A Cross-Level Study of Playfulness Climate on Innovative Behavior in Internet Enterprises

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Abstract

Internet enterprises foster a joyful and pleasant playful climate to promote sustained innovation among employees, aiming to achieve organizational goals. However, existing research on the relationship between playful climate and employee innovative behavior primarily consists of theoretical analysis, lacks empirical studies, and has progressed relatively slowly. Building upon a review of research on playfulness in the organizational management domain, this study conducts research in three areas: Study 1 develops a team playful climate scale for Internet enterprises within the Chinese context, based on organizational climate theory and the characteristics of playful activities. Study 2, grounded at the team level, examines the cross-level mechanism through which playful climate influences employee innovative behavior, drawing upon Conservation of Resources theory. Study 3, drawing from the componential model of creativity, introduces individual thinking styles and multiple identities to explore the boundary conditions that stimulate employee innovative behavior. The research findings advance the concept of team playful climate in Chinese Internet enterprises, promote the development of playful climate theory, and provide theoretical support and practical implications for Internet enterprises to cultivate a playful climate that stimulates innovative behavior.

Full Text

Preamble

A Cross-Level Study of Playful Climate on Innovative Behaviors in Internet Companies

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Abstract: Internet companies cultivate happy and joyful playful climates to stimulate continuous employee innovation and achieve organizational goals. However, existing research on the relationship between playful climate and employee innovative behavior remains primarily theoretical, lacking empirical investigation and progressing slowly. Building upon prior playfulness research in organizational management, this study addresses three key issues: First, drawing on organizational climate theory and the characteristics of playful activities, Study 1 develops a team playful climate scale for Chinese internet companies. Second, grounded at the team level and based on Conservation of Resources Theory, Study 2 examines the cross-level mechanisms linking playful climate to employee innovative behaviors. Third, departing from the Componential Theory of Creativity, Study 3 introduces individual thinking styles and multiple identities to explore boundary conditions that stimulate employee innovative behavior. The findings advance the concept of team playful climate in Chinese internet enterprises, promote theoretical development in playful climate research, and provide theoretical support and practical implications for internet companies seeking to foster innovative behaviors through playful climates.

Keywords: playful climate; innovative behavior; job crafting; conservation of resources theory; componential theory of creativity
Classification Number: B849:C93

1. Problem Statement

On the 50th anniversary of the internet, President Xi Jinping noted in his congratulatory letter to the Sixth World Internet Conference that "the internet has accelerated a new round of technological revolution and industrial transformation, with emerging technologies and applications such as artificial intelligence, big data, and the Internet of Things gaining momentum, ushering in stronger development 动能 and broader development space for the internet." Breakthroughs in information technology fundamentals and frontier technologies have powerfully propelled innovations in internet business models, ushering the economic system into a new internet economy era where internet companies have become the core driving force of economic growth (Hu, Wang, & Duan, 2019). The extraordinary innovation capacity and speed of internet companies stem from their persistent efforts to stimulate employee innovation. For instance, Google is regarded as "an organization suitable for both work and play,"having implemented a one-day-per-week free time policy that sparked employee creativity, leading to the development of products such as Google News, Google Glass, and AdSense. LinkedIn and Zappos advocate "letting employees play at work," encouraging risk-taking and embracing unconventional ideas, which has yielded higher job satisfaction and innovation performance (Schmidt & Rosenberg, 2014). These practices, designed to give employees opportunities to "play" in the workplace,

create a relaxed and free "playful climate" that significantly enhances employee creativity (Petelczyc, Capezio, Wang, Restubog, & Aquino, 2018).

Western scholars conceptualize playful climate as a work environment filled with laughter, jokes, and humor (Isaksen, Lauer, & Ekvall, 1999), built upon employees' perceptions of casualness and relaxed atmosphere, which deeply influences job satisfaction and organizational commitment while enhancing work engagement and innovation performance (Fluegge-Woolf, 2014). Playful experiences are profoundly shaped by culture. Under Western cultures that encourage individual expression and free exploration, an atmosphere that promotes and supports workplace playfulness and fun readily emerges. However, various "play" practices promoted by Western internet companies may be perceived as "unprofessional" in Chinese culture. Traditional Chinese work values hold that employees should "strive for excellence through diligence" and "work diligently," with no place for play at work, as "excellence comes from diligence while waste comes from play" and "indulgence prevents diligence." In reality, however, the daily work environments of leading domestic internet companies are also filled with culturally distinctive playful elements. For example, Alibaba named its newly established science laboratory "Damo" after a character in Jin Yong' s martial arts novels, encouraging employees to climb "the peak of martial arts," which has improved innovation performance. Tencent established a "level-up by fighting monsters" promotion channel where experience points accumulate to cash bonuses and promotions, unleashing employees' creative potential. Meanwhile, internet companies widely adopt platform organizational structures where numerous highly flexible micro-modules or team modules complete specific projects in a team-based manner (Zhao, Cheng, & Jing, 2019). Examples include Tencent' s WeChat team, Taobao' s Tmall team, and Alibaba' s Cloud team. Therefore, it is necessary to explore the connotation of playful climate in internet companies based on Chinese cultural context and at the team level, and to conduct indigenous playful climate research (Nie & Lu, 2016).

Playful climate research originated from studies on childhood playfulness. Glynn and Webster (1992) first extended playfulness research to adults, conceptualizing playfulness as a stable tendency or personal trait to engage in activities in a non-serious manner. In organizational management research, scholars have primarily focused on playful activities and playful climate. Researchers often use "Playfulness" to represent playful activities (Yu, Wu, & Lin, 2003), characterizing them as activities with entertaining purposes, highly interactive features, and the ability to inspire enthusiasm (Van Vleet & Feeney, 2015). Theoretical exploration of playful climate has just begun, with research findings remaining scattered (Petelczyc et al., 2018). Researchers have not reached consensus on the conceptual definition of playful climate, with two main perspectives emerging: one describing playful climate from objective organizational characteristics and internal environment creation, defining it as a "playfulness/humor" subdimension of innovative climate that refers to a relaxed and casual organizational environment (Isaksen et al., 1999); the other defining playful climate from an interpersonal interaction perspective as a pleasant atmosphere jointly created by

the organization and management that encourages employee playfulness, allowing them to safely and fully explore interesting things related to organizational goals (Yu et al., 2003). The ambiguous conceptualization of playful climate has resulted in psychometrically weak existing scales, severely constraining theoretical construction and empirical research on playful climate. Moreover, Western scholars' research on playful climate focuses on general playful climate analysis, which, while insightful, lacks context-specificity (e.g., for the internet industry).

Currently, the positive effects of playful climate are attracting scholarly attention (Plester, Cooper-Thomas, & Winquist, 2015). Existing studies have found that playful work settings not only attract external job seekers (Tews, Michel, & Bartlett, 2012) but also enhance internal employees'job satisfaction and cohesion (Ford, McLaughlin, & Newstrom, 2003), stimulate work engagement (Müceldili & Erdil, 2016), and positively impact task performance and organizational citizenship behavior (Fluegge-Woolf, 2014). Yu et al. (2003) noted that a playful organizational climate helps activate employees' proactive and divergent thinking at work, generating creative ideas. Although preliminary research indicates that playful climate is significantly positively correlated with employee creativity and innovation performance, playful climate remains "one of the least studied and understood organizational phenomena" (Mainemelis & Ronson, 2006), with empirical research on the relationship between playful climate and employee innovation being quite scarce and the relationship still unclear. The domestic internet industry provides fertile ground for exploring the association between playful climate and employee innovation: on one hand, internet companies are pervaded by innovative, egalitarian, and free engineering cultures (Liang, 2019); on the other hand, leading internet companies such as Tencent, Alibaba, and Shanda have actively explored playful organizational climates. In view of this, this study takes internet companies as research subjects to reveal the impact of playful climate on innovative behavior.

Meanwhile, a literature review of playfulness research reveals that empirical studies on the mechanisms through which playful climate influences employee attitudes and behaviors are still lacking. Recently, Petelczyc et al. (2018) suggested integrating fun research into playful climate theory, attempting to explain the impact and mechanisms of playful climate on employee behavior from flow theory, affective events theory, and catharsis perspectives. The flow theory perspective posits that playful climate is associated with challenge, autonomy, and feedback (Abramis, 1990), capable of generating a unique feeling known as "flow," an intrinsically activated state inseparable from problem-solving and creativity (Csikszentmihalyi, 1975). The affective events theory perspective suggests that a playful work atmosphere easily triggers playful activities accompanied by positive emotional experiences, which enhance employees' cognitive flexibility and creative thinking (Yang, Chang, & Zhang, 2019). The catharsis perspective proposes that playful climate helps individuals relax and release tension (Hunter, Jemielniak, & Postula, 2010). In internet companies, work characteristics such as heavy tasks, significant challenges, and long hours are common (Zhao, Wang, & Zhao, 2018), while playful climate helps alleviate

the negative effects of fatigue and emotional depletion. Playful climate can also shape valuable psychological resources (e.g., optimism) and social resources (e.g., interpersonal trust) (Han, Kim, & Jeong, 2016; Michel, Tews, & Allen, 2019), positively influencing team morale and performance (Petelczyc et al., 2018). Meanwhile, according to the componential theory of creativity, the innovation process consumes substantial resources (Amabile, 1997), and individuals with abundant resources are more willing to engage in learning new knowledge and skills.

Job crafting is regarded as a resource-building strategy that not only reduces individual resource depletion caused by job demands but also actively promotes the increase of individual work and social resources (Tims, Bakker, & Derks, 2013a). As a proactive work adjustment behavior (Tims, Bakker, & Derks, 2012), job crafting exists not only at the individual level but can also be a collaborative activity where group members jointly decide how to shape task boundaries and work practices to achieve common goals (Leana, Appelbaum, & Shevchuk, 2009). Given that team-based work has become the norm in internet companies (Liang, 2016), it is necessary to explain the positive influence process of playful climate on innovative behavior from both individual and team job crafting perspectives.

Finally, most existing research agrees that playful climate is beneficial to both individuals and organizations, though some inconsistent views exist. For example, one study confirmed that playful climate positively affects organizational innovation (Zeng, 2008), but Karamfilov (2018) found no significant relationship between playful climate and organizational creativity. Although scholars have attempted to explain this through research methodology and differences in playful climate measurement, no consensus has been reached. This suggests that the relationship between playful climate and employee innovative behavior may be influenced by situational factors. Petelczyc et al. (2018) argued that it is necessary to expand the boundaries of playful climate' s impact on individuals, teams, and organizations, proposing that individual characteristics (e.g., self-regulation ability) and team variables (e.g., team cohesion and team task type) may promote or inhibit the effects of playful climate. Unfortunately, related empirical research is rare. Leadership is one of the important factors in stimulating employee creativity (Zhou & Hoever, 2014). In the internet industry, which faces uncertain environments, there is a greater need for superiors to help employees think rationally from multiple perspectives, encourage them to question existing work methods, and explore innovative directions. Critical thinking is precisely this cognitive skill of analyzing and evaluating using evidence and methods (Hou, 2017). Unlike the West' s emphasis on independent personality, Chinese thinking styles tend more toward dialectics and the doctrine of the mean. Leaders with high-level Zhongyong thinking can accommodate employees' different ideas and may influence subordinates' behavioral performance and work outcomes in a playful climate. According to the componential theory of creativity, employee innovative behavior is the product of the interaction between supportive resources obtained by individuals and their

creative skills, with thinking style being an important creative skill. It can thus be inferred that employees' critical thinking and Zhongyong thinking can interact with various resources they obtain from the work environment to jointly promote employees' generation and implementation of new ideas.

Meanwhile, work-related multiple identities are ubiquitous, enabling employees to construct identity 认同 based on different groups (e.g., organizational identity, professional identity) (Hekman, Bigley, Steensma, & Hereford, 2009). Particularly in internet companies, where knowledge workers constitute the main employee group—a characteristic distinguishing them from traditional enterprises—employees are more loyal to their profession than to the organization (Drucker, 2006). Since organizational identity represents individuals'tendency to think and act from an organizational perspective, while professional identity focuses on analyzing and developing from a professional competence and personal perspective (Yuan, Ding, & Li, 2014), organizational (professional) identity may strengthen employees' organizational (achievement) motivational orientation (Song, Liu, Gu, & He, 2018; Yuan et al., 2014), thereby influencing employees' behavioral motivation in playful environments.

Based on the above analysis, this study argues that, first, from the Chinese context and focusing on internet enterprises that continuously introduce new technologies to achieve rapid development, we should explore the conceptual connotation of playful climate and develop measurement tools. Second, from the perspective of Conservation of Resources Theory, we should unveil the black box through which internet companies' playful climate influences innovative behavior. Finally, we should examine the important situational conditions that moderate the influence of playful climate on innovative behavior.

2. Research Framework

This paper will unfold from three aspects: Study 1 develops a scale for team playful climate in internet companies; Study 2, grounded at the team level, focuses on exploring the cross-level mechanisms through which internet companies' playful climate influences employee innovative behavior; Study 3 analyzes the boundary conditions of the influence of team playful climate on innovative behavior. The research framework is shown in Figure 1 [Figure 1: see original paper].

2.1 Study 1: Scale Development for Team Playful Climate in Internet Companies

Based on organizational climate theory and targeting Chinese internet companies, this study employs a mixed-method approach combining qualitative and quantitative research to distill the conceptual connotation of team playful climate from the practice of internet company climate cultivation, analyze the structural dimensions of team playful climate, and attempt to develop a corresponding measurement scale. The playful climate scale is fundamental to em-

pirical research; unclear understanding of playful climate connotation severely hampers scale development, impedes research on playful climate influence mechanisms, and disadvantages enterprises in building innovation-friendly environments.

First, we define the connotation and research level of playful climate. From the perspective of playful activities, playful climate refers to employees' perception that the organization or group encourages playful activities (Petelczyc et al., 2018), emphasizing organizational or group support for employees to "play at work" and "play out creativity and ideas" (Yu, 2005). Internet companies committed to building playful climates encourage employees to engage in more leisure interactions in the workplace, provide sufficient time for autonomous thinking, and explore task goal achievement in a relaxed state. Since teams are the primary work mode in internet companies (Liang, 2016), team members are interdependent and engage in frequent interactions and deep exchanges to achieve common goals. Therefore, the team is the optimal level for measuring playful climate (West, 1990), as it can more accurately capture employees'shared perceptions of environmental characteristics (Amabile et al., 1996). This study focuses on internet company playful climate at the team level, defining it as "team members' shared perception of pleasant interactions among colleagues, leadership encouragement of playful activities, and organizational policies and resources that support team member playfulness."

Second, we delineate the dimensions of team playful climate. Given that playful climate shares similar characteristics with innovative climate (Isaksen et al., 1999), this study draws on Amabile et al.' s (1996) conceptual structure of innovative climate, which includes five dimensions: organizational encouragement, supervisory encouragement, work group support, sufficient resources, and challenging work. First, since playful activities are characterized by spontaneity and social interaction, this study posits that employees' participation in interactive playful activities is key to shaping playful climate, such as interactions during work breaks and leisure activities after work. Second, group leaders' attitudes and behaviors influence whether pleasant communication and frequent interactions among members can occur, with leadership support being an important source of playful climate formation (Ekvall, 1996; Yu et al., 2003). Third, the formation of group climate is easily influenced by the attitudes of the organization in which the group is embedded, making organizational policies critical. Meanwhile, whether to provide venues and conditions for leisure and play outside of work is also an important indicator of playful climate, such as Alibaba having several basketball courts and Tencent building sports fields. That is, the policies, conditions, and resources the organization provides for team member playfulness reflect encouragement of team playfulness. In summary, this study proposes that internet company team playful climate should have a multidimensional structure, comprising three aspects: colleague interaction, leadership support, and organizational support.

Finally, we compile the team playful climate scale. Group climate represents

members' shared perception of the group environment, which varies due to national culture, industry characteristics, and organizational differences (Amabile et al., 1996). Therefore, this study, grounded in the Chinese context and targeting the internet industry, which is keen on building playful climates, adopts grounded theory and scientific scale development methods to compile a measurement scale for team playful climate. Specific procedures are as follows: First, conduct one-on-one in-depth interviews with internet company employees, selecting about 30 research subjects and asking questions such as "Give examples of characteristics of a relaxed and happy organizational environment." Second, code the interview data using iterative methods to categorize interview materials, form preliminary measurement items, and invite organizational behavior experts to participate in item revision. Third, conduct exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to determine the scale's factor structure. Fourth, test the scale' s discriminant validity by comparing its correlation with innovative climate, and verify its predictive validity by analyzing relationships with creativity and innovative behavior.

2.2 Study 2: Cross-Level Mechanisms of Playful Climate on Employee Innovative Behavior

Conservation of Resources Theory, from the perspective of maintaining and acquiring resources, proposes the primary principle of avoiding resource loss, while also suggesting that people are motivated to prevent resource loss, recover from loss, and acquire new resources through resource-building strategies (Hobfoll, 2001). Halbesleben, Neveu, Paustian-Underdahl, and Westman (2014) further propose that both resource availability and resource value signals may trigger individuals' resource investment behaviors. Playful climate emphasizes work autonomy, mutual trust, leadership openness, and humor (Yu et al., 2003), containing abundant psychological and social resources. Consequently, playful climate helps individuals acquire resources and then actively engage in resource-building strategies (such as job crafting) to increase and expand new resources.

Job crafting is employees' proactive work adjustment behavior seeking balance between job demands and job resources (Tims et al., 2012). After Wrzesniewski and Dutton (2001) pioneeringly proposed the concept of job crafting from an employee perspective, scholars focused their research on the individual level. Since teams have become the primary way organizations accomplish work—where team members share similar experiences, undertake similar task goals, engage in regular communication and interaction, and share knowledge information—job crafting can also be a collaborative activity where group members jointly negotiate task boundaries and specific work practices to achieve common goals (Leana et al., 2009; Tims, Bakker, Derks, & Van Rhenen, 2013b). Job crafting emphasizes increasing positive job resources and challenging job demands while avoiding hindering job demands (Tims et al., 2012), which from the Conservation of Resources Theory perspective is precisely striving to increase resources and prevent resource loss. Tims et al. (2013a) view job crafting as an active

resource-building strategy that not only reduces individual resource depletion caused by job demands but also promotes the increase of individual work and social resources. As mentioned above, playful climate implies an organization filled with various supportive resources that not only allow employees to experience fun but also bring psychological and social resources (Petelczyc et al., 2018). For example, colleague interactions evoke positive emotional experiences and enhance friendships, while superior-subordinate interactions garner support from others. Furthermore, play can improve team cohesion, a key social resource (Petelczyc et al., 2018), enhancing trust among colleagues and facilitating their joint participation in work adjustments. Therefore, a playful environment helps individuals/teams acquire resources and then actively engage in job crafting to expand new resources. Notably, internet companies are rich soil for job crafting, with internal job designs leaving large "blank spaces" (Liang & Chen, 2017) while granting employees autonomy to explore beyond core job responsibilities. This not only provides employees with opportunities to adjust their work but also reduces the risks of job crafting. Therefore, this study infers that playful climate can enhance the motivation of individuals and team members to jointly participate in job crafting activities.

Employee innovative behavior is a multi-stage process that begins with problem identification and idea generation, followed by seeking support for ideas, and finally implementing them (Scott & Bruce, 1994). At the team level, team innovative behavior refers to introducing or applying novel and useful ideas, processes, products, or services within the team. All stages of innovative behavior require sufficient resources, and abundant resources facilitate innovation (Amabile et al., 1996). More importantly, innovative activities face significant risks; innovation failure can lead to resource loss, such as job changes after failure and misunderstanding from superiors and colleagues. According to the principle of avoiding resource loss, without sufficient resources, employees' concerns make innovative activities less likely to occur. Job crafting helps employees reduce hindering job demands such as role ambiguity or conflict, enhances professional knowledge and new skills (Tims et al., 2013b), and makes it easier to generate new ideas and perspectives when exploring new tasks (Amabile et al., 1996). Additionally, innovative activity is a social interaction process (Anderson, Potočnik, & Zhou, 2014), and job crafters actively build and expand social networks (Tims et al., 2012), obtaining support and help from leaders and colleagues, which helps them eliminate worries and concerns to try new methods that break existing rules (Wang & Peng, 2013). Therefore, this paper speculates that employee/team job crafting strategies can provide sufficient resources for innovative behavior. Related research has found that job crafting positively affects employee creativity (Liu, Ye, & Guo, 2019) and innovation performance (Gordon, Demerouti, Le Blanc, & Bipp, 2015). Based on this, this study proposes:

Hypothesis 1: Team playful climate influences employee innovative behavior through the mediating role of employee job crafting.

Hypothesis 2: Team playful climate cross-level influences employee innovative behavior through the mediating role of team job crafting.

Hypothesis 3: Team playful climate influences team innovative behavior through the mediating role of team job crafting.

2.3 Study 3: Boundary Conditions of Playful Climate' s Influence on Employee Innovative Behavior

Current empirical research on playful climate is limited. Although the only two existing studies have explored the relationship between playful climate and organizational innovation, their conclusions are inconsistent (Zeng, 2008; Karamfilov, 2018), suggesting that the relationship between playful climate and employee innovation may be influenced by situational factors.

The Componential Theory of Creativity emphasizes that employee creativity results from the joint action of external and internal factors (Amabile, 1997). External contexts, particularly the work environment, greatly influence creativity formation, containing components that promote creativity (e.g., freedom) and hinder it (e.g., rigid executives). Internal factors focus on how individual intrinsic motivation, creative skills, and expertise enhance creativity. The theory further posits that the match between a promotive work environment and high-level individual factors yields optimal creativity. For example, Zhu, Gardner, and Chen (2018) confirmed that extrinsic motivation moderates the indirect effect of team cooperation climate on individual creativity. Therefore, this study explores the moderating roles of leadership and employee cognitive skills, multiple identities, and other factors in stimulating employee innovative behavior, based on the Componential Theory of Creativity.

Leadership provides employees with relational resources needed for innovation; for instance, leader-member exchange relationships promote the positive effect of authentic leadership on employee innovative behavior (Han & Yang, 2011). As research deepens, scholars propose that leadership can provide important cognitive resources for employees' innovative activities. Jiang and Yang (2016) verified that leaders' critical thinking strengthens the role of team members' perspective-taking in promoting team task reflexivity and team creativity, considering critical thinking more critical than leader-member relationships in the innovation process as an agentic resource for stimulating innovative behavior.

Thinking style is a cognitive skill, and critical thinking style is particularly regarded by psychologists as a skill requiring specialized training, representing a cognitive process of analyzing, interpreting, inferring, and evaluating using evidence and methods (Hou, 2017). Critical thinking is considered universally present in human society as a "self-correcting human phenomenon···a powerful resource" (Fisher, Frey, Tiwar, & Yen, 2009). Based on Conservation of Resources Theory, critical thinking as a reflective thinking and inquiry tool constitutes an important individual resource. Hobfoll (2001) divides resources individuals value into material resources, conditional resources, personal resources, and

energy resources, with different resource types complementing each other to satisfy individuals' goals of increasing resource stock and achieving work objectives. Among them, conditional resources such as social support decrease in value over time. Since resource reduction triggers concerns, people always actively seek to increase resources, especially by investing to obtain new resources to meet resource needs (Halbesleben et al., 2014). It can thus be inferred that leaders' critical thinking style becomes an available resource for employees, effectively supplementing social support resources like playful climate. Specifically, playful climate stimulates individuals' motivation to proactively adjust their work, and through leaders' rational analysis and guidance, helps employees better improve their work. That is, leaders' cognitive resources interact with employees' supportive resources obtained from playful climate to jointly promote employees' job crafting.

Furthermore, leaders'cognitive skills can influence employees'cognitive activities, such as rationally evaluating employees'creative ideas (Mumford, Todd, Higgs, & McIntosh, 2017), prompting employees to search for information more broadly, explore the essence and truth of problems, and find new problem-solving paths (Jiang & Yang, 2015). Existing research indicates that leaders with critical thinking stimulate employees' reflection and in-depth inquiry, enabling employees to carefully examine problems, evaluate them fairly and justly, and finally propose more appropriate problem solutions (Tiwari, Lai, So, & Yueh, 2006). In fact, the internet industry faces uncertain environments where leaders' discerning cognitive skills are needed to help employees think rationally from multiple perspectives, encourage them to question existing work methods, and explore innovative directions. It can be inferred that in the relaxed and pleasant team playful environment of internet companies, leaders provide employees with cognitive resources for rational thinking through critical cognitive skills, prompting them to re-examine various resources in the work environment (Amabile, 1997), promote effective integration and utilization of resources, and facilitate employees to exhibit more innovative behavior (Jiang & Yang, 2016). Therefore, this study proposes:

Hypothesis 4: Leaders' critical thinking moderates the positive effects of team playful climate on employee job crafting (4a) and employee innovative behavior (4b), such that when leaders have high-level critical thinking, the positive effects of playful climate on employee job crafting and innovative behavior are stronger.

Thinking styles know no borders, but people from different regions differ in thinking characteristics. In the Chinese context, people are deeply influenced by traditional culture, with thinking styles tending more toward dialectics and the doctrine of the mean. People with Zhongyong thinking are "good friends" (Zhang & Long, 2016), and Zhongyong thinking is also a resource and tool. When Confucius proposed the doctrine of the mean, he meant "neither excess nor deficiency, just right." As a thinking style different from critical thinking, Zhongyong thinking guides individuals on how to view multiple aspects of things, how to understand problems, and how to choose action plans. When judging

problems and making choices, Zhongyong thinking emphasizes holistic consideration to achieve multi-party balance (Duan & Ling, 2011). Leaders with high Zhongyong thinking advocate inclusiveness, can engage in perspective-taking, comprehensively understand employee characteristics, and accommodate employees. In a playful climate rich in social support, employees feel relaxed and willing to share and exchange learning (Petelczyc et al., 2018). Leaders with high Zhongyong thinking are good at listening to different opinions and encouraging employees to express their views freely (Yang, 2009), making it easier for employees to drop their concerns and bravely express their viewpoints. Specifically, the inclusiveness of high Zhongyong thinking leaders makes employees feel "safe," and the abundant resources in playful climate will motivate employees to try risky job crafting and innovative behavior. Conversely, low Zhongyong thinking leaders will cause employees to view job crafting and innovative behavior as unsafe activities. At this time, even in a playful climate, employees will not have sufficient motivation to participate in job crafting and innovative behavior. That is, high Zhongyong thinking leaders become important catalysts for stimulating employees to engage in job crafting and innovation processes. Compared with critical thinking leaders, Zhongyong thinking leaders can better accommodate various ideas stimulated in playful environments and point out employees' inadequacies in tactful ways to avoid unnecessary conflicts. However, this may also make employees' work environment too relaxed, causing insufficient focus on organizational task goals. That is, Petelczyc et al.' s (2018) concern may exist: when lacking constraints, employee behavior in relaxed environments may not always benefit organizational goals. Therefore, this study further speculates that compared with critical thinking leaders, the positive moderating effect of Zhongyong thinking leaders on the relationship between playful climate and employee job crafting and innovative behavior is smaller.

Hypothesis 5: Leaders' Zhongyong thinking moderates the positive effects of team playful climate on employee job crafting (5a) and employee innovative behavior (5b), such that when leaders have high-level Zhongyong thinking, the positive effects of playful climate on employee job crafting and innovative behavior are stronger.

Hypothesis 6: Compared with critical thinking, leaders' Zhongyong thinking has a smaller moderating effect on the relationship between playful climate and employee job crafting (6a) and employee innovative behavior (6b).

Additionally, according to the Componential Theory of Creativity, employees' creative behavior is the product of the interaction between supportive resources obtained by individuals and their creative skills (Amabile, 1997). It can be inferred that employees' critical thinking, as an important creative skill, can promote the rich structural and social resources provided by job crafting to activate individuals' creative potential, enabling better innovative performance. Similarly, employees' Zhongyong thinking enables them to think about problems from an organizational holistic perspective, better utilize the abundant social support and psychological resources in the team environment, absorb and inte-

grate different viewpoints from various stakeholders, and propose and implement new ideas at work. Therefore, we propose:

Hypothesis 7: Employees' critical thinking moderates the positive effect of employee job crafting on employee innovative behavior, such that when employees have high-level critical thinking, the positive effect of employee job crafting on innovative behavior is stronger.

Hypothesis 8: Employees' Zhongyong thinking moderates the positive effect of employee job crafting on employee innovative behavior, such that when employees have high-level Zhongyong thinking, the positive effect of employee job crafting on innovative behavior is stronger.

The Componential Theory of Creativity also posits that individual motivation is the core driving factor for employees to participate in creative activities (Amabile, 1997). Organizational identity represents individuals' identification with their belonging to a specific organization, indicating their sense of belonging to the organization (Ashforth & Mael, 1989). When individuals see themselves as part of "us," they develop emotional dependence on the organization, internalize organizational requirements (Tavares, Van Knippenberg, & Van Dick, 2016), and are motivated to serve organizational goals and interests. At this time, employees not only concretize serving the organization as an internal requirement for improving work performance (Hekman et al., 2009) but also engage in extra-role behaviors such as helping others to repay the organization' s care and expectations. Song et al. (2018) further point out that team identity stimulates pro-organizational motivation, making team members willing to promote innovative behavior and achieve team development through close cooperation and knowledge information sharing. Meanwhile, internet companies are dominated by knowledge workers who respect their profession and knowledge more than the organization (Drucker, 2006). Accordingly, this paper attempts to analyze the boundary roles of organizational identity and professional identity between employee job crafting and innovative behavior.

Job crafting is a proactive work adjustment behavior characterized by resource-driven and self-directed features. For employees with high organizational identity who view themselves and the organization as one entity and internalize organizational goals and values (Ashforth & Mael, 1989), this means they will engage in job crafting from the organization' s perspective. Employees with higher organizational identity tend to start from organizational interests, thinking about how to innovate work content and methods, continuously propose new ideas in products and services, and explore effective ways to produce new results that align with organizational interests. At this time, employees with high organizational identity will invest the structural and social resources obtained through job crafting into activities that align with organizational interests. That is, high organizational identity job crafters focus on organizational interests, their intrinsic motivation for innovation is more easily awakened (Li, 2018), and they are driven to bravely propose and implement new ideas. Conversely, employees with low organizational identity will not consider organizational interests but

instead participate in activities that reduce challenging job demands under self-interest motivation. In the long run, such behaviors will damage individual and organizational interests (Tims et al., 2013a). Previous research has confirmed that proactive behaviors aimed at organizational interests (such as voice behavior and feedback-seeking behavior) bring positive work outcomes (Tang & Long, 2019; Wang & Peng, 2013). Therefore, we propose:

Hypothesis 9: Organizational identity moderates the positive effect of employee job crafting on employee innovative behavior, such that when employees have high organizational identity, the positive effect of employee job crafting on innovative behavior is stronger.

In recent years, the proportion of professionals in organizations has continuously increased, becoming key human resources. Unfortunately, relevant research on the psychological characteristics of professional employees (such as professional identity) and their outcomes is relatively scarce, with previous studies only conducting some preliminary explorations from the perspective of knowledge workers such as doctors and teachers (Hekman et al., 2009). However, in internet companies where innovation speed and results are at the forefront, professionals in software development, marketing management, and consulting design usually require long periods of standardized training. These personnel have higher professional identity, and innovativeness is an important basis for measuring their work results. Therefore, exploring the impact of professional identity on internet company employees' innovative behavior has considerable value and significance.

Employees with high professional identity value the social value of their professional work, desire satisfaction of personal growth needs (Hekman et al., 2009), are good at thinking about problems from a professional perspective, and break conventions to seek development (Burris, Rockmann, & Kimmons, 2017). On the one hand, employees with high professional identity tend to seek challenging and difficult innovative tasks from the perspective of professional competence improvement when job crafting provides sufficient resources. On the other hand, they are willing to participate in activities that increase structural job resources, such as improving professional standards, learning new skills, and actively building social networks conducive to promoting professional growth, to achieve individual growth. This undoubtedly enables high professional identity job crafters to use abundant structural and social resources to awaken intrinsic innovation motivation (Li, 2018), stimulating individuals to bravely try and implement new ideas. Conversely, employees with low professional identity will, driven by short-term interests, choose more behaviors that reduce challenging job demands and increase hindering job demands, resulting in low innovation willingness, few innovation resources, and less innovative behavior. Therefore, this study proposes:

Hypothesis 10: Professional identity moderates the positive effect of employee job crafting on employee innovative behavior, such that when employees have high professional identity, the positive effect of employee job crafting on inno-

vative behavior is stronger.

Work-related multiple identities are ubiquitous, forming different identity 认同 (such as organizational identity, professional identity) (Hekman et al., 2009). In internet companies, organizational identity and professional identity coexist; an employee can identify with both their affiliated organization and their professional experience and background. Previous research conclusions on the relationship and joint effects of organizational identity and professional identity are inconsistent. Some scholars believe that simultaneously high levels of both identities may trigger identity conflict contradictions (Johnson, Morgeson, Ilgen, Meyer, & Lloyd, 2006). Hekman et al. (2009) further found that when employees have high organizational identity but low professional identity, organizational support has the strongest positive effect on job performance. Domestic scholars have also reached similar conclusions: Yuan et al. (2014) found that when employees have low organizational identity but high professional identity, career growth has the strongest effect on turnover intention. On the other hand, Clark, Gioia, Ketchen, and Thomas (2010) proposed explaining the effect of dual identity from its interactive rather than differential nature, and domestic scholars based on university teacher samples have also confirmed that professional identity has a significant positive effect on organizational identity (Zhang, Zhu, & Zhang, 2013).

Further analysis shows that the main goals of both organizational identity and professional identity are to maintain a positive identity, but they differ in paths to achieving goals. The former emphasizes individuals thinking and acting from an organizational perspective, while the latter focuses on analyzing from a personal professional competence and development perspective (Yuan et al., 2014). In other words, organizational identity strengthens employees' organizational motivational orientation for job crafting, while professional identity activates employees' personal (achievement) motivational orientation for job crafting. Motivated information processing theory posits that intrinsic motivation and prosocial motivation jointly influence creativity (Grant & Berry, 2011), because prosocial motivation helps enhance individuals'sensitivity to others'viewpoints and needs, thereby amplifying the positive effect of intrinsic motivation on creativity (Li & Bai, 2015). From the perspective of psychological comparison theory, intrinsic motivation compares characteristics of different tasks and selectively exhibits different intensities of motivational states based on factors such as task interestingness and difficulty (Shin & Grant, 2019). Therefore, professional identity-activated intrinsic motivation will prefer innovative tasks with greater challenge, under which circumstances more innovative behavior is stimulated. This paper infers that for job crafters with both high organizational identity and high professional identity, who consider both organizational needs and individual challenging motivation, they will promote activities that increase structural resources, social resources, and challenging job demands while reducing hindering job demands. They will have strong innovation willingness, abundant innovation resources, and frequent innovative behavior. Conversely, job crafters with both low organizational identity and low professional identity

will have few innovation resources, low innovation willingness, and exhibit the lowest frequency of innovative behavior. Therefore, this study proposes:

Hypothesis 11: Employee job crafting, organizational identity, and professional identity have a three-way interactive effect on employee innovative behavior, such that the higher the organizational identity and professional identity, the stronger the positive effect of employee job crafting on innovative behavior.

3. Theoretical Construction

Facing fierce market competition and rapid technological change, internet companies continuously accelerate technological iteration to gain competitive advantage. To effectively stimulate employee creativity, an increasing number of internet companies, based on industry work characteristics and employee workforce features, actively cultivate organizational or team playful climates by granting employees autonomy and enriching psychological resources. This study departs from the management practices of Chinese internet companies, draws on Western organizational playful climate research, attempts to develop team playful climate theory in the Chinese context, constructs a cross-level model of team playful climate influencing employee innovative behavior, explains the influence mechanisms of team playful climate, and provides a valuable theoretical framework for empirical research. Overall, this study promotes the development of playful climate theory.

First, this study proposes the concept of team playful climate in Chinese internet companies and develops corresponding measurement tools. Previous playful climate research was built upon Western enterprise practices, initially constructing forms of playfulness or fun activities in internet and high-tech companies and testing their effects through case studies (Lundin, Paul, & Christensen, 2000; Plester & Hutchison, 2016; Kamalan & Sutha, 2017) and empirical research (Karl, Peluchette, Hall, & Harland, 2005; Ford et al., 2003; McDowell, 2004; Tews et al., 2012; Tews, Michel, & Allen, 2014; Van Vleet & Feeney, 2015). Domestic scholars have applied and refined Western playfulness or fun theories in the Chinese context (Yu, 2005; Liu, Tang, & Shao, 2017; Yang et al., 2019), attempting to test the positive effects of playfulness or fun on organizations or employees. Although existing research has increased attention to enterprise playful activities and deepened understanding of this phenomenon, these studies often confuse "play" and "fun" (Petelczyc et al., 2018), discussing general measures and practices of enterprise fun activities without clearly distinguishing differences between playfulness, fun activities, and climate (McDowell, 2004; Fluegge-Woolf, 2014; Tews et al., 2014), resulting in inconsistent conceptual definitions of playful climate. Chinese internet companies have developed rapidly and become an important component of the economic system, with some leading enterprises actively practicing various playful activities, but theoretical research clearly lags behind practice. Moreover, similar to most current organizational climate research, relevant research on fun climate has been conducted at the individual level, exploring how individual perceptions of organizational environment

affect their attitudes and behaviors (Tews et al., 2014; Liu et al., 2017), without considering how team members' shared experiences affect team collaborative behavior. This study focuses on the real-world context where internet company employees conduct innovative activities in team-based micro-modules or group modules, proposing that team level is better for capturing employees' shared climate perceptions. On this basis, following organizational climate theory to deconstruct playful climate elements, this study then develops the concept of team playful climate in Chinese internet companies.

Meanwhile, existing playful climate measurement tools are not well-suited for Chinese internet company contexts. Western scholars first proposed playful climate in innovative climate research, considering playfulness and humor as one of the factors stimulating innovative behavior (Isaksen et al., 1999), and extracted the playful climate construct from organizational innovation characteristics. Based on this, a playful climate subscale with 5 items was formed to measure the degree to which employees perceive a work environment filled with laughter and humor. Based on this playful climate concept, Taiwanese scholars developed an 8-factor, 45-item Organizational Playfulness Climate Questionnaire (OPCQ) (Yu et al., 2003) based on IDEO company practices. Although this scale covers comprehensive content, its measurement items stem from interviews with teachers, IT, and training consulting staff. Due to large industry differences among interviewees, its content validity and construct validity require verification. This study, based on domestic internet companies and drawing on organizational innovative climate theory and fun climate research findings, emphasizes that the core of team playful climate is that teams and immediate superiors encourage employee playfulness, and the organization creates conditions to support employees' relaxed interactions and promote exploration of new ways to achieve work goals. Based on this, this study proposes that encouraging employee playfulness can be specifically summarized as support from colleagues, leaders, and organization, jointly constituting three structural dimensions of team playful climate. The research results compensate for the problem of low contextualization of existing measurements and promote the development of the playful climate construct.

Second, based on Conservation of Resources Theory, this study explains the influence mechanisms of team playful climate on innovative behavior and constructs a multi-level theoretical model of team playful climate influencing innovative behavior through resource-building strategies. Existing research has mainly verified the positive effects of playful/fun work environments on employee innovation performance from cognitive (e.g., interpersonal trust, organizational embeddedness) and affective (e.g., affective commitment, positive emotions, fun experience) perspectives (Chan & Mak, 2016; Fluegge-Woolf, 2014; Han et al., 2016; Ma, Bao, Yang, Mao, & Liu, 2016; Tang, Liu, & Liu, 2017), enabling organizations and employees to benefit from them (Plester et al., 2015; Zhang, 2009). These analytical perspectives focus on playful climate' s impact on employees' psychological states but neglect the resource attributes of playful climate and its influence on employee behavior. This study speculates

that when teams are filled with various resources conducive to playfulness (Petelczyc et al., 2018), employees will exhibit resource-building strategies (such as job crafting) to obtain more new resources. For example, Chinese internet companies commonly feature high innovation requirements, great challenges, and long working hours, and a good playful climate helps build good interpersonal relationships, relieve fatigue, increase individual psychological resources and supportive social resources (Plester et al., 2015; Ye & Zhang, 2019), and is also conducive to employees' investment in high-risk, high-demand innovative activities. Therefore, this study constructs a mechanism model of internet company playful climate influencing employee innovative behavior from the perspective of Conservation of Resources Theory, both expanding the theoretical framework of playful climate and applying Conservation of Resources Theory to the internet company context for testing. Furthermore, internet company employees are usually knowledge workers with professional backgrounds (Drucker, 2006; Liang, 2016), and managers often have high innovation expectations for them. According to the Componential Theory of Creativity, realizing innovative behavior requires employees to have sufficient motivation, knowledge, and cognitive strategies. Based on this realistic context, this study simultaneously clarifies boundary conditions of team playful climate influencing employee innovative behavior from both external context (leadership) and internal factors (employees), specifically examining leaders' and employees' critical thinking and Zhongyong thinking, as well as employees' organizational identity and professional identity effects on innovative behavior. This study both responds to Petelczyc et al.' s (2018) call to explore boundary conditions of playful climate' s influence on individuals, teams, and organizations, and achieves testing of team playful climate influence mechanisms in the internet industry, promoting contextualization of empirical research and providing management implications for internet companies in leadership training, employee selection and development, and other aspects.

Finally, departing from Chinese cultural characteristics, this study adopts an emic approach, surpassing existing research on playful climate developed in Western contexts or cross-cultural comparisons identifying differences in playfulness or playful climate across cultural backgrounds. Specifically, when developing playful climate measurement tools, this study examines Chinese cultural attitudes toward play at work, combined with domestic internet companies' playful practices, to propose Chinese culture-infused enterprise playfulness practice measures or systems. This both enriches Western research on playful activities and climate and provides targeted theoretical foundations for Chinese internet companies to build playful climates, helping enterprises clarify from which aspects—such as organizational support or colleague interaction—they should create playful work environments or climates.

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Note: Figure translations are in progress. See original paper for figures.