and it was promised that the results would only be used for academic research, and the personal information of the respondents would be kept confidential.

This study collected research samples at two time points and from two sources: subordinates and supervisors. At time point T1 (February 2022), employees fill out questionnaires containing basic information, psychological capital, thriving at work and employees’ bootleg innovation. A total of 400 questionnaires were distributed and 356 valid questionnaires were recovered (response rate=89%). At time point T2 (April 2022) two months later, 78 supervisors of these 356 employees were invited to complete questionnaires containing basic information and a measure of paradoxical leadership. The questionnaires that could not be paired, with selections improperly made and those with obvious consistent responses were eliminated. We collected 342 matched questionnaires from 75 supervisors. In the supervisor sample, 33.3% were female; most of them had a bachelor’s or higher degree (68%), most of them were 26–45 years (64.0%). For the employee sample, 45.3% were male and most of them were 26–45 years (51.7%). On average, 48.8% had been working in their current job for more than 3 years and 73.7% held a bachelor’s degree or above. The information of respondents are shown in Table 1.

Table 1 Sample Characteristics

Characteristics		Employee		Supervisor	
		N	%	N	%
Gender	Male	155	45.3%	50	66.7%
	Female	187	54.7%	25	33.3%
Age	25 years old and below	131	38.3%	10	13.3%
	26–35	103	30.1%	22	29.3%
	36–45	74	21.6%	26	34.7%
	46 years old and above	34	9.9%	17	22.7%
Education	College and below	90	26.3%	24	32%
	Undergraduate	193	56.4%	35	46.7%
	Master's degree and above	59	17.3%	16	21.3%
Years of experience	1 year and below	59	17.3%	5	6.7%
	1–3 years	116	33.9%	16	21.3%
	3–5 years	40	11.7%	22	29.3%
	More than 5 years	127	37.1%	32	42.7%

Notes: For employee sample, sample size = 342; For supervisor sample, sample size = 75.

Measures

All scales in this paper are rated on a Likert-5 scale, with 1 indicating strongly disagree and 5 indicating strongly agree.

Paradoxical Leadership (PL) was measured using a two-dimensional structured scale developed by Kauppila & Tempelaar, which includes nine questions on “high performance” and “high support”, with representative questions such as “Leaders have high expectations for employees to achieve their innovation goals”.²⁴ Its Cronbach’ α is 0.891.

Psychological capital (PC) was measured using the four-dimensional structured scale developed by Luthans et al, which includes 24 questions on self-efficacy, hope, optimism, and resilience, with representative questions such as “I believe I can analyze long-term problems and find solutions”.³² Its Cronbach’ α is 0.957.

Thriving at Work (TH) was measured using a two-dimensional structured scale developed by Porath et al, which includes 10 items on “learning” and “vitality”, with representative items such as “I feel energetic”.²¹ Its Cronbach’ α is 0.757.

Bootleg innovation (BI) was measured using the scale developed by Criscuolo et al, which consists of five questions, representative of which are “I can organize my work tasks flexibly based on my work plan in order to explore new, potentially valuable business opportunities”.² Its Cronbach’ α is 0.842.

Control variables: Since the differences among individual employees may have an impact on their own behavior, four demographic variables, including gender, age, education, and years of experience, are used as control variables in this paper.

Empirical Analysis

Scale Validation

The values of Cronbach’s alpha for the four variables all exceeded 0.7, which presented good reliability, The validity of the scales was tested by exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). As shown in Table 2,

Table 2 Factor Loading and Convergent Validity

Variables	Order	Loading Factor	CR	AVE	Variables	Order	Loading Factor	CR	AVE
Paradoxical Leadership	Q1	0.807	0.914	0.542	Psychological Capital	Q25	0.851	0.963	0.519
	Q2	0.721				Q26	0.748		
	Q3	0.701				Q27	0.789		
	Q4	0.691				Q28	0.805		
	Q5	0.689				Q29	0.691		
	Q6	0.721				Q30	0.706		
	Q7	0.803				Q31	0.716		
	Q8	0.674				Q32	0.676		
	Q9	0.803				Q33	0.684		
Thriving at Work	Q10	0.894	0.918	0.530		Q34	0.730		
	Q11	0.769				Q35	0.744		
	Q12	0.744				Q36	0.691		
	Q13	0.687				Q37	0.748		
	Q14	0.679				Q38	0.683		
	Q15	0.721				Q39	0.728		
	Q16	0.608				Q40	0.760		
	Q17	0.745				Q41	0.738		
	Q18	0.677				Q42	0.621		
Bootleg Innovation	Q19	0.718	0.846	0.527		Q43	0.701		
	Q20	0.890				Q44	0.683		
	Q21	0.593				Q45	0.678		
	Q22	0.726				Q46	0.664		
	Q23	0.705				Q47	0.729		
	Q24	0.685		Q48		0.688			

the standardized factor loadings ranged from 0.593 to 0.894, the composite reliability (CR) exceeded the threshold of 0.70 (0.846–0.963), and the average variance extracted (AVE) were higher than the commonly accepted value of 0.5 (0.519–0.542), thus implying the good convergent validity of all constructs. The square root of AVE exceeded inter-construct correlations (Table 3). Moreover, as shown in Table 4, the four-factor model resulted in a relatively good fit to the data ($\chi^2/df=1.62$, RMSEA=0.042, SRMR=0.043, CFI=0.928, TLI=0.925) and were clearly better than those of the alternative models. This indicated good discriminant validity.

A variety of methods were used to test the CMV effect. First, we examined the fit of a model in which all indicators loaded on one factor, partly addressing common method variance concerns regarding measures used in the study. If method variance is largely responsible for the covariation among the measures, confirmatory factor analysis should indicate that a single (method) factor fits the data.⁵⁸ A one factor model ($\chi^2/df = 3.05$, RMSEA = 0.077, SRMR = 0.070, CFI = 0.761, TLI = 0.751) did not fit well in this study. Second, Herman's one-factor test was conducted and the results showed the first common factor accounted for 39.864% of the total loadings (<40%). Third,

Table 3 Descriptive Statistics and Correlation Analysis

	Average Value	Standard Deviation	1	2	3	4	5	6	7	8
Gender	1.55	0.499	1							
Age	2.03	0.999	-0.082	1						
Education	1.91	0.655	-0.036	-0.067	1					
Years of experience	2.69	1.143	-0.039	0.851**	-0.156**	1				
Paradoxical leadership	3.80	0.768	-0.020	0.007	0.061	0.019	(0.736)			
Psychological capital	3.81	0.699	-0.065	0.071	-0.012	0.091	0.604**	(0.720)		
Thriving at work	3.60	0.590	-0.079	-0.009	-0.009	0.026	0.584**	0.663**	(0.728)	
Bootleg innovation	3.63	0.836	-0.040	0.171**	-0.027	0.155**	0.554**	0.558**	0.521**	(0.725)

Notes: ** $p < 0.01$, * $p < 0.05$. All coefficients are standardized. The data in the diagonal brackets are the square root of the AVE value for each variable.

Table 4 Results of Confirmatory Factor Analysis

Measurement Model	χ^2/df	RMSEA	SRMR	CFI	TLI
Five factors (CMF, PL, PC, TH, BI)	1.607	0.042	0.050	0.932	0.926
Four- factors (PL, PC, TH, BI)	1.62	0.042	0.043	0.928	0.925
Three-factors (PL, PC+TH, BI)	2.21	0.059	0.057	0.859	0.852
Two-factor (PL+PC+TH, BI)	2.75	0.072	0.067	0.795	0.786
Single factor (PL+PC+TH+BI)	3.05	0.077	0.070	0.761	0.751

Abbreviations: PL, paradoxical leadership; PC, psychological capital; TH, thriving at work; BI, bootleg innovation; CMF, common method factor.

ULMC (Controlling for the effects of an unmeasured latent methods factor) was adopted to further detect the common method bias.^{59,60} A five-factor model was constructed by adding common method factor to compare with the four-factor model and we found that the fit of the five-factor model have no significant changes (less than 0.02). In summary, there is no serious common method bias exists.

Descriptive Statistics and Correlation Analysis

The variables, descriptive statistics and correlation analysis were conducted, and the results are shown in Table 3. It was found that the correlation coefficients among PL, PC, TH, and BI were all positive, indicating a positive correlation among the variables.

Hypotheses Testing

Main Effect Test of Paradoxical Leadership (PL) on Bootleg Innovation (BI)

The analysis begins with a structural equation test of the main effect of paradoxical leadership on employees' bootleg innovation (hypothesis 1). The standardized path coefficient of paradoxical leadership to employees' bootleg innovation was significant and greater than zero ($\beta = 0.652$, $p < 0.001$). In addition, the structural equation model fit indices for the main effects were: $\chi^2/df=3.46$, CFI=0.918, TLI=0.901, RMSEA=0.085, and SRMR=0.048, which met the relevant requirements and indicated that the whole model fit was good. Therefore, hypothesis 1 was supported.

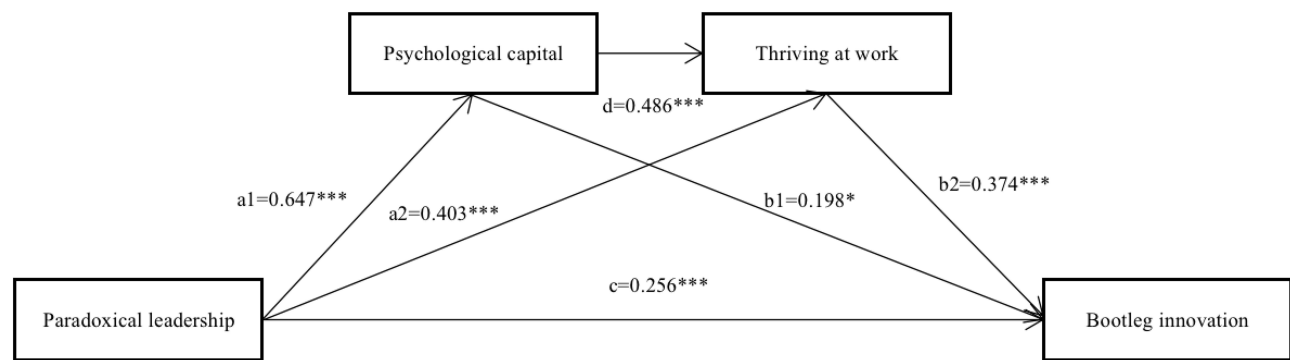


Figure 1 Research model.

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

Structural Equation Analysis of Multiple Mediators of Psychological Capital (PC) and Thriving at Work (TH)

This paper uses structural equation modeling to test the mediation hypotheses in the text by analogizing various alternative models so as to verify the mediation effects in the research model, as shown in Table 5 and Figure 1. Before conducting multiple mediating effects tests (eg, H2, H3, and H4), this paper first tests whether there is a significant direct effect of PL on PC and TH. Therefore, a structural equation model with PL as independent variable and PC and TH as dependent variables, respectively, is established, and the results show that there is a significant positive effect of PL on both PC and TH (standardized path coefficients are $\beta=0.647$, $p<0.001$; $\beta=0.718$, $p<0.001$, respectively), which can indicate that the main effect of PL on employees' BI behavior may be mediated by the two variables mentioned above. All the fit indices of this structural equation model meet the relevant requirements, $\chi^2/df=1.62$, CFI=0.936 and TLI=0.933, which reach the acceptable level of 0.9; RMSEA=0.042 and SRMR=0.041, which are also less than 0.08, thus indicating that the whole model fits well.

Structural equation modeling is further applied to test the six path coefficients in the chain mediation model. In the model analysis, we not only test the independent mediating role of PC and TH separately, but also verify the continuous mediating role between them. The advantage of this method is that it can both strip the two mediating variables (H2 and H3) and verify the indirect effect of PL on employees' BI behavior through the two mediating variables (H4). The empirical results show a significant positive effect of paradoxical leadership on both PC and TH ($\beta=0.647$, $p<0.001$; $\beta=0.403$, $p<0.001$), a significant positive effect of PC and TH on employees' BI behavior ($\beta=0.198$, $p<0.01$; $\beta=0.374$, $p<0.001$) and PC had a significant positive effect on TH ($\beta=0.486$, $p<0.001$), at this point, although the direct effect of PL on employees' BI behavior was weakened by the mediating variables, it still showed a more significant positive contribution ($\beta=0.256$, $p<0.001$). These test results above provide data support for H2, H3, and H4. In addition, the fit indices of the model also meet the relevant requirements, with $\chi^2/df=1.62$, CFI=0.928 and TLI=0.925, which all reach the acceptable level of 0.9; RMSEA=0.042 and SRMR=0.043, which are also less than 0.08, thus indicating that the whole model fits well.

Bootstrap Test for Multiple Mediating Effects of Psychological Capital (PC) and Thriving at Work (TH)

The multiple mediating effects were further analyzed using Bootstrap method in order to cross-validate the findings related to structural equation modeling tests.

The multiple mediating effects in this study can be divided into three main aspects: (1) independent and continuous mediating effects of PC and TH. Single mediating effect of PC: PL→PC→BI, $M1=a1*b1$; single mediating effect of TH: PL→TH→BI, $M2=a2*b2$; continuous mediating effect of PC and TH: PL→PC→TH→BI, $M3=a1*d*b2$; (2) sum of independent and continuous mediating effects: (PL→PC→BI) + (PL→TH→BI) + (PL→PC→TH→BI), Total $M=M1+M2+M3$; (3) comparison of independent and continuous mediating effects, (PL→PC→BI) - (PL→TH→BI), $Diff1=M1-$

Table 5 Indirect Effects and Path Coefficients of the Mediation Model

Partial Mediating Model	Standardized Path Coefficient			Point Estimate (Non-Standardized)	Bias Corrected 95% CI	
	PC	TH	BI		Lower Limit	Upper Limit
Paradoxical Leadership (PL)	0.647***	0.403***				
Psychological Capital (PC)		0.486***	0.198*			
Thriving at Work (TH)			0.374***			
(PL→PC→BI) + (PL→TH→BI) + (PL→PC→TH→BI)				0.436	0.303	0.574
PL→PC→BI				0.141	0.027	0.261
PL→TH→BI				0.166	0.079	0.283
PL→PC→TH→BI				0.129	0.059	0.228
(PL→PC→BI) - (PL→TH→BI)				-0.025	-0.226	0.163
(PL→PC→BI) - (PL→PC→TH→BI)				0.012	-0.166	0.177
(PL→TH→BI)-(PL→PC→TH→BI)				0.037	-0.046	0.131

Note: ***p < 0.001, *p < 0.05.

M2, (PL→PC→BI) - (PL→PC→TH→BI), Diff2=M1-M3, (PL→TH→BI) - (PL→PC→TH→BI), Diff3=M2-M3. In this paper, Bootstrap was set to 5000 times to run for the mediating effect test. The results are shown in Table 5. Mediating effect of PL through PC then to the specific path of employees' BI behavior (M1): PL→PC→BI=0.141, Bias corrected 95% CI= [0.027, 0.261]. Mediating effect of PL through TH then to employees' BI behavior specific path (M2): PL→TH→BI=0.166, Bias corrected 95% CI= [0.079, 0.283]. Mediating effect of the specific path of PL first through PC, then through TH and finally to employees' BI behavior (M3): PL→PC→TH→BI=0.129, Bias corrected 95% CI= [0.059, 0.228]. Based on the above results, it is found that none of the confidence intervals for PL→PC→BI; PL→TH→BI; and PL→PC→TH→BI contain zero, thus providing sufficient evidence that all three mediating effects are significant, and hypotheses H2, H3, and H4 in the derivation are further supported. Overall, the total mediating effect of PL via the two mediating variables of PC and TH (Total M): (PL→PC→BI) + (PL→TH→BI) + (PL→PC→TH→BI) =0.436, Bias corrected 95% CI= [0.303, 0.574], again does not contain zero. Thus, the effect of PL on employees' BI behavior is partially mediated via the path of PC and TH. Furthermore, comparing the mediating effects revealed that the difference between the two specific mediating paths (PL→PC→BI) and (PL→TH→BI) (Diff1=M1-M2=-0.025) was not significantly different at -0.025, (Bias corrected 95% contains zero, CI=[-0.226, 0.163]), indicating that the mediating effects of PC and TH were comparable independently; (PL→PC→BI) and (PL→PC→TH→BI) (Diff2=M1-M3=0.012) were also not significantly different at 0.012 (Bias corrected 95% including zero, CI=[-0.166, 0.177]), meaning that the continuous mediating effect of PC and TH did not differ from the independent mediating effect of PC. In addition, the difference between (PL→TH→BI) and (PL→PC→TH→BI) (Diff3=M2-M3=0.037) was still not different at 0.037 (Bias corrected 95% including zero, CI=[-0.046, 0.131]), indicating that the continuous mediating effect of PC and TH did not differ from the independent mediating effect of TH.

Conclusions and Discussions

Research Findings

We have investigated the effect of paradoxical leadership on employees' bootlegging behavior. Based on the self-determination theory and cognitive-affective system theory, this study also tested the independent and continuous

mediating roles of employees' psychological capital and thriving at work, respectively, and came to the following conclusions:

First, paradoxical leadership is positively associated with bootleg innovation of employees. This paper explores that paradoxical leadership, consisting of performance and support dimensions, controls the behavior and decisions of subordinates while giving employees a certain amount of discretion to ensure their autonomy of action, and argues that the resulting contradictions and tensions enhance the dynamics of the organization and employees themselves,⁶¹ thus stimulating their bootleg innovation behaviors. The findings of this study are consistent with Zhang¹⁴ on the relationship between paradoxical leadership and employees' proactive behaviors, suggesting that paradoxical leadership behavior, which is both flexible and open-ended, is an effective leadership style in the Chinese context and can promote employees' proactive and innovative behaviors.

Second, the results of this paper show that the effect of paradoxical leadership on employees' bootleg innovation works exclusively through the compounded multiple mediating effects of simultaneous and sequential psychological capital and thriving at work; the individual mediating effects of psychological capital and thriving at work between paradoxical leadership and employees' bootleg innovation behavior do not differ significantly. High employee psychological capital contributes to employees' willingness to engage in bootlegging innovation, which has received ample attention in previous studies. However, we note that Spreitzer and Porath³⁶ have hypothesized that psychological factors can have a motivating and creative effect on feelings of job prosperity. Following this line of thought, this study demonstrates three more complex mechanisms of action between paradoxical leadership and employee's bootlegging innovation. Path I: Paradoxical leadership inspires employees to bootlegging innovation by strengthening their perception of their own psychological capital; Path II: Paradoxical leadership stimulates employees' thriving at work, and thereafter promotes the individuals' divergent thinking,⁶² and encourages them to boldly try extra-role behaviors (bootleg innovation) and practice inner vision; Path III: Paradoxical leadership first enhances employees' perceptions of intrinsic psychological capital, and then, through the cognitive-affective path, stimulates the emotional experience of employees' thriving at work, which ultimately promotes employees' bootleg innovation behaviors. Thus, psychological capital can act as both proximal and distal variables to influence employees' bootlegging innovation. This finding echoes the Spreitzer & Porath's study, adding meaningfully to and advancing their research.

Theoretical Contributions

First, the study of paradoxical leadership as the antecedent of bootleg innovation reveals the influence mechanism of paradoxical leadership on employees' bootleg innovation behavior, enriches the literatures of paradoxical leadership and bootleg innovation behavior, and reflects the unique value of paradoxical leadership in organizational management to achieve a dynamic balance between the pursuit of freedom, creativity and independence and the pursuit of organization, order and control. Most of the current studies on paradoxical leadership are limited to employees' in-responsibility behaviors such as employees' ambidextrous behavior,²⁴ innovative behavior,⁶³ following behavior,⁶⁴ and voice behavior,⁶⁵ among others. Bootleg innovation is an innovative act undertaken privately and spontaneously by employees without formal authorization from the organization. It is a typical conduct beyond duty, and even an "illegal" act due to the violation of organizational norms. The findings of our study indicate that paradoxical leadership is also effective to employees' extra-role behaviors, which breaks through the current research situation, and broadly extend the research paradigm and scope between paradoxical leadership and employee behavior. Despite the flourishing of micro-applications of paradox theory, the study of paradoxes is still mainly at the macro level,⁶⁶ so paradox researchers call on researchers to dig deeper into the paradox phenomenon in the micro-domain.⁶⁷ This study supports and responds to this call by understanding the bootlegging innovation of individuals from a paradoxical perspective. While bootlegging innovation has dual attributes²⁵ and is characterized by "paradoxes", previous studies have examined employees' bootlegging innovations in terms of ethical leadership,⁶⁸ authoritarian leadership,¹⁵ servant leadership,⁶⁹ temporal leadership,¹⁸ and other unidimensional leadership styles, lacking of thinking in terms of composite leadership styles. Paradoxical leadership is a kind of leadership style with contradictory characteristics, and employees' bootleg innovation behavior is also a kind of behavior with contradictory characteristics. Studying the relationship between paradoxical leadership and employee's bootlegging innovation breaks through the limitations of the previous perspective of studying the formation mechanism of bootlegging innovation from a single leadership behavior only,

and responds to scholars' call for more empirical research on the impact mechanism of leadership styles on employees' bootlegging innovation. Thus our study is a useful supplement to the previous research, and provides a new perspective for the research on bootlegging innovation.

Second, although existing research points out that paradoxical leadership can effectively deal with various contradictory innovation problems in the organization, the research on how to solve the problem is relatively lacking. When previous literature explored the relationship between leadership behavior and employees' bootlegging innovation, the main line of research was dominated by psychological variables such as innovative self-efficacy,⁶⁹ prevention regulatory focus,¹⁵ moral efficacy and moral identity,⁶⁸ and this paper designed the mediating variable of thriving at work as a useful addition to the existing research. On the one hand, this study confirms the separate mediating role of psychological capital and thriving at work in the relationship between paradoxical leadership and bootlegging innovation, and on the other hand, it constructs a logical process of "situation - cognition - emotion - behavior" through the cognitive-emotional personality system theory, which forms an overall transmission path between key research variables and verifies that psychological factors can stimulate and create thriving at work,²¹ thus revealing more systematically and completely the mechanism of action of paradoxical leadership on employees' bootlegging innovation. In conclusion, this paper's multiple mediating model establishes a close connection between research in multiple fields of leadership, innovation management, and organizational paradoxes, thus expanding our understanding of the relationship between leadership behavior and employee innovation and providing a path for organizations to engage in multi-layered paradox integration.

Practice Implications

First, enterprises should pay attention to the important role of leaders in bootleg innovation, because the attitude conveyed by the leadership style can influence the subsequent bootleg innovation and creative performance of individual employees.³⁸ Our research shows that paradoxical leadership can help the leaders for the challenges caused by bootleg innovation. Leaders can cultivate paradoxical thinking, manage the conflict and compatibility of contradictions, and flexibly coordinate employees' innovation issues. Leaders can also improve their own leadership capabilities, expand their cognitive response categories, further encourage employees' independent behaviors with different responses, and skillfully guide employees' bootleg innovation in a direction that is beneficial to the company.

Second, this paper finds that paradoxical leadership not only helps employees build psychological capital, but also enhances their thriving at work, both by encouraging them to improve efficiency and promoting them to boldly engage in innovation, generating novel and practical ideas and perspectives. Therefore, managers should be adept at using paradoxical thinking, recognizing both the tension between these elements and at the same time being aware of their compatibility, to enhance their psychological capital and thriving at work as they promote their employees' innovation process, and ultimately their ability to innovate.

Third, companies can start special training to equip managers with paradoxical leadership qualities and competencies. Companies can assess the leadership level of their existing management team and find the gap between them and the ideal paradoxical leadership behavior, so as to determine the focus and difficulties of paradoxical leadership training. Paradoxical leadership establishes clear and higher performance goals for employees' behavior on the one hand; on the other hand, it stimulates innovative behavior by providing organizational support. Therefore, it is possible to consider institutional development to ensure that managers actively practice paradoxical leadership behaviors, and to include the extent and impact of supervisors' paradoxical leadership behaviors in the assessment of managers' work.

Limitations and Perspectives

Further investigation of this topic is sorely needed and strongly encouraged. In particular, we would like to know (1) the impact of the negative side of paradoxical leadership on employees' bootleg innovation behavior is to be further explored in the future, as some scholars have called for exploring the "dark side" of paradoxical leadership. (2) Although the different time points and sources data collection method can reduce the effect of homophily to a certain extent, it still cannot draw reliable causal inferences. Future studies may consider logbook methods or supplementary experimental studies that are closer to the true state. (3) The subjects of this study are individual employees, but the findings at the individual level do not automatically translate into findings at the team or organizational level. An additional area of

interest is how the bootleg innovation of individual employees gradually evolves into the bootleg innovation of the teams. (4) Each set of assumptions is likely to hold under specific contexts, since the boundary conditions of paradoxical leadership on employees' bootleg innovation are not explored, further investigation is needed.

Conclusion

Despite the limitations, our study extends the knowledge about bootleg innovation with a focus on the specific role of paradoxical leadership. On the one hand, our findings, especially those related to the role of psychological capital and thriving at work, reveal the influence mechanism of paradoxical leadership on employees' bootleg innovation. On the other, it is useful for understanding what kind of leadership style can effectively stimulate employees' bootleg innovation.

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Ethics Statement

This study was conducted in accordance with the Declaration of Helsinki, and Anhui University of Finance and Economics reviewed and approved the study protocol. All participants read and signed a consent form before they participated in the study.

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Disclosure

The authors report no conflicts of interest in this work.

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