Journal of East European Management Studies

J. East Eur. Manag. Stud. **2026**; 31(4): 43896
https://doi.org/10.31083/JEEMS43896

Article

Self-Efficacy and Psychological Ownership as Drivers of Employee Bootleg Innovative Behavior: The Moderating Role of Job Autonomy

Tingting Li[1], Mingyan Wang[2], Jiafu Su[3,*]

[1]International College, National Institute of Development Administration, 10240 Bangkok, Thailand
[2]National Research Base of Intelligent Manufacturing Service, Chongqing Technology and Business University, 400067 Chongqing, China
[3]International College, Krirk University, 10220 Bangkok, Thailand
*Correspondence: jiafu.su@hotmail.com (Jiafu Su)

Academic Editors: Thomas Steger and Rainhart Lang
Submitted: 16 June 2025 Revised: 24 December 2025 Accepted: 14 January 2026 Published: 5 August 2026

Abstract

Bootleg innovative behavior among employees in technology-based enterprises represents their creativity, reflecting both their willingness and ability to independently pursue creative activities through informal channels. Such behavior often spurs more groundbreaking and practical innovation outcomes. Based on Self-Determination Theory, combined with Psychological Ownership Theory and Job Characteristics Theory, this study develops a research model incorporating a mediating variable (psychological ownership) and a moderating variable (job autonomy) to examine the influence of employees' self-efficacy on bootleg innovative behavior and its underlying mechanisms in technology-based enterprises. The findings reveal that self-efficacy significantly and positively influences employees' bootleg innovative behavior; psychological ownership partially mediates the relationship between self-efficacy and bootleg innovative behavior; and job autonomy significantly and positively moderates the relationship between psychological ownership and bootleg innovative behavior, with high levels of job autonomy enhancing the motivational effect of psychological ownership on bootleg innovative behavior. This study enriches the theoretical understanding of bootleg innovative behavior, provides a theoretical basis for understanding the psychological and situational mechanisms of employee innovation behavior, and offers practical guidance for technology-based enterprises in motivating employee innovation and managing bootleg innovative behavior.

Keywords: self-efficacy; psychological ownership; job autonomy; bootleg innovative behavior
JEL: M54, Q31, O32

1. Introduction

In an era of rapid advancement within the knowledge economy and digital transformation, innovation has become the critical pathway for organizations to acquire core competitiveness and achieve sustainable development (Anderson et al., 2014; Schilpzand et al., 2018). In an external environment characterized by uncertainty and intense competition, traditional innovation models increasingly struggle to meet organizations' demands for rapid responsiveness and continuous renewal (Zhou and Hoever, 2014). Therefore, organizations must stimulate employee motivation for innovation through diverse approaches, such as fostering an open and inclusive innovation atmosphere, establishing a culture of sharing and trust, providing adequate resources and institutional support, and strengthening employees' innovative role identity and self-motivation (McAllister et al., 2007; Shanker et al., 2017). However, the innovation process is often accompanied by uncertainty and institutional constraints, and not all innovative ideas receive formal organizational support (Criscuolo et al., 2014; Mainemelis, 2010). When employees' innovative ideas conflict with organizational norms, some individuals with strong innovative convictions may choose to persistently advance their ideas through informal channels. This behavior is termed "bootleg" or "bootleg innovative behavior" (Mainemelis, 2010). Bootleg innovation refers to private innovation activities undertaken by employees without formal organizational authorization. Driven by personal initiative and guided by organizational interests, these activities utilize organizational resources. Unlike traditional innovation conducted within formal institutional structures and authorized frameworks, bootleg innovation formally deviates from organizational norms yet aims to enhance organizational performance and innovation outcomes (Criscuolo et al., 2014). This form of "constructive deviance" reflects the dynamic equilibrium between employees' normative constraints and innovative impulses, revealing the diverse sources of innovation within organizations (Globocnik and Salomo, 2015). In recent years, scholars have increasingly recognized the positive role of bootleg innovative behavior in promoting organizational learning, technological exploration, and flexible adaptation (Amoozegar et al., 2025). It reflects the dynamic tension between employees' intrinsic motivation and organizational innovation goals: on the one hand, it embodies the release of individual self-determination and creative potential; on the other, it reveals the structural conflict between organizational systems and innovation demands (Gao and Gao, 2024). Regardless of the success or failure of the innovation outcome, the trial-and-error process of bootleg innovative behavior itself pro-

vides opportunities for exploratory learning within the organization. This process thus becomes a crucial driver for enhancing organizational innovation performance and building long-term competitive advantage (Salter et al., 2014; Tenzer and Yang, 2019).

When explaining why employees engage in bootleg innovative behavior, researchers generally agree that individual psychological factors and situational conditions interact synergistically (Appelbaum et al., 2007; Xu and Zhao, 2020). Among these, self-efficacy stands as a critical individual variable, reflecting an individual's belief and confidence in their ability to successfully complete specific tasks (Bandura, 1997). In work settings, employees with high self-efficacy tend to maintain positive self-perceptions and a sense of control when confronting uncertainty and risk, making them more likely to adopt autonomous exploration and engage in innovative experimentation behavior (Newman et al., 2018). Simultaneously, psychological ownership serves as a crucial psychological mechanism influencing bootleg innovation. Psychological ownership refers to an individual's sense of "belonging" toward a specific goal, such as a job, project, or organization. When employees perceive the organization or its innovation projects as extensions of themselves, they exhibit heightened responsibility and commitment, making them more likely to take innovative actions to maintain or enhance the "self-owned" object (Pierce et al., 2001). Consequently, psychological ownership can motivate employees to proactively take risks and break conventions, serving as a key psychological driver for bootleg innovative behavior (Ozler et al., 2008). Moreover, bootleg innovation does not stem solely from individual psychological factors; organizational contextual factors also play a significant moderating role (Nanyangwe et al., 2025). Job autonomy is regarded as a crucial environmental variable influencing innovative behavior. Job autonomy reflects the degree of decision-making freedom, independence, and discretion employees possess in task execution (Hackman and Oldham, 1976). High levels of job autonomy enhance employees' intrinsic motivation and sense of responsibility, providing psychological safety and behavioral space for bootleg innovation (Akhtar and Ali, 2023). Thus, the emergence of bootleg innovative behavior results from the interaction between individual psychological traits and situational factors. Self-efficacy and psychological ownership form the psychological foundation at the individual level, while job autonomy provides situational support for bootleg innovative behavior. The interplay among these three elements collectively explains the behavioral logic behind employees' proactive exploration and innovation beyond organizational norms.

Regarding the factors influencing employees' bootleg innovative behavior, existing research primarily examines two perspectives: individual characteristics and external contexts (Criscuolo et al., 2014; Gao et al., 2024; Wang and Lee, 2025). Early studies predominantly focused on individual traits and external environments, such as employee creativity, personality characteristics, self-efficacy, and innovation motivation (Augsdorfer, 2012; Globocnik and Salomo, 2015; Smith and Tushman, 2005), alongside organizational innovation climate, leadership styles, and organizational characteristics (Avey et al., 2012; Huang et al., 2016; Salter et al., 2014). However, recent research has further expanded the psychological and contextual foundations of bootleg innovative behavior, revealing a more systematic, multi-level research trend. At the individual level, scholars have begun examining the role of employees' psychological mechanisms and intrinsic motivations in bootleg innovative behavior (Shang, 2024; Tenzer and Yang, 2023). Self-efficacy, innovative self-concept, and psychological safety have been shown to enhance employees' propensity for innovative deviance in risky situations (Gao et al., 2020; Lu et al., 2023). Concurrently, psychological ownership and organizational identity can stimulate employees' sense of responsibility and encourage proactive innovative behavior (He et al., 2022). At the leadership and team level, leadership style is regarded as a significant external force influencing bootleg innovative behavior (Zhou and Li, 2025). Empowering leadership and inclusive leadership promote constructive bootleg behavior by enhancing employees' psychological safety and sense of responsibility (Duan et al., 2025). Furthermore, a trusting team atmosphere and shared vision can also help stimulate members' inclination toward innovative deviance (Yıldız et al., 2015). At the organizational and situational levels, research increasingly emphasizes the supportive role of organizational climate and institutional characteristics in bootleg innovative behavior (Globocnik et al., 2022). A positive innovation climate, a culture of tolerance for failure, and organizational support can reduce employees' expectations of punishment for rule-breaking innovation, thereby strengthening their bootleg innovative behavior (Zhang et al., 2025). Simultaneously, job autonomy, as a key contextual variable, has been shown to strengthen the positive relationship between employees' intrinsic motivation and bootleg innovative behavior (Yuan and Woodman, 2010).

In summary, recent research on bootleg innovative behavior has gradually shifted from single-perspective approaches toward integrated frameworks encompassing multidimensional factors such as individual cognition, psychological motivation, leadership styles, and organizational support (Gao and Gao, 2024; Nanyangwe et al., 2025; Shang, 2024). However, three key research gaps remain: (1) a lack of systematic explanations of the mechanisms underlying individual intrinsic motivation; (2) insufficient attention to the moderating role of situational variables in individual psychological processes; (3) limited research on integrated pathways involving mediating variables such as psychological ownership.

Based on the above analysis, this study adopts Self-Determination Theory as its core theoretical framework. Drawing upon Psychological Ownership Theory and Job

Characteristics Theory, it integrates self-efficacy, psychological ownership, and job autonomy into a unified model. From the perspective of psychological motivation mechanisms, it elucidates the formation process of bootleg innovative behavior, thereby enriching the research perspective on the interaction between individual-level factors and situational influences. Existing research on employee bootleg innovative behavior predominantly focuses on individual traits, role positioning, or external factors such as personality characteristics, creativity, resource acquisition capabilities, or leadership styles (Globocnik, 2023; Huang et al., 2022), with relatively little attention paid to individuals' mental states, intrinsic motivations, and psychological needs. Therefore, this study introduces self-efficacy and psychological ownership to emphasize individuals' perceptions of their own capabilities and psychological attachment to work and organizations. By explaining the emergence of bootleg innovative behavior from an internal psychological mechanism perspective, it provides a complementary approach to exploring the psychological processes underlying employee innovation behavior. Although existing research has examined the influence of leadership styles and organizational climate on bootleg innovative behavior, little attention has been paid to the mediating role of psychological ownership between self-efficacy and bootleg innovative behavior (Avey et al., 2009; Pierce et al., 2001). This study validates the mediating role of psychological ownership, clarifying how individual beliefs and psychological commitment drive innovation behavior, thereby providing empirical support for applied research on Psychological Ownership Theory. A previous study has predominantly examined the effects of organizational environments and supportive factors on bootleg innovative behavior, with limited research integrating individual internal psychological states with job characteristics (e.g., job autonomy) (Li and Liu, 2022).

This study examines the formation mechanism of bootleg innovative behavior from the individual psychological perspective. Self-efficacy serves as the independent variable, psychological ownership as the mediating variable, and job autonomy as the moderating variable. This research offers a new theoretical perspective for understanding the deep psychological motivations behind employees' bootleg innovative behavior. Based on a theoretical model that explores how self-efficacy, psychological ownership, and job autonomy jointly influence bootleg innovative behavior, this study aims to address the following core questions:

Q1: Do self-efficacy and psychological ownership positively influence employees' bootleg innovative behavior?

Q2: How does psychological ownership mediate the relationship between self-efficacy and bootleg innovative behavior?

Q3: How does job autonomy moderate the effect of psychological ownership on bootleg innovative behavior?

Q4: Specifically, does psychological ownership exert a stronger positive influence on bootleg innovative behavior in contexts with high job autonomy?

In summary, to further clarify the theoretical logic and causal pathways of variables within the model, this study proposes research hypotheses concerning self-efficacy, psychological ownership, job autonomy, and bootleg innovative behavior. Using Research and Development (R&D) personnel and technical professionals from knowledge-intensive technology enterprises as subjects, hierarchical regression and moderated mediation models were employed to examine the interactive mechanisms among variables. The findings not only reveal the pivotal role of individual psychological mechanisms in the formation of bootleg innovation but also extend the application of Self-Determination Theory, Psychological Ownership Theory, and Job Characteristics Theory to the field of bootleg innovation. This provides a new theoretical perspective for understanding how employees proactively engage in innovation beyond institutional frameworks. Meanwhile, by integrating individual traits with situational factors, this study reveals the multi-level mechanisms driving bootleg innovative behavior, providing empirical evidence and practical insights for technology-based enterprises to establish effective innovation management systems.

2. Literature Review and Hypothesis Development

2.1 Self-Efficacy and Employees' Bootleg Innovative Behavior

Self-efficacy is an individual's belief and judgment regarding their ability to accomplish tasks in specific situations, influencing motivation, persistence, and behavioral choices (Bandura, 1994). Research has since continually expanded its implications, self-efficacy extends beyond task confidence in particular contexts to encompass a sense of "general self-efficacy" across situations, reflecting an individual's overall confidence in their capabilities and sense of control over their environment (Eden, 1988). Existing research consistently indicates that, higher self-efficacy enhances an individual's belief in overcoming challenges and fosters an optimistic attitude, thereby increasing their motivation for innovation and willingness to act proactively (Liang et al., 2023; Tierney and Farmer, 2011). However, most research links self-efficacy to "formal innovation" or "organizationally supported innovation behavior", overlooking employees' "bootleg innovation"—that is, unauthorized constructive innovation activities—within rule-constrained and resource-limited contexts (Mainemelis, 2010). A recent study has begun to examine the relationship between self-efficacy and bootleg innovation. A recent study found that self-efficacy significantly promotes employees' innovative behavior through psychological capital and creativity (Newman et al., 2018). Empirical evidence also indicates that when employees are confident in their

innovative capabilities, they may persist in advancing creative implementation through informal channels even when facing leadership rejection (Su et al., 2022). Furthermore, recent research has proposed that innovative self-efficacy and negative leadership feedback jointly influence employees' constructive bootleg innovative behavior, indicating that individuals with high self-efficacy are better able to maintain innovative persistence in resource-constrained situations (Liu et al., 2025). Thus, self-efficacy serves not only as a crucial psychological antecedent of employee innovation motivation but also as a significant driver of bootleg innovative behavior. Nevertheless, most of these research studies have remained confined to exploring individual psychological dimensions, with insufficient attention paid to the interactive mechanisms between self-efficacy and organizational contextual variables such as job autonomy and psychological ownership.

According to Self-Determination Theory, an individual's behavioral motivation depends on the fulfillment of three fundamental psychological needs: autonomy, competence, and relatedness (Deci and Ryan, 2000). When these needs are activated, an individual's intrinsic motivation increases, making them more likely to exhibit proactive and innovative behavior. Consistent with the views of Pierce et al. (2001), this study argues that, self-efficacy embodies an individual's sense of competence. Enhancing self-efficacy fosters employees' perception of greater control and responsibility over their work, thereby cultivating psychological ownership and satisfying their need for relatedness. Meanwhile, existing research indicates that, psychological ownership motivates individuals to perceive their work as an "extension of self", increasing their willingness to engage in bootleg innovation that breaks conventional norms (Avey et al., 2009). Furthermore, job autonomy, as an external contextual factor, can amplify the influence of self-efficacy on psychological ownership and innovative behavior (Zhang and Bartol, 2010). Compared to previous research that primarily focused on "formal innovation", this study integrates self-efficacy with bootleg innovation through self-determination theory. It reveals how self-efficacy, in high-autonomy contexts, stimulates employees' bootleg innovative behavior through psychological ownership. Self-Determination Theory reveals the underlying logic of this study's model: self-efficacy satisfies the need for competence, thereby stimulating psychological ownership, which further drives employees' bootleg innovative behavior in high-autonomy contexts. Therefore, this study proposes the following hypothesis:

H1: There is a positive relationship between self-efficacy and employees' bootleg innovative behavior.

2.2 Self-Efficacy and Psychological Ownership

A previous study has suggested that, employees with higher self-efficacy typically demonstrate greater work engagement, persistence, and innovative performance (Carter et al., 2018). Within organizational contexts, self-efficacy not only enhances employees' perceived capabilities but also strengthens their sense of self-worth and psychological attachment to the organization (Lunenburg, 2011). However, a study has focused on the direct effects of self-efficacy on performance or creativity, with relatively few exploring the pathways through which it influences employees' underlying attitudes and behaviors through psychological mechanisms (Dawkins et al., 2017). Pierce et al. (2001) clarified that psychological ownership is a cognitive-emotional state in which individuals experience a sense of psychological ownership characterized by the feeling that "it belongs to me". Researchers have indicated that employees with high psychological ownership are more likely to exhibit positive work attitudes, organizational commitment, and innovative behavior (Dawkins et al., 2017; Van Dyne and Pierce, 2004). Existing research mostly views psychological ownership as an outcome of organizational support or leadership empowerment, overlooking the intrinsic role of individual capability beliefs (such as self-efficacy) in its formation. An empirical study in recent years has progressively revealed a positive relationship between the above two factors. A recent empirical study found that self-efficacy promotes employee innovation behavior by fostering creativity through psychological capital (Sooknannan et al., 2024). Under the influence of leadership support and psychological safety, employees with high self-efficacy are more inclined to exhibit constructive bootleg innovative behavior (Shang and Yang, 2022). For employees in high-tech and knowledge-intensive industries, self-efficacy significantly enhances job satisfaction and reduces turnover intentions (Bhardwaj and Sharma, 2024). Therefore, self-efficacy not only strengthens employees' psychological ownership but also stimulates innovative and even bootleg innovative behavior through psychological ownership, thereby achieving positive organizational outcomes (Dawkins et al., 2017; Liu et al., 2019; Pierce et al., 2001). However, while existing research has confirmed the positive relationship between self-efficacy and psychological ownership, systematic exploration of its underlying psychological mechanisms and functions remains lacking. Particularly overlooked is the process by which self-efficacy influences employees' bootleg innovative behavior through psychological ownership. This study examines the mechanism by which self-efficacy endogenously drives psychological ownership from the perspective of individual internal factors.

In this research, self-efficacy embodies the sense of competence within Self-Determination Theory, a positive belief in one's capabilities. This belief enhances individuals' sense of control and responsibility over work tasks, thereby fostering psychological ownership (Pierce et al., 2001). Based on Psychological Ownership Theory, individuals develop a psychological "sense of ownership" toward goals or tasks, a process primarily dependent on perceived control, commitment, and self-identification (Pierce et al.,

2001). Self-efficacy can foster psychological ownership by enhancing perceived control, increasing behavioral commitment, and strengthening self-identification (Dawkins et al., 2017). In other words, high self-efficacy enables individuals to confidently take control of goals, commit more resources, and integrate them into their self-concept. This, in turn, strengthens their sense of responsibility and belonging, ultimately fostering psychological ownership. Accordingly, the following hypothesis is proposed:

H2: There is a positive relationship between self-efficacy and psychological ownership.

2.3 Psychological Ownership and Employees' Bootleg Innovative Behavior

The emergence of psychological ownership requires both an "individual" and an "object of ownership", emphasizing the individual's psychological formation of a sense of possession and belonging, the feeling that "this belongs to me" (Dawkins et al., 2017; Pierce et al., 2001). In organizational contexts, employees' psychological ownership manifests as emotional attachment and a sense of responsibility toward the organization, team, or work tasks (Van Dyne and Pierce, 2004), leading them to perceive organizational outcomes as extensions of their self-worth (Belk, 1988). Existing research consistently indicates that this psychological connection not only strengthens employees' sense of mission and achievement motivation but also prompts them to voluntarily assume organizational risks and proactively protect and enhance organizational performance (Avey et al., 2009; Brown et al., 2014). However, previous research has predominantly focused on the positive relationship between psychological ownership and "formal innovation behavior" or "organizational citizenship behavior" (Gardner et al., 2021; Su et al., 2025; Van Dyne and Pierce, 2004), with limited attention given to how it motivates employees' "bootleg innovation". This informal innovation is increasingly prevalent in modern flexible organizational structures, and its motivations differ significantly from those of traditional innovation behaviors. In recent years, scholars have further indicated that psychological ownership significantly enhances employees' innovative engagement and constructive deviance (Hussain et al., 2022; Yıldız et al., 2015). Concurrently, individuals with high psychological ownership are more inclined to transcend institutional constraints in pursuit of innovation goals, driven by organizational responsibility and reciprocity motives (Ye et al., 2022). Furthermore, findings from a study of technology company employees indicated that psychological ownership promotes the assumption of innovation risks and autonomous innovation activities by strengthening employees' organizational identification and self-determination motivation (You et al., 2022). Thus, psychological ownership not only stimulates positive attitudes and a sense of responsibility among employees but also facilitates bootleg innovative behavior by enhancing intrinsic motivation and psychological safety. In summary, existing research lacks a systematic analysis of how psychological ownership drives "bootleg innovation", an informal form of innovation, through intrinsic motivation mechanisms. This study reveals the psychological mechanisms by which employees, driven autonomously, break through institutional boundaries to innovate, examining the relationship between psychological ownership, intrinsic motivation, and bootleg innovative behavior.

Based on Psychological Ownership Theory, when individuals develop a sense of psychological ownership toward an organization or task, it enhances their sense of responsibility and focus on outcomes, thereby stimulating initiative and innovative behavior. Psychological ownership prompts individuals to view organizational goals or tasks as extensions of themselves, making them more likely to engage in creative and unconventional behavior (Pierce et al., 2001). Combined with Self-Determination Theory, psychological ownership satisfies individuals' autonomy needs, internalizing behavior into self-driven actions. Experiences of autonomy enhance intrinsic motivation, prompting individuals to explore novel approaches or propose innovative solutions within a bootleg framework—thus enabling bootleg innovative behavior (Deci and Ryan, 2000). In summary, when employees develop a strong sense of ownership and emotional attachment toward an organization, they proactively engage in innovative actions for organizational benefit—even when such behavior extends beyond formal authorization. Psychological ownership enhances employees' intrinsic motivation and sense of self-determination, prompting them to pursue shared personal and organizational values through bootleg innovative behavior. Therefore, this study proposes the following hypothesis:

H3: There is a positive relationship between psychological ownership and employees' bootleg innovative behavior.

2.4 The Mediating Role of Psychological Ownership

Psychological ownership centers on an individual's sense of possession and belonging toward organizational or work objectives. Its formation process is grounded in self-efficacy, self-identity, and the level of control and commitment toward work tasks (Dawkins et al., 2017; Pierce et al., 2001). Existing research indicates that, when employees perceive that their capabilities are recognized and they can effectively control work situations, they are more likely to develop a "this is mine" psychological connection to the organization or task, thereby stimulating the formation of psychological ownership (Mayhew et al., 2007). Yoon et al. (2020) found that self-efficacy significantly predicts employees' psychological ownership levels and promotes innovative behavior by strengthening intrinsic motivation and self-identity. Researchers further noted that individuals with high self-efficacy are more inclined to proactively assume responsibility and control objectives

at work, thereby enhancing their psychological ownership (Yıldız et al., 2015). In addition, a study has confirmed that self-efficacy indirectly promotes innovative performance and bootleg innovation tendencies by enhancing employees' work engagement and intrinsic motivation (Hao et al., 2024). Meanwhile, psychological ownership, as a deep-seated psychological motivation, drives individuals to proactively assume risks and responsibilities, exhibiting innovative behavior that transcends their roles (Avey et al., 2009; Brown et al., 2014). When employees develop a strong sense of ownership and emotional attachment to their organization, they tend to break conventions and engage in informal innovative behavior to safeguard and enhance the interests of the organization they "own" (Pierce et al., 2018). While existing research has revealed a positive relationship between self-efficacy and innovative behavior, emphasizing the direct effect of self-efficacy (Newman et al., 2018; Tierney and Farmer, 2011), it has generally overlooked the mediating mechanism of psychological ownership between the two. Explanations of how psychological ownership influences bootleg innovative behavior through individuals' "psychological appropriation" and "identification with responsibility" remain relatively insufficient. This study aims to uncover the underlying psychological pathway linking self-efficacy to bootleg innovation via psychological ownership.

According to Psychological Ownership Theory, individuals who develop a sense of "psychological ownership" toward their work or tasks within an organization exhibit heightened responsibility and proactive engagement (Pierce et al., 2001). Self-efficacy enhances their sense of control and behavioral commitment, thereby fostering psychological ownership (Avey et al., 2009). When individuals perceive a task as "their own", this psychological ownership sparks heightened responsibility and intrinsic motivation, driving them to engage in innovative behavior that transcends formal norms yet advances organizational goals, known as bootleg innovation (Vadera et al., 2013). Thus, psychological ownership as a mediating variable reveals how self-efficacy promotes bootleg behavior through internal psychological states (Avey et al., 2009; Pierce et al., 2001). Self-efficacy fosters psychological ownership by enhancing individuals' sense of control and belonging toward their work, while psychological ownership subsequently stimulates initiative and innovative tendencies, thereby enabling bootleg innovation. Based on this, the following hypothesis is proposed:

H4: Psychological ownership mediates the relationship between self-efficacy and bootleg innovative behavior.

2.5 Moderating Role of Job Autonomy

Job autonomy reflects the discretion and decision-making space individuals possess in their work, serving as a key source of employees' perceived sense of control and responsibility (Breaugh, 1985; Hackman and Oldham, 1975). When employees enjoy greater freedom in determining work methods, scheduling, and evaluation criteria, they are more likely to experience a sense of control and intrinsic motivation, thereby stimulating creative thinking and exploratory behavior (Nesheim et al., 2017). Conversely, when work is subject to strict control and supervision, employees' autonomy needs are restricted, leading to suppressed innovation motivation and reduced willingness to engage in proactive exploration (Mayer and Davis, 1999). Recent studies have also confirmed that a high-autonomy work environment enhances employees' psychological empowerment and sense of self-determination, thereby strengthening their innovative drive and willingness to take risks (Hon and Lui, 2016; Zhang and Bartol, 2010). Researchers found that job autonomy significantly promotes bootleg innovation by enhancing employees' sense of control and intrinsic motivation (Liu et al., 2021). They further noted that highly autonomous employees are more likely to adopt informal approaches to achieve creative goals when encountering innovation barriers, thereby maintaining control and ownership over innovative outcomes (Velez and Neves, 2016). Concurrently, high levels of job autonomy strengthen the relationship between psychological ownership and innovative behavior (Aslan and Atesoglu, 2021). This occurs because a liberating work environment enables employees to perceive the organization and tasks as "their own venture", thereby increasing their willingness to break rules, take risks, and exert extra effort toward innovation goals (Nanyangwe et al., 2021). Therefore, under conditions of high job autonomy, employees are more likely to internalize psychological ownership into concrete behavioral tendencies, proactively engaging in bootleg innovative behavior. However, while existing research confirms that job autonomy directly promotes innovative behavior, it generally overlooks the mediating role it plays in regulating the relationship between psychological ownership and bootleg innovative behavior at the psychological mechanism level. This study reveals, from an interactionist perspective, how job autonomy strengthens the conversion mechanism from psychological ownership to bootleg innovative behavior.

According to Self-Determination Theory, when individuals experience greater autonomy at work, their basic psychological needs, particularly the need for autonomy, are satisfied, thereby enhancing intrinsic motivation and self-regulation (Deci and Ryan, 1985, 2000). Concurrently, Job Characteristics Theory posits that job autonomy, as a core job characteristic, provides individuals with decision-making freedom and behavioral control, facilitating the transformation of psychological ownership into proactive action (Hackman and Oldham, 1976). When job autonomy is high, individuals can more fully translate psychological ownership into concrete actions, making it easier to implement bootleg innovative behavior. Conversely, when job autonomy is low, even with high levels of psychological ownership, individuals' innovative behavior may be

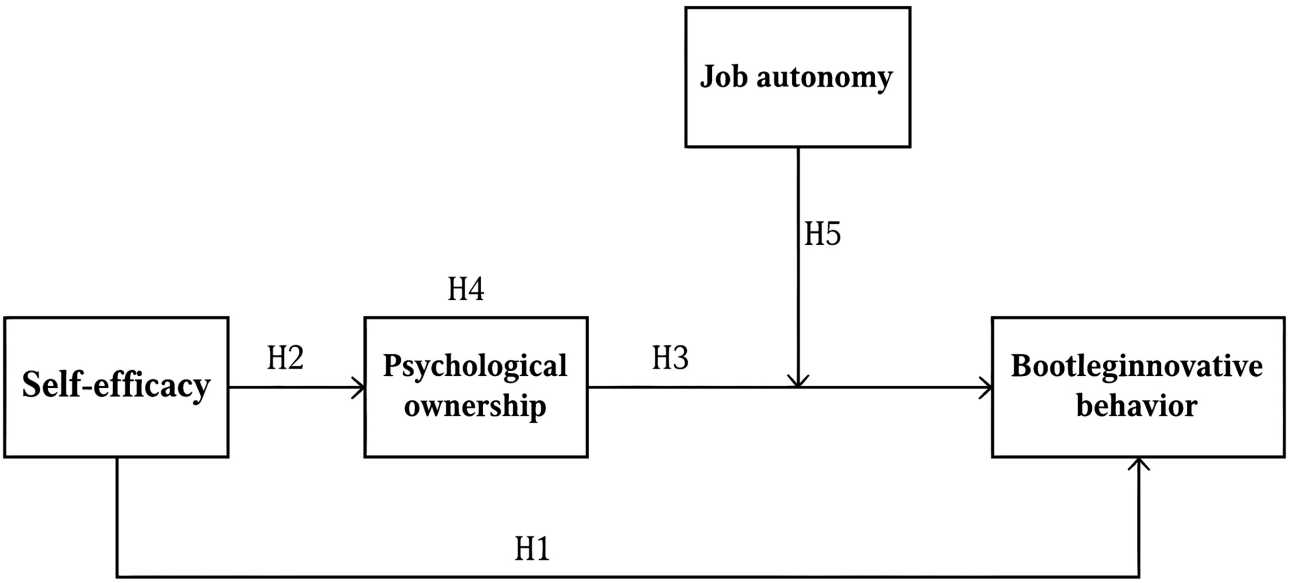

Fig. 1. Conceptual model.

constrained by organizational systems or task limitations (Zhang and Bartol, 2010). Based on this, we propose the following hypothesis:

H5: Job autonomy positively moderates the relationship between psychological ownership and employees' bootleg innovative behavior, such that the higher the level of job autonomy, the stronger the positive effect of psychological ownership on employees' bootleg innovative behavior.

Based on a systematic review of the key research variables and relevant literature, this paper explores the operational mechanisms linking self-efficacy, psychological ownership, job autonomy, and employees' bootleg innovative behavior. Consequently, a theoretical model is proposed, as illustrated in Fig. 1.

3. Research Design

3.1 Questionnaire Design

This study selected knowledge-intensive technology enterprises in sectors such as electronic communications, software and information technology, biopharmaceuticals, new materials, and new energy as the sample population due to the contextual characteristics of bootleg innovation. These enterprises exhibit intensive innovation activities, a high proportion of scientific and technical personnel, and more pronounced demands for bootleg innovation. To ensure data quality, the research primarily targeted R&D personnel and professional technical staff for questionnaire collection. This study focuses on four core variables: employee self-efficacy, psychological ownership, job autonomy, and bootleg innovative behavior. Based on relevant literature and drawing upon well-established scales with proven reliability and validity, a measurement tool was developed. The questionnaire design incorporated feedback from four scholars in organizational innovation and three senior executives from respondent companies, with revisions and optimizations made to specific items according to the research context. Specific adjustments included: localizing the original scales to align with the Chinese workplace context, contextualizing and refining items within practical work scenarios to enhance measurement accuracy, and removing redundant items to improve the questionnaire's operational feasibility and completion efficiency. These optimizations effectively enhanced the questionnaire's applicability and measurement precision while preserving the core measurement structure of the scales.

All variables in this study employed a five-point Likert scale, with respondents rating each item based on their personal circumstances: "1" indicates strongly disagree, "2" indicates disagree, "3" indicates average, "4" indicates agree, "5" indicates strongly agree. The questionnaire comprised two sections: Part One collected basic respondent information (gender, age, education level, length of service, job position); Part Two featured core measurement scales covering self-efficacy, psychological ownership, job autonomy, and bootleg innovative behavior. The distribution channels mainly included paper questionnaires distributed in the field and collected on the spot, as well as electronic questionnaires administered via email and Questionnaire Star (a Chinese app dedicated to questionnaire surveys). To ensure truthful reporting of individuals' levels of bootleg innovation, this study was conducted anonymously, and participants were assured that the collected data would be used solely for academic purposes, with all responses kept strictly confidential. A total of 700 questionnaires were distributed, yielding 612 valid responses after excluding invalid samples, resulting in an effective response rate of 87.43%.

3.2 Measurement of Variables

3.2.1 Self-Efficacy

Since this study did not specify a particular context, a generalized self-efficacy scale was employed (Zhang and Schwarzer, 1995). Previous research by the investigators confirmed this scale's strong reliability and validity (Scholz et al., 2002). This study developed three dimensions of self-efficacy, namely, cognitive and developmental efficacy, interpersonal communication and collaboration efficacy, and learning and creativity efficacy. The specific item content was slightly modified to fit the current research context, and individual items were integrated and reduced to yield nine measurement items, including statements such as "I feel that doing this job is right and meaningful".

3.2.2 Psychological Ownership

The scales used in this study have undergone empirical validation by numerous scholars (Dawkins et al., 2017; Olckers and van Zyl, 2017) and demonstrated good reliability and validity (Van Dyne and Pierce, 2004). To enhance respondents' comprehension and facilitate their responses, minor modifications and simplifications were made to the wording of individual items. A total of six items were used for measurement, including items such as "I feel that this is my company" and "I have a high sense of personal ownership of this company".

3.2.3 Job Autonomy

The job autonomy measurement scale employed in this study utilizes job autonomy, work methods, work organization, and work standards as its measurement dimensions (Breaugh, 1985). This scale has been previously validated and has demonstrated good reliability and validity (Breaugh and Becker, 1987; Sekhar, 2011). Seven items were identified for measurement, including "I can freely choose the methods I use in my work" and "I can modify my work goals".

3.2.4 Bootleg Innovative Behavior

The dependent variable in this study is bootleg innovative behavior. The bootleg innovative behavior measurement scale developed by Lin et al. (2016) has been validated in a subsequent study for its excellent reliability and validity (Tenzer and Yang, 2023). We made minor modifications to the scale language to match our research content and identified nine items for measurement by removing highly repetitive items, such as "I persist in optimizing innovative ideas without my superiors' approval".

3.2.5 Control Variables

Previous research has demonstrated that employees' gender, age, education, and length of service can influence bootleg innovative behavior (Huang et al., 2016). Therefore, to ensure the validity and completeness of our study, we selected these four demographic variables as control variables to exclude their interference with the study results. Specifically, we used the following codes for each variable: ①Gender: "1" for male and "2" for female. ②Age: We used the following codes: "1" for 18–25 years old, "2" for 25–35 years old, "3" for 35–45 years old, "4" for 45–55 years old, and "5" for 55 years old or above. ③Educational Level: We used the following codes: "1" for bachelor's degree, "2" for master's degree, and "3" for doctoral degree. ④Length of Service: We used the following codes for this variable: "1" for less than 1 year, "2" for 1–3 years, "3" for 4–10 years, "4" for 11–25 years, and "5" for over 25 years.

4. Results Analysis

4.1 Demographic Characteristics

As shown in Table 1, this study collected a total of 612 valid responses, with males accounting for 64.9% and females for 35.1%. Respondents' ages were predominantly concentrated between 25 and 45 years old (67.8%). The sample demonstrated a high overall educational attainment, with the vast majority holding bachelor's degrees or higher (Bachelor's: 58.3%; Master's: 28.1%; Doctorate: 13.6%). Participants were predominantly mid-career to experienced professionals (11–25 years: 33.3%; 4–10 years: 26.6%; over 25 years: 18.3%). In terms of job distribution, R&D and planning positions dominated the sample (R&D: 34.8%; Planning: 27.9%). Overall, this sample primarily consists of middle-aged and young professionals with advanced degrees and specialized experience in R&D and planning roles, providing a solid demographic foundation for subsequent analyses in this study.

4.2 Correlation Coefficients

The self-efficacy of employees showed a significant positive correlation with psychological ownership ($r = 0.266$, $p < 0.01$), and a significant positive correlation with bootleg innovative behavior ($r = 0.270$, $p < 0.01$). Psychological ownership showed a significant positive correlation with bootleg innovative behavior ($r = 0.339$, $p < 0.01$).

4.3 Reliability and Validity Analysis

This study used the internal consistency index to test the scale's reliability. The Cronbach's Alpha coefficients for the four variables of self-efficacy, psychological ownership, job autonomy, and bootleg innovative behavior were 0.918, 0.914, 0.949, and 0.948, respectively, all of which met the standard and indicated a high level of internal consistency of the questionnaire. Therefore, the survey questionnaire used in this study has good reliability, and the data can be trusted.

The results of Kaiser-Meyer-Olkin (KMO) and Bartlett's test showed that KMO = 0.951 (>0.70), and Bartlett's test statistic was 13,610.787 ($p < 0.01$). To test for common method bias, exploratory factor analysis was conducted using the Harman single-factor test. Results showed that the variance explained by the first common factor, ex-

Table 1. Demographic characteristics.

		Frequency	Percentage
Gender	Male	397	64.9%
	Female	215	35.1%
Age	15~25years old	88	14.4%
	26~35years old	260	42.5%
	36~45years old	155	25.3%
	46~55years old	78	12.7%
	Over 55 years old	31	5.1%
Educational Level	Bachelor	357	58.3%
	Master	172	28.1%
	Doctoral	83	13.6%
Length of Service	Less than 1 year	43	7.0%
	1–3 years	90	14.7%
	4–10years	163	26.6%
	11–25years	204	33.3%
	Over 25 years	112	18.3%
Job Position	R&D personnel	213	34.8%
	Planners	171	27.9%
	Designers	132	21.6%
	Engineers	96	15.7%

tracted without rotation, was 27.89%, below the 40% critical threshold. This indicates that no significant common method bias exists in this study. As shown in Table 2, using principal component analysis, factors with eigenvalues greater than 1 were extracted, and an orthogonal rotation was conducted using the maximum variance method to obtain the rotated component matrix. Four common factors were extracted, and the cumulative variance explained by the rotation was 69.08% (>60%), indicating good interpretability. The 31 items were classified into four factors, with factor loadings for each item above 0.5. Thus, the information contained in the four factors was comprehensive, and there was no overlap between the factors. None of the items had high loadings on multiple factors. These analyses suggest that the selected scale has good structural validity. Confirmatory factor analysis conducted using Structural Equation Modeling (SEM) showed a good fit for the four-factor model (χ^2/df = 0.967, Goodness-of-Fit Index [GFI] = 0.959, Comparative Fit Index [CFI] = 0.989, Normed Fit Index [NFI] = 0.970, Root Mean Square Residual [RMR] = 0.016). The standardized factor loadings of all items ranged between 0.70 and 0.85, all exceeding 0.5; the composite reliability (CR) ranged from 0.915 to 0.949, all above 0.7; and the average variance extracted (AVE) ranged from 0.556 to 0.726, all above 0.5. This indicates that the scale has good convergent and discriminant validity.

4.4 The Mediating Role of Psychological Ownership

To rule out potential interference of multicollinearity on the estimation results, this study conducted variance inflation factor (VIF) tests on all continuous control variables, independent variables, moderating variables, and mediating variables. The test results showed that the VIF for each variable was far less than 10, indicating no multicollinearity issue. Furthermore, all continuous variables were mean-centered.

This study examined the mediating role of psychological ownership in the relationship between self-efficacy and employee bootleg innovative behavior in four steps, as shown in Table 3. Model 1 revealed a significant positive effect of self-efficacy on psychological ownership ($\beta = 0.264$, $p < 0.01$), indicating that self-efficacy had a significant positive impact on psychological ownership, supporting H2. Model 2 showed a significant positive effect of self-efficacy on bootleg innovative behavior ($\beta = 0.270$, $p < 0.01$), supporting H1. Model 3 showed a significant positive effect of psychological ownership on bootleg innovative behavior ($\beta = 0.341$, $p < 0.01$), supporting H3. Model 4 added psychological ownership to Model 2 and showed a significant effect on bootleg innovative behavior ($\beta = 0.290$, $p < 0.01$). The impact of self-efficacy on bootleg innovative behavior decreased from $\beta = 0.270$ ($p < 0.01$) to $\beta = 0.193$ ($p < 0.01$), with $R^2 = 0.160$, indicating that psychological ownership played a partial mediating role in the path between self-efficacy and bootleg innovative behavior, supporting H4.

Further testing of the overall hypothesis model was conducted using the Bootstrap method with 5000 repeated samples to examine the mediating effect. The results are shown in Table 4: The standardized indirect effect coefficient for the path self-efficacy → psychological ownership → bootleg innovative behavior was 0.088 (standard error

Table 2. Explained total variance.

Component	Initial eigenvalues			Extracted sum of squared loadings			Rotated sum of squared loadings		
	Total	Percentage of variance	cumulative %	Total	Percentage of variance	cumulative %	Total	Percentage of variance	cumulative %
1	8.645	27.887	27.887	8.645	27.887	27.887	6.373	20.559	20.559
2	5.429	17.512	45.398	5.429	17.512	45.398	5.476	17.664	38.224
3	4.193	13.525	58.923	4.193	13.525	58.923	5.364	17.302	55.526
4	3.149	10.157	69.080	3.149	10.157	69.080	4.202	13.554	69.080

Table 3. Regression analysis of the mediating role of psychological ownership.

Variable		R^2 F	β	SE	t
Psychological Ownership (M1)	Gender	0.083 10.996**	–0.090	0.056	–2.314*
	Age		–0.073	0.043	–1.153
	Educational Level		0.039	0.037	0.981
	Length of Service		0.107	0.040	1.672
	Self-efficacy		0.264	0.045	6.772**
Bootleg Innovative Behavior (M2)	Gender	0.083 11.002**	0.009	0.055	0.238
	Age		–0.132	0.043	–2.076*
	Educational Level		–0.054	0.036	–1.364
	Length of Service		0.124	0.039	1.944
	Self-efficacy		0.270	0.045	6.925**
Bootleg Innovative Behavior (M3)	Gender	0.125 17.393**	0.037	0.054	0.977
	Age		–0.105	0.042	–1.697
	Educational Level		–0.069	0.035	–1.768
	Length of Service		0.092	0.038	1.479
	Psychological ownership		0.341	0.038	8.920**
Bootleg Innovative Behavior (M4)	Gender	0.160 19.227**	0.035	0.053	0.944
	Age		–0.111	0.041	–1.816
	Educational Level		–0.066	0.035	–1.720
	Length of Service		0.093	0.037	1.520
	Self-efficacy		0.193	0.044	4.996**
	Psychological ownership		0.290	0.038	7.444**

Note: * indicates $p < 0.05$, ** indicates $p < 0.01$. SE, standard error.

[SE] = 0.018), with a 95% confidence interval of [0.055, 0.125] not including 0 ($p < 0.05$). It can be inferred that psychological ownership plays a partial mediating role in the relationship between self-efficacy and bootleg innovative behavior, supporting hypothesis H4.

From the perspective of Self-Determination Theory, high self-efficacy satisfies employees' competence needs, enhancing their autonomy and motivation for innovation. From the perspective of Psychological Ownership Theory, a sense of ownership and responsibility fosters greater psychological safety and willingness to act in unauthorized innovative behavior. The presence of a partial mediating effect indicates that not all employees with high self-efficacy engage in bootleg innovative behavior; psychological ownership serves as a crucial condition for activating such behavior. The study suggests that when promoting employee autonomy and innovation, organizations should concurrently focus on competence development and psychological ownership cultivation to effectively enhance employee initiative and boost innovative behavior.

4.5 Test of Moderating Effects of Job Autonomy

This study further tested the hypothesis that job autonomy moderates the relationship between psychological ownership and bootleg innovative behavior, as proposed in H5 and shown in Table 5. Model 3 introduced control variables, independent variables, mediating variables, moderating variables, and the interaction term between the independent variable and the moderating variable, job autonomy*psychological ownership, for multiple regression analysis (β = 0.147, $p < 0.01$). The results showed that job autonomy had a significant positive effect on bootleg innovative behavior, and the R^2 value was significantly higher compared to Model 1. The moderating variable, job autonomy, had a significant positive moderating effect on the relationship between the independent variable, psychological

Table 4. Test of mediating effects.

Path	Effects	Coefficient	95% CI	
			Lower	Upper
Self-Efficacy→ Psychological Ownership → Bootleg Innovative Behavior	Total effects	0.311	0.223	0.399
	Direct effect	0.223	0.136	0.311
	Indirect	0.088	0.055	0.125

Table 5. Moderating effects of job autonomy.

Variable		R^2 F	β	SE	t
Bootleg Innovative Behavior (M1)	Gender		0.005	0.057	0.129
	Age	0.011	–0.129	0.044	–1.966
	Educational Level	1.637	–0.056	0.038	–1.357
	Length of Service		0.131	0.040	1.980*
Bootleg Innovative Behavior (M2)	Gender		0.035	0.053	0.944
	Age		–0.111	0.041	–1.816
	Educational Level	0.160	–0.066	0.035	–1.720
	Length of Service	19.227**	0.093	0.037	1.520
	Self-efficacy		0.193	0.044	4.996**
	Psychological ownership		0.290	0.038	7.444**
Bootleg Innovative Behavior (M3)	Gender		0.043	0.052	1.168
	Age		–0.106	0.040	–1.770
	Educational Level		–0.057	0.034	–1.517
	Length of Service	0.183	0.087	0.037	1.431
	Self-efficacy	16.844**	0.195	0.044	5.096**
	Psychological ownership		0.279	0.038	7.251**
	Job Autonomy		–0.059	0.032	–1.571
	Interaction term		0.147	0.045	3.934**

Note: * indicates $p < 0.05$, ** indicates $p < 0.01$.

ownership, and the dependent variable, bootleg innovative behavior. Therefore, H5 is supported.

To further illustrate the pattern of the moderating effect, we plotted the interaction figure (as shown in Fig. 2). The simple slope test revealed that the positive effect of psychological ownership on bootleg innovative behavior differed significantly across levels of job autonomy. When job autonomy was at a low level, psychological ownership had a significant positive effect on bootleg innovative behavior ($b = 0.1229$, $SE = 0.055$, $t = 2.25$, $p = 0.0247 < 0.05$), but the effect was relatively weak. When job autonomy was at a high level, the positive effect of psychological ownership on bootleg innovative behavior was further enhanced ($b = 0.4220$, $SE = 0.052$, $t = 8.218$, $p < 0.01$). This implies that for individuals with high levels of job autonomy, an increase in psychological ownership leads to a greater increase in bootleg innovative behavior.

According to Self-Determination Theory, high job autonomy satisfies employees' need for autonomy, enabling them to experience greater psychological control over their actions and a stronger sense of choice. This makes them more willing to translate psychological ownership into actual innovative behavior. Job Characteristics Theory further suggests that high autonomy enriches the core attributes of work, enhancing task challenge, responsibility, and meaning. This strengthens employees' sense of ownership over their work, maximizing the motivational effects of psychological ownership. Job autonomy not only serves as a key condition for stimulating employee innovation but also amplifies the influence of psychological ownership on bootleg innovative behavior, offering theoretical and practical insights for understanding employee innovation motivation.

5. Discussion

This study was grounded in Self-Determination Theory (Deci and Ryan, 1985, 2000) and integrated Psychological Ownership Theory (Pierce et al., 2001) and Job Characteristics Theory (Hackman and Oldham, 1975). It introduced job autonomy as a moderator to examine how the interaction between individual psychological motivation and situational characteristics influences bootleg innovative behavior.

First, this study found that self-efficacy exerts a significant positive influence on bootleg innovative behavior. This finding aligns with Bandura's (1997) perspective that "individuals' beliefs in their own capabilities de-

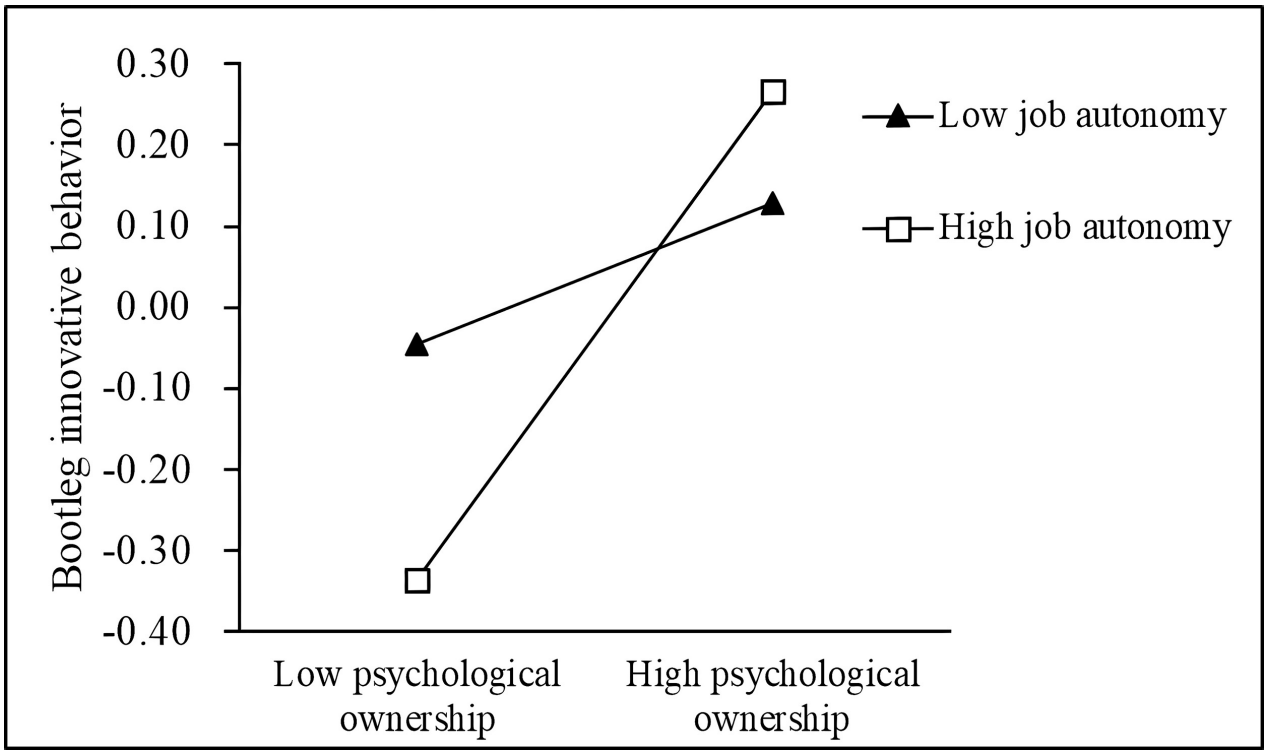

Fig. 2. Moderating effect of job autonomy.

termine their behavioral persistence and innovativeness". It also supported Tierney and Farmer's (2011) research, which found that high self-efficacy levels enhance employees' creative confidence and innovative execution capabilities. Consistent with recent empirical research, self-efficacy promotes innovative behavior by enhancing employees' creativity and psychological capital (Kumar et al., 2022). However, in contrast to most of the study that focus on "formal innovation" or organizationally authorized innovation (Globocnik, 2023), this study extends self-efficacy to the context of "unauthorized innovation", revealing that individuals can still initiate spontaneous innovative behaviors through belief in their capabilities even under rule-constrained conditions. This indicates that self-efficacy's role extends beyond task performance within organizational incentive systems; it can also facilitate "bootleg innovation" by strengthening self-motivation in the absence of external support. Thus, this study addresses the overreliance on external motivation explanations in bootleg innovation research by introducing an intrinsic motivation perspective.

Second, this study found that psychological ownership partially mediates the relationship between self-efficacy and bootleg innovative behavior. Specifically, high self-efficacy enhances employees' sense of belonging and ownership toward the organization, thereby stimulating greater innovative commitment and risk-taking behavior. This finding aligns with the three-path model of psychological ownership proposed by Pierce et al. (2001), where the "control-familiarity-self-investment" mechanism fosters individuals' sense of responsibility and behavioral initiative. Furthermore, this finding aligns with Avey et al.'s (2009) conclusion, which stated that psychological ownership promotes positive employee behavior. However, compared to previous studies that primarily focused on the effects of psychological ownership on organizational citizenship behavior or external environmental and leadership factors (Brown et al., 2014; Van Dyne and Pierce, 2004), this study introduces the concept into the context of "bootleg innovation", revealing that psychological ownership not only drives compliant behavior but can also transform into unconventional, constructive innovation momentum. This finding extends the pathway through which psychological ownership, as an intrinsic motivator, facilitates informal innovation.

Third, this study found that job autonomy significantly moderates the positive relationship between psychological ownership and bootleg innovative behavior. When employees possess greater autonomy and decision-making freedom at work, the positive effect of psychological ownership on bootleg innovative behavior becomes more pronounced. This finding corroborates Hackman and Oldham's (1975) Job Characteristics Model, which posits that job autonomy enhances employees' sense of control and responsibility over tasks, thereby stimulating higher-level motivation and creative behavior. This discovery aligns with recent research that, when examining innovative employee behavior, has noted that high-autonomy environments significantly amplify the positive effects of individual psychological resources (Jang and Kim, 2025; Li and Liu, 2022). Building upon previous research limitations that viewed job

autonomy primarily as a direct antecedent to bootleg innovative behavior (Jin and Kim, 2015; Lee, 2025; Nasution et al., 2021), this study examines its moderating effect within the "psychological ownership–bootleg innovative behavior" pathway from an interactionist perspective. It demonstrates the critical role of external contexts in transforming individual psychological ownership into innovative behavior.

6. Conclusions

This study integrates Psychological Ownership Theory and Job Characteristics Theory based on Self-Determination Theory to construct a research model examining bootleg innovative behavior. It reveals the mechanisms through which self-efficacy, psychological ownership, and job autonomy affect employees' bootleg innovative behavior, thereby deepening the understanding of bootleg innovation research from the perspective of individual psychological motivation. The findings of this study indicate that self-efficacy exerts a significant positive influence on bootleg innovative behavior; psychological ownership partially mediates the relationship between self-efficacy and bootleg innovative behavior; and job autonomy significantly moderates the relationship between psychological ownership and bootleg innovative behavior.

6.1 Theoretical and Practical Contributions

At the theoretical level, this study constructs a "self-efficacy—psychological ownership—bootleg innovative behavior" model based on Self-Determination Theory, thereby expanding the theory's explanatory power regarding unconventional innovation behavior. While prior research has predominantly examined compliant innovation, creative performance, or organizational citizenship behavior (Deci and Ryan, 2000; Gagné and Deci, 2005), this study demonstrates that self-efficacy, as an intrinsic factor, can drive employees to engage in bootleg innovation within organizational constraints, providing new evidence for the applicability of Self-Determination Theory in bootleg innovation contexts. Furthermore, by revealing the mediating role of psychological ownership in the relationship between self-efficacy and bootleg innovation, this study deepens the theoretical implications of Psychological Ownership Theory. Compared to previous studies focusing on its effects on satisfaction, organizational commitment, or citizenship behavior (Dawkins et al., 2017; Pierce et al., 2003), this research finds that psychological ownership motivates employees to engage in bootleg innovation based on responsibility identification and belongingness, expanding the theory's boundaries in the fields of innovation and bootleg behavior. Finally, by incorporating Job Characteristics Theory, this study verifies the moderating role of job autonomy in the relationship between psychological ownership and bootleg innovative behavior, revealing the interactive effects of situational characteristics and individual psychological mechanisms. This finding aligns with Hackman and Oldham (1975)'s perspective that high-autonomy environments enhance employees' sense of self-control and innovative self-confidence. It thus addresses the existing research limitation of insufficient attention to situational variables and deepens our understanding of the formation mechanism of bootleg innovation.

At the practical level, this study provides valuable insights for innovation management in technology-based enterprises. First, strengthen the cultivation of employee self-efficacy. Organizations should establish progressive innovation goals that help employees accumulate "perceived success experiences" through task completion; Training programs in innovation skills and psychological resilience can further enhance employees' self-regulation when facing uncertainty. In addition, implementing "mentorship programs" and "success case review mechanisms" enables employees to develop efficacy expectations by learning from exemplary experiences. Second, foster an organizational mechanism oriented toward psychological ownership. Firms should adopt a project responsibility system and share ownership of phased outcomes, ensuring employees have clear accountability and receive appropriate rewards throughout the innovation process. Creating open and transparent channels for innovation suggestions, such as internal crowdsourcing platforms, can encourage employees to voice new ideas and participate in decision-making. Furthermore, building an organizational culture of trust, support, and inclusiveness can reduce employees' fear of punitive consequences for innovation failures. Third, optimize the dynamic balance between autonomy and control. Managers should flexibly allocate levels of autonomy according to task characteristics and employee capabilities. For exploratory tasks, greater decision-making freedom and resource allocation authority should be granted to stimulate experimental thinking. For execution-oriented tasks, maintaining a moderate degree of structure helps prevent inefficiency and resource waste. By establishing a parallel management system integrating "empowerment-feedback-control", organizations can maintain order and resource efficiency while fostering the continuous emergence of constructive bootleg innovative behavior. Finally, develop multidimensional incentive and tolerance mechanisms. Companies can encourage bold experimentation and iterative learning by introducing diverse incentives, including non-monetary recognition, internal innovation funds, and innovation failure insurance. At the same time, forming "innovation tolerance alliances" between senior and middle management, where failure is viewed as a natural part of the learning process, can sustain employees' willingness to engage in constructive bootleg innovation.

6.2 Limitations and Future Research

Although this study has achieved meaningful results at both theoretical and empirical levels, several limitations

remain that warrant further refinement in future research. First, regarding sample and data collection, this study primarily relied on employee self-assessment questionnaires. While reliability and validity tests, along with homogeneity of variance tests, indicated high data quality, subjective reporting may still be influenced by social desirability bias. Future studies could incorporate multi-source data (e.g., supervisor evaluations, peer ratings) or adopt longitudinal designs to enhance objectivity and causal inference capabilities. Second, while the cross-sectional design confirmed associations among self-efficacy, psychological ownership, and bootleg innovative behavior, it cannot reveal the dynamic evolution of causal pathways between variables. Subsequent studies may employ experimental methods, longitudinal tracking, or time-series analysis to further explore developmental processes and trend changes in psychological mechanisms. Third, the sample for this study primarily consisted of technology-intensive enterprises in China. This singular context may impose certain limitations on the external validity of the findings. Such enterprises typically exhibit a stronger innovation orientation and more flexible organizational climate, which may amplify the relationship between self-efficacy, psychological ownership, job autonomy, and bootleg innovative behavior. Consequently, industries characterized by stricter regulations or distinct innovation environments, such as the public sector, traditional manufacturing, or finance, may demonstrate varying intensities or directions of this relationship. Furthermore, unique organizational cultures and management characteristics within the Chinese context, such as collectivism, a distinctly hierarchical organizational atmosphere, and high expectations for organizational identification, may further amplify or mitigate the impact of different variables on bootleg innovative behavior. Therefore, future research could conduct comparative studies across different cultural or organizational contexts to explore the similarities and differences in how cultural variations influence employees' psychological mechanisms and factors affecting bootleg innovative behavior, thereby enhancing the model's universality and robustness. Fourth, this study examines the role of individual psychological motivations and situational factors in shaping bootleg innovative behavior. However, factors such as psychological safety, perceived organizational support, leadership style, and organizational fairness may also influence employees' bootleg innovative behavior. Future research could incorporate additional variables across different levels to construct a more comprehensive "psychological motivation-situational characteristics" integrated model. This approach would systematically reveal the underlying logic of bootleg innovative behavior formation and enhance our understanding of the interactive mechanisms among various factors. In summary, despite certain limitations, this study provides a crucial foundation for understanding the mechanisms influencing employee bootleg innovative behavior. Future research could deepen this topic within a multi-time-point, multi-context, and multi-variable framework, offering more robust theoretical and practical support for organizational innovation management.

Availability of Data and Materials

The raw data supporting the conclusions of this article will be made available by the authors on request.

Author Contributions

TL: Conceptualization, methodology, writing—original draft preparation, MW: Formal analysis, JS: Conceptualization, methodology, Writing - review & editing. All authors contributed to editorial changes in the manuscript. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Acknowledgment

Not applicable.

Funding

This work was supported by Technology Research Program of Chongqing Municipal Education Commission (Grant No. KJQN202200808).

Conflicts of Interest

The authors declare no conflicts of interest.

References

Akhtar MS, Ali H. Innovative Work Behavior: An association of Leadership Styles, Job Autonomy, and Employee Proactive Behavior. Journal of Social Sciences Review. 2023; 3: 190–211. https://doi.org/10.54183/jssr.v3i1.128

Amoozegar A, Esohwode OE, Yujiao W, Pee WH, Ismaeil A, Yadav M, et al. Employee creativity and innovation in higher education institutions: applying the dynamic componential model of creativity and innovation. Frontiers in Psychology. 2025; 16: 1614751. https://doi.org/10.3389/fpsyg.2025.1614751

Anderson N, Potočnik K, Zhou J. Innovation and Creativity in Organizations: A state-of-the-science review, prospective commentary, and guiding framework. Journal of Management. 2014; 40: 1297–1333. https://doi.org/10.1177/0149206314527128

Appelbaum SH, Iaconi GD, Matousek A. Positive and negative deviant workplace behaviors: causes, impacts, and solutions. Corporate Governance: the International Journal of Business in Society. 2007; 7: 586–598. https://doi.org/10.1108/14720700710827176

Aslan M, Atesoglu H. The Effect of Innovation and Participation as Workplace Values on Job Satisfaction and the Mediating Effect of Psychological Ownership. Sage Open. 2021; 11. https://doi.org/10.1177/21582440211061530

AUGSDORFER P. A DIAGNOSTIC PERSONALITY TEST TO IDENTIFY LIKELY CORPORATE BOOTLEG RESEARCHERS. International Journal of Innovation Management. 2012; 16: 1250003. https://doi.org/10.1142/s1363919611003532

Avey JB, Avolio BJ, Crossley CD, Luthans F. Psychological ownership: theoretical extensions, measurement and relation to work outcomes. Journal of Organizational Behavior. 2009; 30: 173–191. https://doi.org/10.1002/job.583

Avey JB, Wernsing TS, Palanski ME. Exploring the Process of Ethical Leadership: The Mediating Role of Employee Voice and Psychological Ownership. Journal of Business Ethics. 2012; 107: 21–34. https://doi.org/10.1007/s10551-012-1298-2

Bandura A. Self-efficacy. In Ramachaudran VS (ed.) Encyclopedia of human behavior (Vol. 4, pp. 71–81). Academic Press: San Diego, CA, USA. 1994.

Bandura A. Self-efficacy: The exercise of control. W. H. Freeman: New York NY. 1997.

Belk RW. Possessions and the extended self. Journal of Consumer Research. 1988; 15: 139–168. https://doi.org/10.1086/209154

Bhardwaj S, Sharma SK. Self-efficacy and organizational efficacy effect on employee attrition in IT sector. Business Analyst Journal. 2024; 45: 1–10. https://doi.org/10.1108/BAJ-07-2023-0057

Breaugh JA, Becker AS. Further Examination of the Work Autonomy Scales: Three Studies. Human Relations. 1987; 40: 381–399. https://doi.org/10.1177/001872678704000604

Breaugh JA. The measurement of work autonomy. Human Relations. 1985; 38: 551–570. https://doi.org/10.1177/001872678503800604

Brown G, Crossley C, Robinson SL. Psychological Ownership, Territorial Behavior, and Being Perceived as a Team Contributor: The Critical Role of Trust in the Work Environment. Personnel Psychology. 2014; 67: 463–485. https://doi.org/10.1111/peps.12048

Carter WR, Nesbit PL, Badham RJ, Parker SK, Sung LK. The effects of employee engagement and self-efficacy on job performance: a longitudinal field study. The International Journal of Human Resource Management. 2018; 29: 2483–2502. https://doi.org/10.1080/09585192.2016.1244096

Criscuolo P, Salter A, Ter Wal ALJ. Going Underground: Bootlegging and Individual Innovative Performance. Organization Science. 2014; 25: 1287–1305. https://doi.org/10.1287/orsc.2013.0856

Dawkins S, Tian AW, Newman A, Martin A. Psychological ownership: A review and research agenda. Journal of Organizational Behavior. 2017; 38: 163–183. https://doi.org/10.1002/job.2057

Deci EL, Ryan RM. The general causality orientations scale: Self-determination in personality. Journal of Research in Personality. 1985; 19: 109–134. https://doi.org/10.1016/0092-6566(85)90023-6

Deci EL, Ryan RM. The “What” and “Why” of Goal Pursuits: Human Needs and the Self-Determination of Behavior. Psychological Inquiry. 2000; 11: 227–268. https://doi.org/10.1207/s15327965pli1104_01

Duan CL, Zhang YJ, Zhang JW. Leadership style and employees’ bootlegging innovation: A meta-analysis. Science & Technology Progress and Policy. 2025; 42: 141–150. (In Chinese)

Eden C. Cognitive mapping. European Journal of Operational Research. 1988; 36: 1–13.

Gagné M, Deci EL. Self-determination theory and work motivation. Journal of Organizational Behavior. 2005; 26: 331–362.

Gao P, Gao Y. How Does Digital Leadership Foster Employee Innovative Behavior: A Cognitive-Affective Processing System Perspective. Behavioral Sciences (Basel, Switzerland). 2024; 14: 362. https://doi.org/10.3390/bs14050362

Gao Q, Xu J, Tao Z, Liu L, Wu C. Exploration and Analysis on the Psychological Capital of Entrepreneurship and the Deviant Innovation Behavior of Employees. Frontiers in Psychology. 2020; 11: 1880. https://doi.org/10.3389/fpsyg.2020.01880

Gao X, Wang L, Lu L, Wu W. The influence of bootleg innovation on individual innovation performance: The mediating effect of cognitive flexibility and the moderating effect of leadership’s emotional intelligence. PloS One. 2024; 19: e0296782. https://doi.org/10.1371/journal.pone.0296782

Gardner DG, Pierce JL, Peng H. Social exchange and psychological ownership as complementary pathways from psychological contract fulfillment to organizational citizenship behaviors. Personnel Review. 2021; 50: 1479–1494. https://doi.org/10.1108/pr-12-2019-0688

Globocnik D. Individual and contextual factors affecting employees’ inclination to bootlegging. In Globocnik I. S. S. D. (ed.) Corporate underground: Bootleg innovation and constructive deviance (pp. 167–186). World Scientific: New Jersey, USA. 2023.

Globocnik D, Peña Häufler B, Salomo S. Organizational antecedents to bootlegging and consequences for the newness of the innovation portfolio. Journal of Product Innovation Management. 2022; 39: 717–745. https://doi.org/10.1111/jpim.12626

Globocnik D, Salomo S. Do Formal Management Practices Impact the Emergence of Bootlegging Behavior? Journal of Product Innovation Management. 2015; 32: 505–521. https://doi.org/10.1111/jpim.12215

Hackman J, Oldham GR. Motivation through the design of work: test of a theory. Organizational Behavior and Human Performance. 1976; 16: 250–279. https://doi.org/10.1016/0030-5073(76)90016-7

Hackman JR, Oldham GR. Development of the job diagnostic survey. Journal of Applied Psychology. 1975; 60: 159–170. https://psycnet.apa.org/doi/10.1037/h0076546

Hao JX, Chen Z, Mahsud M, Yu Y. Organizational psychological ownership and innovative work behavior: the roles of coexisting knowledge sharing and hiding across organizational contexts. Journal of Knowledge Management. 2024;

28: 2197–2219. https://doi.org/10.1108/jkm-12-2022-0965

He K, Oláh J, Hasan M. THE INFLUENCE OF PSYCHOLOGICAL OWNERSHIP AND SOCIAL SUPPORT ON ORGANIZATIONAL RESILIENCE: THE MEDIATING ROLE OF ORGANIZATIONAL IDENTITY. Journal of Business Economics and Management. 2022; 23: 650–667. https://doi.org/10.3846/jbem.2022.16571

Hon AH, Lui SS. Employee creativity and innovation in organizations: Review, integration, and future directions for hospitality research. International Journal of Contemporary Hospitality Management. 2016; 28: 862–885. https://doi.org/10.1108/ijchm-09-2014-0454

Huang D, Zhu T, Wu Y, Sun T. A Study on Paradoxical Leadership and Multiple Path Mechanisms of Employees' Bootleg Innovation. Psychology Research and Behavior Management. 2022; 15: 3391–3407. https://doi.org/10.2147/PRBM.S383155

Huang KE, Wu JH, Lu SY, Lin YC. Innovation and technology creation effects on organizational performance. Journal of Business Research. 2016; 69: 2187–2192. https://doi.org/10.1016/j.jbusres.2015.12.028

Hussain K, Aftab S, Chaudhry MG. Person-Organization Fit as determinant of Constructive Deviance Behavior: the mediating role of Psychological Ownership and the moderating role of Collectivist Orientation. A Conditional Process Analysis. Journal of Applied Economics and Business Studies. 2022; 6: 25–52. https://doi.org/10.34260/jaebs.612

Jang E, Kim YC. Autonomy Constrained: The Dynamic Interplay Among Job Autonomy, Work Engagement, and Innovative Behavior Under Performance Pressure. Administrative Sciences. 2025; 15: 97. https://doi.org/10.3390/admsci15030097

Jin YH, Kim SJ. The effects of Job Autonomy on Innovative Behavior: Mediating Effect of Job Engagement. The Journal of the Korea Contents Association. 2015; 15: 451–461. https://doi.org/10.5392/jkca.2015.15.01.451

Kumar D, Upadhyay Y, Yadav R, Goyal AK. Psychological capital and innovative work behaviour: The role of mastery orientation and creative self-efficacy. International Journal of Hospitality Management. 2022; 102: 103157. https://doi.org/10.1016/j.ijhm.2022.103157

Lee E. The moderating role of organizational culture in the relationship between job autonomy and innovative behavior. Review of Public Personnel Administration. 2025. https://doi.org/10.1177/0734371X251342001 (online ahead of print)

Li Z, Liu L. The impact of organizational innovation culture on employees'; innovation behavior. Social Behavior Personality: an international journal. 2022; 50: 1–10. https://doi.org/10.2224/sbp.11934

Liang Z, Suntrayuth S, Sun X, Su J. Positive Verbal Rewards, Creative Self-Efficacy, and Creative Behavior: A Perspective of Cognitive Appraisal Theory. Behavioral Sciences (Basel, Switzerland). 2023; 13: 229. https://doi.org/10.3390/bs13030229

Lin B, Mainemelis C, Kark R. Leaders' responses to creative deviance: Differential effects on subsequent creative deviance and creative performance. The Leadership Quarterly. 2016; 27: 537–556. https://doi.org/10.1016/j.leaqua.2015.09.001

Liu F, Chow IHS, Zhang JC, Huang M. Organizational innovation climate and individual innovative behavior: exploring the moderating effects of psychological ownership and psychological empowerment. Review of Managerial Science. 2019; 13: 771–789. https://doi.org/10.1007/s11846-017-0263-y

Liu X, Baranchenko Y, An F, Lin Z, Ma J. The impact of ethical leadership on employee creative deviance: the mediating role of job autonomy. Leadership & Organization Development Journal. 2021; 42: 219–232. https://doi.org/10.1108/lodj-01-2020-0026

Liu Y, Wang Y, Geng S. The complex driving model of employee creative deviance: The combinatorial effects of ability, motivation and opportunity. Science & Technology Progress and Policy. 2025; 42: 139–149. https://doi.org/10.6049/kjjbydc.2024070075

Lu L, Luo T, Zhang Y. Perceived overqualification and deviant innovation behavior: The roles of creative self-efficacy and perceived organizational support. Frontiers in Psychology. 2023; 14: 967052. https://doi.org/10.3389/fpsyg.2023.967052

Lunenburg FC. Self-efficacy in the workplace: Implications for motivation and performance. International Journal of Management, Business, Administration. 2011; 14: 1–6.

MAINEMELIS C. STEALING FIRE: CREATIVE DEVIANCE IN THE EVOLUTION OF NEW IDEAS. Academy of Management Review. 2010; 35: 558–578. https://doi.org/10.5465/amr.2010.53502801

Mayer RC, Davis JH. The effect of the performance appraisal system on trust for management: A field quasi-experiment. Journal of Applied Psychology. 1999; 84: 123–136. https://psycnet.apa.org/doi/10.1037/0021-9010.84.1.123

Mayhew MG, Ashkanasy NM, Bramble T, Gardner J. A study of the antecedents and consequences of psychological ownership in organizational settings. The Journal of Social Psychology. 2007; 147: 477–500. https://doi.org/10.3200/SOCP.147.5.477-500

McAllister DJ, Kamdar D, Morrison EW, Turban DB. Disentangling role perceptions: how perceived role breadth, discretion, instrumentality, and efficacy relate to helping and taking charge. The Journal of Applied Psychology. 2007; 92: 1200–1211. https://doi.org/10.1037/0021-9010.92.5.1200

Nanyangwe CN, Wang H, Cui Z. The end justifies the means: the role of organizational identification on bootleg innovation behavior. Journal of Management & Organization. 2025; 31: 929–944. https://doi.org/10.1017/jmo.2022.92

Nanyangwe CN, Wang H, Cui Z. Work and innovations: The impact of self-identification on employee bootlegging behaviour. Creativity and Innovation Management. 2021; 30: 713–725. https://doi.org/10.1111/caim.12455

Nasution NR, Siregar ZME, Pristiyono P. The Effect of Job Autonomy on Employee Innovative Behavior: The Role of Job Satisfaction as Intervening Variable. Budapest International Research and Critics Institute (BIRCI-Journal): Humanities

and Social Sciences. 2021; 4: 2846–2853. https://doi.org/10.33258/birci.v4i2.1994

Nesheim T, Olsen KM, Sandvik AM. Never walk alone: achieving work performance through networking ability and autonomy. Employee Relations. 2017; 39: 240–253. https://doi.org/10.1108/er-09-2016-0185

Newman A, Herman HM, Schwarz G, Nielsen I. The effects of employees'; creative self-efficacy on innovative behavior: The role of entrepreneurial leadership. Journal of Business Research. 2018; 89: 1–9. https://doi.org/10.1016/j.jbusres.2018.04.001

Olckers C, van Zyl L. Measuring psychological ownership: A critical review. In Olckers C, van Zyl L, van der Vaart L. (eds.) Theoretical orientations and practical applications of psychological ownership (pp. 61–78). Springer: Cham. 2017.

Ozler H, Yilmaz A, Ozler D. Psychological ownership: An empirical study on its antecedents and impacts upon organizational behaviors. Problems and Perspectives in Management. 2008; 6: 38–47.

Pierce JL, Jussila I, Li D. Development and validation of an instrument for assessing collective psychological ownership in organizational field settings. Journal of Management & Organization. 2018; 24: 776–792. https://doi.org/10.1017/jmo.2016.66

Pierce JL, Kostova T, Dirks KT. The State of Psychological Ownership: Integrating and Extending a Century of Research. Review of General Psychology. 2003; 7: 84–107. https://doi.org/10.1037/1089-2680.7.1.84

Pierce JL, Kostova T, Dirks KT. Toward a theory of psychological ownership in organizations. Academy of Management Review. 2001; 26: 298–310. https://doi.org/10.5465/amr.2001.4378028

Salter A, Criscuolo P, Ter Wal AL. Coping with Open Innovation: Responding to the Challenges of External Engagement in R&D. California Management Review. 2014; 56: 77–94. https://doi.org/10.1525/cmr.2014.56.2.77

Schilpzand P, Houston L, Cho J. Not Too Tired to be Proactive: Daily Empowering Leadership Spurs Next-morning Employee Proactivity as Moderated by Nightly Sleep Quality. Academy of Management Journal. 2018; 61: 2367–2387. https://doi.org/10.5465/amj.2016.0936

Scholz U, Gutiérrez Doña B, Sud S, Schwarzer R. Is General Self-Efficacy a Universal Construct? Psychometric findings from 25 countries. European Journal of Psychological Assessment. 2002; 18: 242–251. https://doi.org/10.1027//1015-5759.18.3.242

Sekhar S. Correlates of work autonomy. The IUP Journal of Organizational Behavior. 2011; 10: 26–40.

Shang H. Review of employees' bootleg innovation behavior. Highlights in Business, Economics and Management. 2024; 32: 170–178.

Shang L, Yang L. A cross-level study of the relationship between ethical leadership and employee constructive deviance: Effects of moral self-efficacy and psychological safety climate. Frontiers in Psychology. 2022; 13: 964787. https://doi.org/10.3389/fpsyg.2022.964787

Shanker R, Bhanugopan R, van der Heijden BI, Farrell M. Organizational climate for innovation and organizational performance: The mediating effect of innovative work behavior. Journal of Vocational Behavior. 2017; 100: 67–77. https://doi.org/10.1016/j.jvb.2017.02.004

Smith WK, Tushman ML. Managing Strategic Contradictions: A Top Management Model for Managing Innovation Streams. Organization Science. 2005; 16: 522–536. https://doi.org/10.1287/orsc.1050.0134

Sooknannan R, Coetzee M, Potgieter IL. Business innovation intent among college students: Contributions of psychological capital and entrepreneurial self-efficacy. Journal of Psychology in Africa. 2024; 34: 471–476. https://doi.org/10.1080/14330237.2024.2370052

Su J, Chen Y, Liu H, Wang M, Jiang L. Breaking the code: exploring the drivers of knowledge sharing in the digital innovation ecosystem via mixed methods. Kybernetes. 2025. https://doi.org/10.1108/k-12-2024-3252 (online ahead of print)

Su X, Jiang X, Lin W, Xu A, Zheng Q. Organizational Innovative Climate and Employees' Improvisational Behavior: The Mediating Role of Psychological Safety and the Moderating Role of Creative Self-Efficacy. Sage Open. 2022; 12. https://doi.org/10.1177/21582440221132526

Tenzer H, Yang P. Extreme bootlegging: Individual-level antecedents to creative deviance. In Corporate underground: Bootleg innovation and constructive deviance (pp. 323–332). World Scientific: New Jersey, USA. 2023.

TENZER H, YANG P. PERSONALITY, VALUES, OR ATTITUDES? INDIVIDUAL-LEVEL ANTECEDENTS TO CREATIVE DEVIANCE. International Journal of Innovation Management. 2019; 23: 1950009. https://doi.org/10.1142/s1363919619500099

Tierney P, Farmer SM. Creative self-efficacy development and creative performance over time. The Journal of Applied Psychology. 2011; 96: 277–293. https://doi.org/10.1037/a0020952

Vadera AK, Pratt MG, Mishra P. Constructive Deviance in Organizations: Integrating and moving forward. Journal of Management. 2013; 39: 1221–1276. https://doi.org/10.1177/0149206313475816

Van Dyne L, Pierce JL. Psychological ownership and feelings of possession: three field studies predicting employee attitudes and organizational citizenship behavior. Journal of Organizational Behavior. 2004; 25: 439–459. https://doi.org/10.1002/job.249

Velez MJ, Neves P. Abusive supervision, psychosomatic symptoms, and deviance: Can job autonomy make a difference? Journal of Occupational Health Psychology. 2016; 21: 322–333. https://doi.org/10.1037/a0039959

Wang Y, Lee G. The Impact of the Combination of Innovative Self-Efficacy And Psychological Safety on Bootleg Innovation Behavior among Teachers in Chinese Higher Vocational Colleges. Journal of Korea Culture Industry. 2025; 25: 1–21. https://doi.org/10.35174/jkci.2025.09.25.3.1

Xu W, Zhao S. The Influence of Entrepreneurs' Psychological Capital on Their Deviant Innovation Behavior. Frontiers in Psychology. 2020; 11: 1606. https://doi.org/10.3389/fpsyg.2020.01606

Ye Z, Shang X, Shafait Z, Xu Y. Impact of Leading by Example on Employees' Organizational and Job Psychological Ownership: A Moderated Mediation Study. Frontiers in Psychology. 2022; 13: 888653. https://doi.org/10.3389/fpsyg.2022.888653

Yıldız B, Alpkan L, Ateş H, Sezen B. Determinants of constructive deviance: The mediator role of psychological ownership. International Business Research. 2015; 8: 124–139.

Yoon SK, Kim JH, Park JE, Kim CJ, Song JH. Creativity and knowledge creation: the moderated mediating effect of perceived organizational support on psychological ownership. European Journal of Training and Development. 2020; 44: 743–760. https://doi.org/10.1108/ejtd-10-2019-0182

You Y, Hu Z, Li J, Wang Y, Xu M. The Effect of Organizational Innovation Climate on Employee Innovative Behavior: The Role of Psychological Ownership and Task Interdependence. Frontiers in Psychology. 2022; 13: 856407. https://doi.org/10.3389/fpsyg.2022.856407

Yuan F, Woodman RW. Innovative behavior in the workplace: The role of performance and image outcome expectations. Academy of Management Journal. 2010; 53: 323–342. https://doi.org/10.5465/amj.2010.49388995

Zhang C, Xu J, Liu L. Shared leadership and employee creative deviance: psychological contract and felt obligation. Management Decision. 2025; 63: 4095–4112. https://doi.org/10.1108/md-04-2024-0806

Zhang JX, Schwarzer R. Measuring optimistic self-beliefs: A chinese adaptation of the general self-efficacy scale. Psychologia: An International Journal of Psychology in the Orient. 1995; 38: 174–181.

Zhang X, Bartol KM. Linking Empowering Leadership and Employee Creativity: The Influence of Psychological Empowerment, Intrinsic Motivation, and Creative Process Engagement. Academy of Management Journal. 2010; 53: 107–128. https://doi.org/10.5465/amj.2010.48037118

Zhou J, Hoever IJ. Research on Workplace Creativity: A Review and Redirection. Annual Review of Organizational Psychology and Organizational Behavior. 2014; 1: 333–359. https://doi.org/10.1146/annurev-orgpsych-031413-091226

Zhou Q, Li L. Leadership styles, bootlegging innovation, and innovation performance of knowledge workers: A structural equation model analysis. Journal of Family Business and Management Studies. 2025; 17: 103–122.