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The influence of transformational leadership on team performance and team creativity: A team-level resilient proactive model

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THE INFLUENCE OF TRANSFORMATIONAL LEADERSHIP ON TEAM PERFORMANCE AND TEAM CREATIVITY: A TEAM-LEVEL RESILIENT PROACTIVE MODEL

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I hereby declare that this DBA dissertation is my original work and it has been written by me in its entirety.
I have duly acknowledged all the sources of information which have been used in this dissertation.

This DBA dissertation has also not been submitted for any degree in any university previously.

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Abstract

The current Volatility, Uncertainty, Complexity, and Ambiguity (VUCA) era is characterized by a number of factors, including globalization, technological advancements, geopolitical instability, and shifting consumer demands. These factors have combined to create an environment in which businesses and organizations must be highly adaptable and agile to survive and thrive.

To succeed in the current VUCA era, organizations must have the ability to anticipate and respond to change quickly while also being able to adapt to new technologies and business models. This task requires a strong focus on innovation, agility, and collaboration as well as a willingness to take calculated risks and try new approaches; accordingly, transformational leadership has emerged as a critical driver of organizational development in VUCA era. Given that the team is the basic unit of organizational operation, it is crucial for organizations to explore the effects of leadership on team performance and creativity as well as the mechanism underlying those effects.

In this research, I propose that transformational leadership has a positive connection to the team mental model, which consequently benefits team performance and creativity by enhancing team proactive motivational states—team potency and team improvisation. Furthermore, I suggest that variables representing internal and external team environment complexity—team task

variety and external team context complexity—moderate and strengthen the effect of transformational leadership on team mental model.

Data were collected from firms located in eastern China using a multisource, three-wave field study design. The final sample consisted of 630 employees from 81 teams. The results provide partial support for the hypotheses proposed in this research. Specifically, I find that transformational leadership has a significant direct effect on team mental model, which in turn has effects on team potency and team improvisation. The serial indirect effects between transformational leadership and team performance/creativity via team potency/improvisation are thus supported. Moreover, the moderating role of internal team environment complexity—team task variety on the relationship between transformational leadership and team mental model is supported, while that of external environmental complexity—external team context is not. I discuss the theoretical and practical implications of these findings for organizations, managers, and employees and highlight directions for future research.

Keywords: transformational leadership, team mental model, team improvisation, team performance, team creativity, team task variety, external environmental complexity

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Chapter 1 Introduction

1.1 Research Background

Improving team performance and creativity in today's volatile, uncertain, complex, and ambiguous (VUCA) business environments can be challenging. a range of strategies, including changing leadership behavior, enhancing communication and collaboration within the team, and providing resources and support to team members have been suggested as ways to improve team productivity (performance and creativity).

Transformational leadership is a form of modern leadership behavior that has been illustrated to be effective in supporting team and organizational success in changing environments (Walumbwa et al., 2018). Transformational leaders inspire and motivate team members to achieve their goals, challenge them to grow and develop, and provide support and resources to help them succeed (Eisenberg, Post, & DiTomaso, 2019). Several studies have demonstrated that transformational leadership is especially helpful for improving resilience in action teams facing changing and dynamic environments, such as healthcare teams (Cop et al., 2021) and disaster response teams (Dimas et al., 2018).

The objective of my thesis is to propose a team-level resilient proactive model combining Stoverink et al.'s (2020) team resilient theory and Parker, Bindl and Strauss' (2010) proactive motivation model to explain team productivity (performance and creativity). According to Stoverink et al. (2020), team resilience is shaped by a variety of resources, such as the team mental model, team potency, team improvisation and team psychological safety. Among the four

resources of team resilience, the team mental model represents team knowledge-based cognition (e.g., mutually shared cognition), while the other three represent team motivational states (e.g., group potency, psychological safety, cohesion; Nellen et al., 2019). Relevant toF psychological safety, team potency and team improvisation are directly linked to beliefs in completing tasks. For example, team potency represents the belief in one's capacity to complete the task (Guzzo et al., 1993), while team improvisation represents the belief in transiting the dynamic task situation (Vera & Crossan, 2005). According to Parker, Bindl and Strauss' (2010) model, I further propose a team resilient proactive model such that transformational leadership improves team proactive motivations—"can do" (e.g., team potency) and "reason to" (e.g., team improvisation)—by enhancing team shared knowledge represented by the team mental model. Furthermore, team internal and external complexity (e.g., team task variety, external environmental complexity) facilitates the positive relationship between transformational leadership and the team mental model.

1.2 Research Questions

In particular, I conduct a three-wave empirical study to investigate the following research questions.

1) How does transformational leadership enhance team performance and team creativity via a team-level resilient proactive process, which comprise team mendtla model, team potency and team improvisation?

2) How do internal and external team complexity moderate the relationship between team transformational leadership and team resilient proactive process?

1.3 Significance of the Study

My research aims to propose a brand-new theoretical model, namely, the team-level resilient proactive model, which provides an explanation for how transformational leadership shapes team performance and creativity, especially in a complex team situation. The research, by combining three important areas in the organizational behavior literature—team transformation, team resilience and proactive motivation—provides the following contributions:

First, this research contributes to the team-level literature on transformational leadership. Although transformational leadership should influence the whole team, there is still less evidence of how transformational leadership influences team processes (e.g., Bai et al., 2016; Braun et al., 2013; Chen et al., 2013; Jiang & Chen, 2018). In particular, I propose a team resilient proactive model to explain the mechanism by which transformational leadership works on team-level outcomes, especially under complex team situations.

Second, this research contributes to Stoverink et al.'s (2020) team resilience theory by providing initial empirical evidence and replenishing the explanations of the functional relationships among the different resources of team resilience. In particular, I suggest that the team mental model precedes team potency and team improvisation rather than juxtaposing with them.

Third, this research contribute to Parker, Bindl and Strauss' (2010) proactive model by providing team-level evidence. Specifically, I indicate team potency as "can do" motivation and team improvisation as "reason to" motivation, which play a role in transferring the positive effect of transformational leadership on team performance and team resilience.

In addition, my research provides good insights into management practices. In particular, we should train our leaders on transformational leadership and provide them with sufficient resources in a timely manner so that they can support their team to perform better and more creatively, resulting in organizational success. Meanwhile, as the complex team context plays an important role in moderating the relationship between transformational leadership and team resilience, we should try to create sufficient and easily reachable resources to support teams in becoming more resilient, leading to organizational success.

Chapter 2 Literature Review

2.1 Transformation Leadership

2.1.1 Concept and Measurement

The concept of transformational leadership was first introduced by Burns in 1978. Transformational leadership represents a departure from traditional transactional leadership theory, which focuses on using rewards and punishments to incentivize followers and drive them towards achieving specific goals (Burns, 1978).

Transformational leadership focuses on inspiring and motivating followers to transcend their own self-interest and achieve higher organizational and social goals. It seeks to change the behavior patterns of followers by raising their motivation and morale, thus transforming them into more committed and productive members of the organization (Smith & Johnson, 2019). The goal of transformational leadership is to create a positive and transformative impact on both the leader and the followers.

Podsakoff and Schriescheim (1985) conducted a research study to examine the effects of different leadership styles on employee performance and job satisfaction. The study involved surveying employees from a variety of organizations about their perceptions of their supervisors' leadership behaviors and their own job satisfaction and performance.

The researchers identified three primary types of leadership styles: transformational, transactional, and laissez-faire. Transformational leadership is characterized by inspiring and motivating followers to reach their full potential, while transactional leadership involves establishing clear goals and providing incentives for meeting those goals. This leadership style emphasizes the

`importance of measurable performance and providing feedback to employees regarding their progress. Laissez-faire leadership implies a non-interventionist stance according to which leaders provide very little guidance or direction.

The study found that employees who viewed their supervisors as transformational leaders not only reported higher job satisfaction but also exhibited higher levels of job performance than employees who perceived their supervisors as transactional or laissez-faire leaders (Avolio et al., 2004). However, the study also found that transactional leadership, which specifically addresses the contingent reward, was positively related to employee performance in certain circumstances, such as when the task was routine and structured (Bass & Avolio, 1990).

The full range of leadership (FRL) model developed by Avolio and Bass (1991) suggests that contingent rewards, which are a key feature of transactional leadership, are effective in certain situations in which clear goals and expectations are established and rewards are tied to the achievement of those goals. In fact, the FRL model proposes that effective leadership encompasses a range of behaviors, including transactional (contingent reward), transformational, passive-avoidant (management-by-exception), and charismatic leadership styles. The model also suggests that leaders who are able to adapt their leadership style to different situations and the unique needs of their followers are often viewed as the most effective since they are able to tailor their approach to support and motivate their team most effectively. For instance, leadership is more effective when transferring from transactional to transformational leadership, especially in changing environments (Zhang & Bartol, 2010).

In particular, transactional leadership is characterized by the use of rewards and punishments to motivate followers to achieve specific goals (Avolio, Bass, & Jung, 1999) and is based on the premise that followers are motivated to perform well if they are offered a reward for doing so. Accordingly, transactional leadership is also called contingent reward leadership, and it can be effective in situations in which followers have a precise comprehension of the objectives and specific outcomes that are expected to be achieved and the rewards offered are meaningful and relevant to them (Smith, Johnson, & Lee, 2019).

However, it is worth emphasizing the fact that while transactional leadership can be effective in some situations, it may not always be the most effective leadership style, particularly in situations in which the followers are looking for more meaningful and inspiring guidance from their leaders, such as changing situations (Den Hartog et al., 1997). In such situations, transformational leadership has been found to be particularly effective in inspiring and motivating followers to transcend their own self-interest and pursue higher goals that align with the overall mission and vision of the organization as well as broader societal values..

The distinction between active and passive management-by-exception can further suggest the limitedness of transactional leadership. Active management-by-exception involves taking corrective action when a follower fails to comply with expectations, whereas passive management-by-exception involves taking a hands-off approach and intervening only if there is a problem. Research has shown that active management-by-exception can have varied effects and may not always be effective in motivating followers (Kiazad, Seibert, & Kraimer, 2014). In contrast, passive management-by-exception is generally seen as a less effective form of leadership and is

often not recommended. As Levinson (1980) pointed out, if a leader only uses rewards and punishments to motivate followers, the followers continue to feel like a "jackass" and may not be fully committed and involved in their work.

Transformational leadership goes beyond transactional exchanges by addressing followers' perceptions of their own value and contributions as well as their level of self-esteem and confidence and by engaging followers in a more meaningful and committed way (Wong & Hui, 2018). Transformational leaders seek to inspire and empower their followers to strive for and achieve greater success, not only for themselves but also for the collective good of the organization and society as a whole, which can result in higher commitment and involvement from followers (Den Hartog et al., 2010).

Transformational leadership was initially identified as an effective leadership style in military contexts (Howell & Avolio, 1992); however, subsequent research has demonstrated its usefulness in various settings and contexts, ranging from business and education to healthcare and non-profit organizations, thus highlighting its broad applicability and versatility as a leadership style in both individual and team settings. For instance, the findings of Avolio & Yammarino (2002) support the versatility and effectiveness of transformational leadership across different settings. The core elements of transformational leadership, such as articulating a vision, providing individualized support, having high performance expectations, and fostering intellectual stimulation, have been shown to lead to a diverse range of desirable outcomes, including increased employee engagement and satisfaction as well as organizational performance (Wang, Sui, Liao, & Chuang, 2015). This

versatility and effectiveness of transformational leadership have made it a popular and widely studied leadership style.

Transformational leadership and charismatic leadership are often used interchangeably, but they are not the same. Transformational leadership is an approach that focuses on empowering and motivating followers to surpass their own limitations and work towards achieving higher goals (Bass & Riggio, 2006), while charismatic leadership is characterized by the leader's exceptional charm, charisma, and interpersonal skills (Shamir, House, & Arthur, 1993). Charisma can certainly enhance the effectiveness of transformational leadership, but it is not a prerequisite for a leader to be transformational. For example, a leader can exhibit transformational leadership qualities, such as inspiring vision, individualized consideration, and intellectual stimulation, without necessarily having a charismatic personality.

Charismatic leadership, on the other hand, often involves creating a sense of emotional connection with followers and inspiring them to believe in a shared vision. Charismatic leaders often have a strong presence and charisma that make them appealing and inspiring to followers.

In summary, transformational leadership is a broader concept that includes elements of charisma and other important components, such as inspiring vision, intellectual stimulation, and individualized support. Charismatic leadership, on the other hand, is more focused on the leader's charisma and ability to inspire and influence through emotional connection.

2.1.2 Measurement of Transformational Leadership

Transformational leadership theory has evolved over time, and several researchers have contributed to it. Bass (1999) refined the theory by specifying four dimensions of transformational leadership as follows: (a) "idealized influence, the measurement of the degree of leaders' influence on their followers and, in turn, followers' identification with their leaders"; (b) "inspirational motivation: future vision provided by leaders to inspire followers"; (c) "intellectual stimulation: how leaders could encourage followers to become more creative and innovative"; and (d) "individualized consideration: whether leaders are concerned about the needs of followers and give guidance to their growth."

Podsakoff et al. (1990) identified six elements as key components of transformational leadership. These elements reflect a range of approaches that transformational leaders can use to inspire and motivate their followers to achieve higher performance and to pursue higher organizational and social goals.

1) Articulating a vision, involves leaders clearly communicating to their followers a compelling and inspiring vision for the future.

2) Providing an appropriate model, involves leaders serving as role models for their followers by exhibiting the behaviors and attitudes that they expect from others.

3) Fostering the acceptance of group goals, involves leaders working to build consensus and commitment among their followers to the goals and objectives of the group.

4) Having high performance expectations, involves leaders setting high expectations for performance and encouraging their followers to strive for excellence.

5) Providing individualized support, involves leaders showing concern for the personal and professional development of their followers and providing support and guidance to help them grow and succeed. This includes tailoring feedback and support to meet the specific needs and development goals of each individual follower.

6) Providing intellectual stimulation, involves leaders challenging their followers to think creatively and consider new and innovative approaches to solving problems. This involves encouraging followers to question assumptions and look at issues from new perspectives. By doing so, leaders can foster a culture of continuous learning and improvement within the organization.

Together, these six elements of transformational leadership provide a comprehensive picture of the various ways in which leaders can inspire and motivate their followers to achieve higher performance and pursue higher organizational and social goals.

Furthermore, MacKenzie et al. (2001) integrated the six elements of Podsakoff et al.'s (1990) transformational leadership into four aspects as follows.

1) Core transformational leadership behavior, encompasses the first three elements of transformational leadership, which are articulating a vision, providing an appropriate model, and fostering the acceptance of group goals. These elements reflect how leaders can inspire and motivate their followers by communicating a compelling vision, setting a positive example, and aligning the goals and objectives of the team or organization.

2) Individualized support, relates to the fifth element of transformational leadership, which is providing individualized support to followers. This aspect reflects how leaders can show concern

for the personal and professional development of their followers and provide tailored feedback and support to help them grow and succeed.

3) High performance expectations, relates to the fourth element of transformational leadership, which is having high performance expectations. This aspect reflects how leaders can challenge their followers to achieve strong performance and continuously strive for improvement.

4) Intellectual stimulation, relates to the sixth element of transformational leadership, which is providing intellectual stimulation. This aspect reflects how leaders can encourage followers to think creatively and consider new and innovative approaches to solving problems.

Even though Bass' model (1999) is more simplified than Podsakoff et al.'s (1990), the former may not cover all of the contents of the latter. As shown in Table 2-1, inspirational motivation in Bass' model may not include all three components, such as providing an appropriate model, fostering the acceptance of group goals, and having high performance expectations. MacKenzie et al.'s model (2011) also includes four factors to reduce the complexity of the model, and one factor called core transformational leadership behavior integrates the three elements of Podsakoff et al.'s model (1990) (e.g., articulating a vision, providing an appropriate model, fostering the acceptance of group goals). Therefore, I adopt the Transformational Leadership Inventory (TLI) measurement tool by MacKenzie et al. (2011), which is commonly used to assess transformational leadership. In fact, MacKenzie et al. (2001) provided a more streamlined and accessible framework for understanding the various ways in which transformational leadership can inspire and motivate followers to achieve higher performance.

Table 2-1: Comparison of three transformational leadership theories

Bass (1999)	Podsakoff et al. (1990)	MacKenzie et al. (2001)
Idealized influence Inspirational motivation	Articulating a vision Providing an appropriate model Fostering the acceptance of group goals	Core transformational leadership behavior (articulating a vision, providing an appropriate model, fostering the acceptance of group goals)
	Having high performance expectations	High performance expectation
Individualized consideration	Providing individualized support	Individualized support
Intellectual stimulation	Providing intellectual simulation	Intellectual simulation

2.1.3 Transformational Leadership and Team Creativity

Previous literature has provided evidence of the relationship between transformational leadership and team creativity. In particular, Chen et al. (2013) intended to explore the relationships among transformational leadership, team-level support for innovation climate, motivational mechanisms, and team innovative performance in Chinese research and development (R&D) teams. The results from 428 members of 95 R&D teams across 33 Chinese firms showed that team-level support for innovation climate mediated the relationship between transformational leadership and team innovative performance. Meanwhile, team-level support for innovation climate leads to individual-level intrinsic motivation and team identification, which in turn results in individual-level innovative performance. The results of this research indicate that creating a team-level supportive innovation climate and promoting individual-level intrinsic motivation and team identification are important for enhancing team innovation outcomes in R&D teams.

Jiang and Chen's (2015) study aimed to explore the way in which transformational leadership influences team innovative performance. The study consisted of two separate studies, both of which focused on knowledge-centered team mechanisms. The results of the first study showed that knowledge sharing partially mediated the relationship between transformational leadership and team innovative performance.

Bai et al. (2016) emphasized the crucial importance of transformational leadership in boosting team members' innovative thinking within a team setting. The study proposed a three-path cross-level mediating model that incorporated team conflict and knowledge sharing as critical team-level process variables. Using multilevel structural equation modeling, the study found that transformational leadership positively predicted knowledge sharing among team members, which in turn positively predicted employee creativity. The relationship between transformational leadership and knowledge sharing was found to be partially mediated by team conflict, indicating that conflict management is an important aspect of transformational leadership. The study highlights the importance of creating a team environment that supports knowledge sharing and conflict management, as these factors can help foster employee creativity. Furthermore, the study underscores the critical role of transformational leadership as an enabler of employee creativity at both the individual and team levels.

Generally, the abovementioned research has indicated that transformational leadership enhances team creativity via the team process (e.g., knowledge sharing; team conflict) and team emergent states (e.g., team support for innovation climate; team identification). Furthermore, some team characteristics moderate the effect of transformational leadership and team creativity. For instance,

Jiang and Chen (2015) revealed that team learning orientation moderated the relationship between transformational leadership and knowledge sharing such that the relationship was stronger for teams with higher learning orientation.

Dong et al. (2017) aimed to investigate the relationship between dual-focused transformational leadership (TFL) and creativity while also examining the intervening mechanisms at two levels (i.e., individual and team levels). The study proposed a multilevel model that incorporates two intervening mechanisms at the individual (i.e., intrinsic motivation and creative self-efficacy) and team levels (i.e., team diversity). To test the proposed model, the researchers collected data from 59 teams consisting of 244 employees from various organizations in China. While TFL was positively related to individual creativity via both intrinsic motivation and creative self-efficacy, team diversity was found to moderate the relationship between individual creativity and team creativity. In particular, the positive effect of individual creativity on team creativity was stronger when team diversity was high.

2.1.4 Transformational Leadership and Team Performance

Research has also provided evidence on the relationship between transformational leadership and team performance.

Braun et al. (2013) found that transformational leadership was positively related to both individual- and team-level job satisfaction but only related to objective team performance. Wang and Howell (2012) investigated the influence of transformational leadership (TFL) on both individual- and group-level outcomes in a large, diversified company. The results revealed that followers' personal identification with the leader plays a significant role in mediating the effects of TFL on individual-

level performance and empowerment. This suggests that followers who identified more strongly with their leaders were more likely to perform better and feel more empowered with the influence of leaders' TFL. Even though the authors did not approve the effects of TFL on group-level performance, they showed that TFL influences collective efficacy via group identification. Again, the study suggested that TFL promotes team emergent states, such as group identification and collective efficacy, which may further lead to positive individual and collective outcomes.

Wang et al. (2011) conducted a meta-analytic study to confirm the positive relationship between transformational leadership and team performance across different criterion types and analytical levels. The study analyzed 58 independent samples from 53 studies and used a random-effects model to estimate the overall effect size. The results showed a significant and positive relationship between transformational leadership and team performance, with an overall effect size of 0.49. Furthermore, the relationship between transformational leadership and team performance was stronger for objective criteria than for subjective criteria. Additionally, the relationship was stronger at the team level than at the individual level.

There is growing recognition among scholars of the positive impact of transformational leadership on individual-, team-, and organization-level outcomes. Studies have shown that transformational leaders can positively influence their followers to exhibit organizational citizenship behaviors (Podsakoff et al., 2000), enhance team innovative performance (West & Sacramento, 2012), and improve overall organizational performance (Pfeffer, 1994). As mentioned before, scholars have also examined the impact of transformational leadership on the team process (e.g., knowledge sharing) and team emergent states (e.g., supportive climate, Jiang & Chen, 2015; knowledge

sharing, Bai et al., 2016). However, relevant to the studies on the relationship between transformational leadership and team creativity, fewer studies have tried to examine the mechanism by which transformational leadership influences team performance. It should be beneficial to establish a mechanism of team process or emergent states by which transformational leadership simultaneously affects team performance and team creativity and to examine whether the path from transformational leadership to team performance is different from that to team creativity.

Furthermore, there is also a gap in knowledge regarding how transformational leaders can develop teams to respond to challenges and overcome difficulties in the volatile, uncertain, complex, and ambiguous (VUCA) environment. This highlights the need for further research on the specific ways in which transformational leadership can promote team processes shaped by variables representing team resilience and help organizations navigate the challenges of the VUCA environment.

2.2 Team Resilience Process

2.2.1 Concept and Measurement

Resilience can be defined as the ability to adapt and recover from adversity, stress, or difficult situations. Team resilience refers to a team's ability to overcome setbacks and work together to achieve their goals, even when faced with obstacles or challenges (Stoverink et al., 2020). This is important from the perspectives of business and organizational psychology, as resilient teams are better equipped to deal with change, uncertainty, and unexpected events. There is no specific or unified definition of team resilience. Morgan et al. (2013) defined team resilience as "a dynamic

and psychosocial process which protects a team from possible negative effect in the face of stress," while Stoverink et al. (2020) defined it as "the ability of a team to adapt and bounce back from disruptive, stressful, or adverse situations, while maintaining goal attainment, individual well-being, and team functioning." However, both noted that team resilience involves the ability to learn from adversity and apply those lessons to future situations, as well as the capacity to continue performing effectively in the face of ongoing challenges. The authors suggested that the key factors related to team resilience should include collective efficacy, team cohesion, communication, and shared leadership (Morgan et al., 2013; Stoverink et al., 2020). These components were seen as critical to enabling teams to cope with adversity and maintain their functioning and effectiveness.

2.2.2 Team Resilience Theory

Stoverink et al. (2020) proposed team resilience theory, which identifies several sources of team resilience, such as team potency, team mental model, team improvisation, and team psychological safety. The four sources interact to create a resilient team process that should help effectively navigate challenges and maintain strong performance.

Team Potency

Team potency refers to team members' collective belief in their ability to perform tasks and achieve their goals effectively (Guzzo et al., 1993). Such a belief is shared among team members and based on their assessment of the team's capabilities, resources, and performance history. Team potency reflects the team's confidence in its ability to work together, overcome challenges, and achieve success and has been found to be a significant predictor of team performance due to its association with the team's internal motivation, cohesion, and coordination (Gully et al., 2002). High team potency increases effort, persistence, and collaboration among team members, which

results in better outcomes. On the other hand, low team potency can lead to reduced effort, motivation, and coordination, which can lead to poor team performance. Therefore, understanding and fostering team potency is crucial for building effective teams and achieving success in collaborative tasks. Stoverink et al. (2020) suggested that team potency has a curvilinear relationship with team resilience that exhibits a U-shaped curve. Accordingly, team potency has a positive effect on team resilience up to a certain point; however, beyond that point, the relationship becomes negative.

Specifically, Stoverink et al. (2020) argued that moderate team potency can enhance team resilience by boosting team members' confidence and motivation to tackle challenges and overcome obstacles. This can lead to improved team morale, coordination, and collaboration, which in turn can improve the team's ability to bounce back from setbacks and adapt to changing circumstances.

Overall, Stoverink et al. (2020) suggested that team leaders should aim to foster team potency to strengthen the team’s resilient process while avoiding the negative effects of an excessive belief in the team's abilities.

Team Mental Model

A team's mental model encompasses the shared comprehension and awareness that team members have regarding the team's goals, tasks, roles, and strategies and the ways in which these components interact with each other during the team's activities (Mathieu et al., 2000). Smith-Jentsch et al. (2001) defined a mental model as "a team's shared understanding of the situation, the task, and the team itself." This understanding is based on the team's past experiences,

communication, and feedback and reflects the team's collective knowledge about what needs to be done, who will do it, and how it will be accomplished. The team mental model enables team members to predict and prepare for each other's behaviors, coordinate their efforts, and make effective decisions to achieve team success.

Having a shared mental model has been shown to play a crucial role in shaping team performance and effectiveness, as such a model promotes effective communication, coordination, and cooperation among the team's members. A team's members can forecast each other's moves more effectively, identify potential problems, and make adjustments in real time to ensure that the team remains on track and achieves its goals when they possess a mutual mental model (Mathieu et al., 2000).

Therefore, fostering the team mental model is important for team leaders and members and requires ongoing communication, feedback, and reflection to ensure that everyone is on the same page and works together effectively.

According to Stoverink et al. (2020), the team mental model promotes team resilience in several ways. First, the team mental model empowers team members to foresee each other's actions and understand how their individual contributions fit into the larger team efforts. This allows for smoother coordination and communication, which can help the team respond more effectively to unexpected situations.

Second, the team mental model allows teams to quickly identify and address problems, as team members are more likely to notice when something is not going according to plan. This can help prevent small issues from escalating into larger problems, which can ultimately threaten the team's success.

Finally, the team mental model helps teams maintain a sense of shared identity and purpose, even when they face difficulties or challenges. By emphasizing and internalizing the team's objectives and principles, team members are more inclined to remain motivated and committed even when they face significant challenges.

Overall, Stoverink et al. (2020) suggested that developing and maintaining a strong team mental model is important to promoting team resilient processes, so team leaders should prioritize communication, collaboration, and reflection to foster such a mutual understanding among the members of a team.

Team Improvisation

Originating in the musical field (jazz music), improvisation refers to the musician’s performance without any preparation or planning (Nisula, 2015). Improvisation has been increasingly applied in the business field as a way to adapt to uncertain and unpredictable situations. In a business context, improvisation suggests an ability to respond to unexpected challenges or opportunities in a flexible and creative way without relying on predetermined plans or routines.

Examples of improvisations in business include improvisational theater techniques being used in team-building exercises, brainstorming sessions, and problem-solving workshops. The principles of improvisation can also be applied in the fields of leadership and management, which encourages leaders to be more adaptable, responsive, and creative in their decision-making process.

Overall, improvisation in business can help organizations stay agile and responsive in a fast-changing environment and to embrace uncertainty as an opportunity for innovation and growth (Meyer & Gupta, 2014). This suggests that the team has the ability to adapt and respond to unexpected situations or challenges. Teams with a high capacity to improvise are able to quickly generate and implement creative solutions to problems.

Yeo and Lee (2018) explored the correlation between team improvisation, which refers to the ability of healthcare teams to adapt to unexpected situations and find innovative solutions, and team resilience, which refers to the ability of healthcare teams to withstand and recover from stress and adversity. They conducted interviews with healthcare professionals and observed team interactions in two nursing homes in Singapore. The findings of their research indicated that team improvisation is positively related to team resilience, as healthcare teams that are better able to improvise are also more likely to be resilient when facing challenges. The authors contended that promoting team improvisation may be an effective tactic for enhancing team resilience in healthcare settings.

Sutcliffe, Vogus, and Weick (2015) argued that teams with a higher capacity to improvise are more adept ah managing unexpected challenges and setbacks and are more likely to maintain their

resilience over time. The authors also identified several factors that can enhance or hinder team improvisation, including team structure, training and experience, culture and communication, and organizational support. They concluded that organizations could foster team improvisation by developing and promoting these factors, which can in turn improve team resilience and overall organizational performance.

Team Psychological Safety

Team psychological safety is a crucial aspect pertaining to team members' ability to feel safe and comfortable expressing their thoughts, ideas, and concerns without the risk of adverse outcomes, such as ridicule or retribution (Edmondson, 1999). Team psychological safety is a key component of effective teamwork, as it fosters open communication, collaboration, and innovation within teams. When team members feel psychologically safe, they are more apt to share their perspectives, ask questions, and offer feedback, which can lead to better decision making, problem solving, and performance (Edmondson, 1999). On the other hand, when team members feel threatened or intimidated with a low psychological safety climate, they may withhold valuable information, avoid taking risks, and become disengaged from the team (Edmondson, 2002).

Psychological safety can be fostered by leaders who encourage open communication, listen actively to team members, and demonstrate respect and empathy (Edmondson, 2018). It can also be built through team-building exercises that promote trust, shared values, and a sense of belonging (Edmondson, 1999).

Therefore, among the four sources of team resilience, the team mental model represents the team's common knowledge and cognitive basis, both team potency and team improvisation reflect the team's belief in their capacity to complete tasks regardless of normal or abnormal situations, and team psychological safety represents a climate in which they can express themselves safely.

2.3 Team Resilient Proactive Model

2.3.1 Model of Proactive Motivation

Parker et al.'s (2010) model of proactive motivation proposes that individuals who are high in proactive motivation are more likely to take initiative, persist in their efforts, and be proactive in achieving their goals. Accordingly, proactive motivational states are mental states that drive individuals to take action and pursue their goals. Parker et al. (2010) referred to three proactive motivational states as "can do," "reason to," and "energized to".

The "can do" proactive motivation state refers to individuals' belief in their ability to successfully complete a task. This belief is based on their perception of possessing the necessary skills, knowledge, and resources to accomplish the task at hand. When individuals have a "can do" motivation, they are more likely to take on challenges and persist in the face of obstacles because they believe that they can overcome any difficulties that may arise. This proactive motivation state is important because it helps individuals maintain a sense of control and self-efficacy, which in turn can lead to greater achievement and success.

The "reason to" proactive motivation state refers to an individual's belief that a task is meaningful, valuable, and important. When individuals have a "reason to" attitude, they are more likely to feel invested in a task and motivated to see it through completion because they believe that it has

significance and purpose. This proactive motivation state is important because it helps individuals maintain a sense of purpose and direction in their work, which can enhance their sense of well-being and job satisfaction. Moreover, when individuals believe that a task is meaningful, they are more likely to engage in creative problem solving, take initiative, and persist in the face of difficulties. Thus, the "reason to" proactive motivation state can lead to greater innovation and productivity in individuals and organizations.

The "energized to" proactive motivation state refers to an individual's feelings of excitement, enthusiasm, and passion for a task or activity. When individuals are "energized to" perform a task, they are more likely to experience a sense of flow, which is a state of total immersion in the activity. Flow occurs when individuals are fully engaged in a task, experiencing a sense of enjoyment and fulfillment and losing track of time and distractions. The "energized to" proactive motivation state is important because it can enhance individuals' creativity, productivity, and well-being. When individuals are in a state of flow, they are more likely to perform at their best and experience a sense of satisfaction with and fulfillment by their work. Additionally, individuals who experience the "energized to" proactive motivation state are more likely to seek challenging and stimulating tasks, which can further enhance their personal growth and development.

Together, these proactive motivation states can help individuals achieve their goals and perform at their best. By believing in their ability to succeed, finding meaning and purpose in their work, and experiencing a sense of excitement and engagement, individuals can tap into their full potential and accomplish great things.

2.3.2 Team Resilient Proactive Model in the Current Study

As Parker and colleagues (2010) pointed out, “can do,” “reason to,” and “energized to” are the three important motivational states for individuals to implement proactive behavior. I further extend this assumption at the individual level to the team level. In addition, Stoverink et al. (2020) proposed a team resilience model in which team potency, team improvisation, and team mental models are important sources of team resilience processes. Accordingly, I integrate Parkers et al.’s (2010) proactive motivation model and Stoverink et al.’s (2020) team resilience model to generate a team resilient proactive model.

According to my theory, team potency represents a "can do" motivation, team improvisation represents a "reason to" motivation, and the team mental model acts as the precursor to knowledge to activate the aforementioned “can do” and “reason to” motivational states.

Specifically, team potency refers to the collective belief of team members in their ability to perform tasks and achieve their goals effectively (Guzzo et al., 1993). Team potency reflects the team’s shared confidence in the ability to work together, overcome challenges, and succeed in team tasks. That is, when teams have high potency, team members tend to be confident that they will overcome obstacles and work out challenging tasks to achieve their goals. Previous research has supported this argument that high team potency has a positive effect on both in-role and extra-role performance at the team level (Hu & Judge, 2017). Such a motivational state is suggested as “can do” motivation in Parker’s proactive motivation model at the individual level. In addition, in the team context, I frame it as team “can do” motivation.

Improvisation suggests the capacity to "continuously and creatively adjust to change and to consistently move products and services out the door" (Brown & Eisenhardt, 1998: p. 33). Teams with the capacity to improvise are better able to face unexpected situations and deal with unknown setbacks in a resilient way. In particular, faced with uncertainty and challenges, members of the team with a high level of improvisation tend to determine new methods and procedures to solve problems and promote the creation of new products or services. Akgün et al. (2007) revealed that high team potency could exhibit new product development by utilizing and implementing new knowledge. This is consistent with the "reason to" motivation in Parker's proactive motivation model, which addresses self-initiated actions to improve the current situation.

Furthermore, Parker et al. (2010) proposed several beneficial simulations of motivational states, such as individual differences (e.g., personality traits, knowledge) and contextual variables (e.g., leadership traits, coworkers' support). I assume that the team mental model, as cognitive-based knowledge, is an antecedent of team potency (as "can do" motivation) and team improvisation (as "reason to" motivation). The team mental model represents shared cognition among team members about team goals, tasks, roles, activities, and strategies. To facilitate the team mental model, members are embedded in a coconstruction process to know well with each other and the team. Such mutually shared cognition further improves team effectiveness (Nellen et al., 2019). The team mental model can promote collaboration and communication among members, and such an interaction can enhance team cohesion. Frequent interactions are conducive to the exchange of knowledge and experience, which helps enhance team improvisation.

2.4 Internal and External Team Complexity

2.4.1 Team Task Variety As Internal Team Complexity

Task variety refers to the range of different tasks or activities that a person performs in his or her job or role (Parker, 2000). Task variety involves the diversity of the tasks that must be completed by individuals to fulfill their responsibilities. According to Miller and Cronenwett (2004), task variety can be conceptualized as the number and diversity of tasks performed in a job. Task variety is often viewed as a positive aspect of a job because it can lead to greater job satisfaction, engagement, and the development of a broader range of skills. However, too much task variety can also be overwhelming and stressful if people feel that they are constantly shifting between unrelated tasks without adequate time or resources to complete them.

Wu and Wang (2015) conducted a meta-analysis of the research on the relationship between task variety and job performance. They found a positive relationship between task variety and job performance, indicating that individuals with a greater variety of tasks tend to perform better on the job. Additionally, team task variety is found to moderate this relationship, with higher task variety leading to a stronger positive relationship between transformational leadership and team proactivity. The study indicated that transformational leadership was positively related to career adaptability and work behaviors. Additionally, task variety was found to moderate the relationship between career adaptability and work behaviors. Specifically, when task variety was high, career adaptability was more strongly related to work behaviors than when task variety was low.

Lan and Chen's (2020) study examined the relationship between transformational leadership, career adaptability, task variety, and work behaviors. Transformational leadership is a leadership

style that focuses on inspiring and motivating followers to achieve their full potential by providing a vision and challenging them to think creatively and innovate. Career adaptability refers to an individual's ability to cope with changing job demands and develop new skills to meet evolving challenges. Work behaviors are the actions and attitudes that employees display in the workplace, such as job performance, commitment, and engagement. The study showed that transformational leadership was positively related to career adaptability and work behaviors. Additionally, task variety was found to moderate the relationship between career adaptability and work behaviors. Specifically, when task variety was high, career adaptability was more strongly related to work behaviors than when task variety was low. These findings suggest that transformational leadership can help foster career adaptability and positive work behaviors but that task variety plays an important role in how career adaptability translates into work behaviors. Organizations can enhance employees' career adaptability and work behaviors by promoting transformational leadership and providing opportunities for task variety.

In summary, task variety strengthens the effects of transformational leadership on either attitudinal or performance outcomes. Furthermore, task variety moderates the path (e.g., the path between career adaptability and work behaviors) introduced by transformational leadership.

2.4.2 External Team Context As External Complexity

The external team context (ETC) refers to the external environment in which a team operates, including the resources available to the team (Ployhart, et al. 2021).

The availability of resources can have a significant impact on team performance and outcomes. Teams with access to more resources, such as funding, information, and expertise, are generally

better able to achieve their goals and objectives. In addition, the nature of the resources available can influence team dynamics, decision-making processes, and overall performance.

ETC is also related to issues such as the availability, accessibility, and stability of resources. For example, teams operating in remote or underdeveloped areas may have limited access to resources, while teams operating in urban centers or developed regions may have more resources available. Additionally, teams may face challenges in accessing resources due to factors such as distance, time, and cost.

Finally, the ETC can also be influenced by changes in the external environment over time. For example, economic fluctuations, changes in technology, or changes in regulations can impact the availability and accessibility of resources for a team.

Understanding the external team context is important for team leaders and members, as it can help them identify potential challenges and opportunities and develop strategies to effectively manage available resources. There is a growing body of research on external team context (ETC) and its impact on team performance. Some examples of research on this topic include Ployhart et al. (2021), Daellenbach (2018) and Chen et al. (2019).

Ployhart et al. (2021) conducted a meta-analysis on 51 studies and found that the external team context (e.g., availability of resources, market competition, and regulatory environment) had a moderate to strong effect on team performance. They also found that the impact of the ETC on

team performance was the strongest when teams had high interdependence and when the ETC was measured at the same level of analysis as was team performance (i.e., team-level ETC).

Anand and Daellenbach (2018) examined the impact of the ETC on new product development teams and found that it had a direct, positive effect on team creativity and an indirect, positive effect on team creativity through information exchange. They also found that the impact of the ETC on team creativity was stronger when teams had strong trust and a shared understanding of goals and objectives.

Chen et al. (2019) investigated the impact of the ETC on team innovation in China and found that it had a positive effect on team innovation mediated by team learning. They also found that the impact of the ETC on team innovation was stronger when teams had strong proactive personalities and psychological safety. Overall, these studies suggest that the ETC can have a significant impact on team performance, creativity, and innovation and that this impact can be influenced by factors such as team interdependence, trust, shared understanding of goals, proactive personality, and psychological safety.

Numerous studies have shown that transformational leadership inspires team members, stimulates their intellect (Bass, 1999), and provides them with the necessary resources to get the job done, all of which are conducive to the development of team resilience. However, studies are lacking that have examined the contextual conditions under which this effect occurs or is augmented. In particular, I am curious about the role that the external environment plays in enhancing the effect of transformational leadership on team resilient sources. On the one hand, sufficient, predictable

and accessible external resources may provide good ground for transformational leaders to implement management. In such a situation, the management measures developed by the transformational leader easily take effect, which confirms the correctness of his or her leadership, and then the team members are more likely to recognize the transformational leader's ability and follow him or her, enhancing the resilience of team sharing. On the other hand, sufficient, predictable and accessible external resources are complementary to the team's internal environment, and the synergy between the two can make the collaboration of team members more significant and effective than before.

Chapter 3 Hypothesis Development

3.1 Team Resilient Proactive Model

Scholars have shown the positive relationship between transformational leadership and team resilient states. Scholars have suggested that higher transformational leadership enhances followers' resilience (Sommber et al., 2015), as well as that of the team (Aliem & Hashish, 2021), during a crisis. While Weick (1993) developed the four sources of organizational resilience, and Stoverink et al. (2020) extended the four sources at the team level based on COR theory (Hobfoll, 1988; 1989; 2001). As mentioned above, the four sources of the team resilient state include team potency, team mental model, team improvisation, and team psychological safety. Based on Parker et al.'s (2010) model, we further suggest that the team mental model as a knowledge basis precedes team potency ("can do") and team improvisation ("reason to"), which constitute the chain intermediary between transformational leadership and team performance and team creativity.

As Plophart et al. (2021) proposed, the external team context consists of three aspects: team munificent, temporal dynamic and spatial variability. I further argued that the external team context can be used as a moderator to strengthen the relationship between transformational leadership and the three sources of team resilient proactive processes (1993).

Previous evidence suggests that team resilient proactive processes constituted by team potency, team mental models, and team improvisation should improve team performance outcomes. In particular, a team resilient state leads to high communication quality, efficient collaboration, enough support and fewer concerns over failure, which should contribute to creative behavior and team creativity (Meneghel et al., 2016; Richtnér & Löfsten, 2014). Meanwhile, from the

perspective of proactive motivation, “can do” and “reason to” result in proactive behaviors that lead to high team performance and creative outcomes (Parker et al., 2010).

3.2 Transformational Leadership and Team Resilient Proactive Process

It is reasonable to argue that transformational leadership could play a role in positively influencing followers’ cognition and behaviors. Ayoko and Chua (2014) suggested that transformational leadership is the key factor in promoting a similar team mental model. Leaders who are more communicative and supportive have a higher possibility of actively conveying goals to team members, allowing them to better recognize the important components attributed to team targets.

Some researchers have proven a positive linkage between transformational leadership and the team mental model. For example, Wang et al. (2019) found that transformational leadership was positively associated with the team mental model, which mediated the relationship between transformational leadership and team performance. In addition, Bhatti et al. (2019) found that transformational leadership was positively associated with the team mental model, which partially mediated the relationship between transformational leadership and team creativity. Generally, the authors have suggested that leaders who have high transformational leadership can encourage team creativity and performance by fostering a shared understanding of the team's goals and vision. Thus, I hypothesize the following:

Hypothesis 1: Transformational leadership is positively related to the team mental model.

Hypothesis 2a: The team mental model is positively related to team performance.

Hypothesis 2b: The team mental model is positively related to team creativity.

Hypothesis 3a: The team mental model mediates the relationship between transformational leadership and team performance.

Hypothesis 3b: The team mental model mediates the relationship between transformational leadership and team creativity.

A significant amount of research has been conducted on the relationship between team mental models and team potency. Some studies have found that the team mental model is positively related to team potency, meaning that teams with a common understanding of their goals and processes are more likely to believe in their ability to perform well (Smith, Johnson, & Williams, 2023).

Many researchers have suggested that team potency is an important antecedent of team performance and team creativity. In other words, fostering a sense of collective efficacy and confidence among team members can have a significant impact on team success. An example comes from Smith and Johnson (2021), who suggested that organizations can promote team potency by investing in team-building activities, providing opportunities for team members to work together on challenging tasks and promoting a positive team culture that emphasizes collaboration and mutual support. Thus, I hypothesize the following:

Hypothesis 4a: The team mental model is positively related to team potency.

Hypothesis 5a: Team potency is positively related to team performance.

Hypothesis 5b: Team potency is positively related to team creativity.

Scholars have regarded improvisation as an indispensable part of organizational strategy, underlining not only the significance of improvisation but also how individuals' improvised ability could be improved. For example, Vera and Crossan (2005) emphasized the role of training in improvisation and proved that team members could learn how to better improvise by taking

advantage of the expertise, communication and information brought about by training. Such training effects of improvision should be much better when individuals are trained within a team (Moreland & Myaskovsky, 2000). However, transformational leadership should replace training to improve team improvisation, which has been ignored. In fact, it is easier for leaders who pay attention to their followers' needs to build trust and interaction within the team to exert influences on improving improvisation (Kianto, 2008). Leaders could positively affect team improvisation via team empowerment and self-efficacy (Nisula, 2015). Thus, I hypothesize the following:

Hypothesis 4b: The team mental model is positively related to team improvisation.

Hypothesis 6a: Team improvisation is positively related to team performance.

Hypothesis 6b: Team improvisation is positively related to team creativity.

Based on the above hypothesis, I also hypothesize the following chain-mediating role for the team mental model, team potency and team improvisation:

Hypothesis 7a: The team mental model and team potency play a chain-mediating role in the relationship between transformational leadership and team performance.

Hypothesis 7b: The team mental model and team potency play a chain-mediating role in the relationship between transformational leadership and team creativity.

Hypothesis 8a: The team mental model and team improvisation play a chain-mediating role in the relationship between transformational leadership and team performance.

Hypothesis 8b: The team mental model and team improvisation play a chain-mediating role in the relationship between transformational leadership and team creativity.

3.3 The Moderating Role of Task Variety and ETC

Research has suggested that team task variety can act as a moderator of the relationship between transformational leadership and team performance (Lan & Chen, 2020). Specifically, transformational leadership is likely to be more effective in teams that have high task variety.

The reason for this is that high task variety requires teams to have a diverse range of skills and knowledge, which can lead to coordination conflicts and challenges. Transformational leaders, who are skilled at inspiring and motivating their team members, can help overcome these challenges by providing a shared vision of the team's goals, promoting communication and collaboration, and providing individualized support and feedback.

Furthermore, high task variety may also increase the need for creativity and innovation (Wu & Wang, 2015), which are key components of transformational leadership. Transformational leaders can help stimulate their team members' creativity by providing a supportive and empowering environment that encourages experimentation and risk-taking. Thus, I hypothesize the following:

Hypothesis 9a: Task variety moderates the relationship between transformational leadership and the team mental model such that the relationship is strengthened when task variety is high.

Sufficient, predictable and accessible external resources are complementary to the team's internal environment, and the synergy between the two kinds of resources can make the collaboration of team members more significant and effective than ever before. In challenging and uncertain environments, transformational leaders can help followers and teams better understand the team's

goals through vision articulation, intellectual stimulation, and supportive behaviors (Dimas et al., 2018). Thus, I consider the ETC as a moderator and hypothesize its moderating effects on four sources of team resilience:

Hypothesis 9b: The external team context moderates the relationship between transformational leadership and the team mental model such that the relationship is strengthened when the external team context is high.

Therefore, I propose the following theoretical framework, as shown in Figure 3-1.

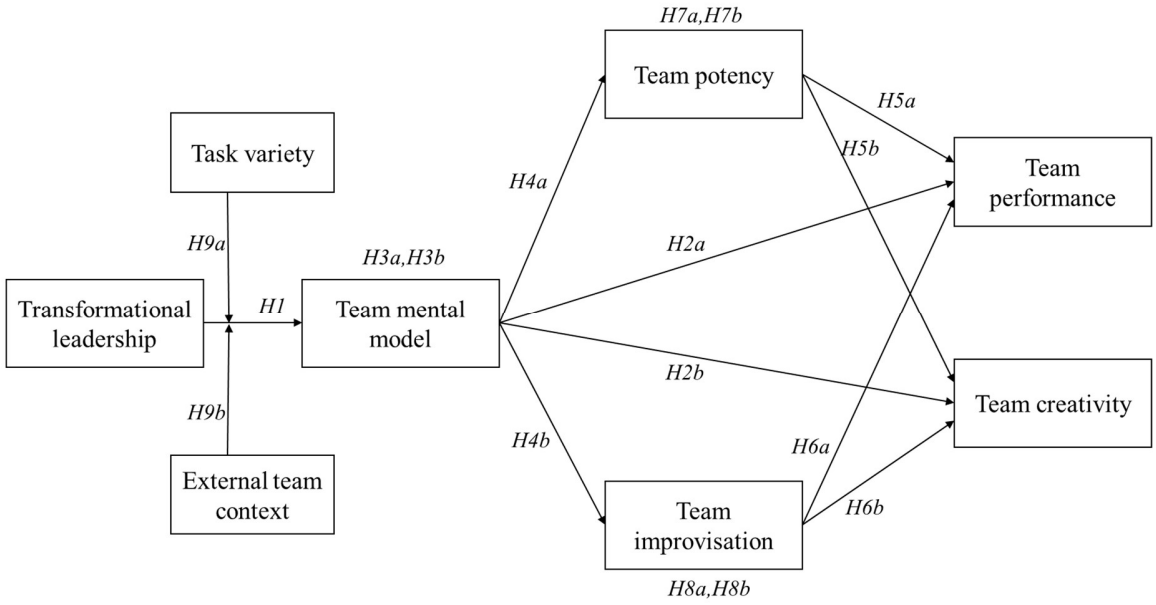

Figure 3-1 Theoretical Framework

Chapter 4 Research Design

4.1 Participants and Procedure

I used multisource, three-wave data in Eastern China. The data collection was approved by the Institutional Review Board (IRB) of SMU (IRB-22-184-A109(1222)). At Time 1 (i.e., December 2022), surveys were distributed to 754 employees (i.e., team members) on 85 teams. Team member surveys contained transformational leadership. A total of 745 employees from 85 teams completed the survey for a response rate of 98.81%. Approximately one month later, at Time 2 (i.e., January 2023), I distributed surveys to the same team members as at Time 1, and they were asked to rate the team mental model, team potency, and team improvisation. A total of 722 employees from 85 teams returned the surveys for a response rate of 95.76%. At Time 3 (i.e., February 2023), I invited 17 upper managers from the above 85 teams to rate team performance and team creativity. Data from 82 teams were returned for a response rate of 96.47%. In addition to excluding teams with missing data, to ensure data quality, I dropped teams with fewer than three members responding completely to the three-wave survey. The final sample consisted of 630 employees from 81 teams. The average team size was 7.78 (SD = 5.02). Among employees, the team average age was 33.93, 58.57% were male, and 74.44% had a bachelor's degree.

4.2 Ethical Considerations

I submitted an application to the Institutional Review Board (IRB) of SMU on 1 Dec 2022, and it was approved on 6 Dec 2022 as follows.

IRB APPROVAL OF RESEARCH

CATEGORY 2A: Expedited Review

Title of Research: The Influence of Transformational Leadership on Team Resilience, Performance and Creativity with External Team Context as Moderator: An Empirical Study in 2 Team-Focused Chinese Companies

SMU-IRB Approval Number: IRB-22-184-A109(1222)

Approval period from 6 December 2022 to 5 December 2023

4.3 Measures

Since the survey was conducted in China, I followed the standard back-translation procedure (Brislin, 1980) to translate the original English scale into Mandarin Chinese. Unless otherwise specified, participants were asked to respond to the questionnaire using a 5-point Likert scale (1 = Strongly disagree, 5 = Strongly agree), except for task variety. All scale items are available in the Appendix.

Transformational leadership (T1)

I adopted the scale from Mackenzie et al. (2001) to measure transformational leadership. The scale consisted of core transformational leadership behavior, high performance expectations, supportive leader behavior, and intellectual stimulation. A sample item was, "My supervisor has ideas that have challenged me to reexamine some of my basic assumptions about my work." The Cronbach's α for the scale was .918. Employees' responses were aggregated at the team level; mean $r_{wg(j)}$ =.96; ICC1 =.42, ICC2 =.85, F = 6.78, p <.001.

Task variety (T1)

I measured task complexity using a three-item measurement developed by Hackman and Oldham (1980). Employees were expected to rate using the three-item scale of a 7-point Likert scale. A sample item was, "The job requires me to use a number of complex or high-level skills." The Cronbach's α for the scale was .767. Employees' responses were aggregated at the team level; mean $r_{wg(j)}$ =.77; ICC1 =.32, ICC2 =.79, F = 4.66, p <.001.

External team context (T2)

Ployhart and colleagues (2021) developed a multidimensional scale for the external team environment at the team level. They defined the external team environment as a function of munificence, temporal dynamism, and spatial variability. I adapted the 19-item measure for my survey. All team members rated the key resources of the external environment outside the team. Sample items included, "My team operates in an environment that has a large number of resources. (Munificence)," "The critical resources in my team's environment change unexpectedly. (Temporal dynamism)," and "The critical resources my team needs are found external to my company. (Spatial variability)." The Cronbach's α for the scale was .849. Employees' responses were aggregated at the team level; mean $r_{wg(j)}$ =.97; ICC1 =.39, ICC2 =.83, F = 6.02, p <.001.

Team mental model (T2)

I measured the team mental model using the adapted seven-item scale developed by Lim and Klein (2006). A sample item was, "Team members back each other up in carrying out team tasks." The Cronbach's α for the scale was .961. Employees' responses were aggregated at the team level; mean $r_{wg(j)}$ =.96; ICC1 =.39, ICC2 =.83, F = 5.99, p <.001.

Team potency (T2)

I measured team potency by adapting the six-item scale developed by Guzzo et al. (1993) to the team level. A sample item was, "This team believes it can become unusually good at producing high-quality work." The Cronbach's α for the scale was .972. Employees' responses were aggregated at the team level; mean $r_{wg(j)}$ =.94; ICC1 =.40, ICC2 =.84, F = 6.128, p <.001.

Team improvisation (T2)

I measured team improvisation using the adapted three-item scale from Vera and Crossan (2005). A sample item was, "The team takes risks in terms of producing new ideas in doing its job." The Cronbach's α for the scale was .921. Employees' responses were aggregated at the team level; mean $r_{wg(j)}$ =.89; ICC1 =.36, ICC2 =.82, F = 5.46, p <.001.

Given that the team mental model, team potency, and team improvisation were reported by the same source at the same timepoint, I ran a three-factor model to rule out common method bias and confirmed the distinctiveness among the three variables. The results suggested that the three-factor model (χ^2[101 = 154.70, p < 0.001; CFI =.97, RMSEA =.08, SRMR =.04]) fit the data better than any of the two-factor models ($\Delta\chi^2/\Delta df$ ranging from 2.29 to 4.95), providing support for the discriminant validity of the measured constructs.

Team performance (T3)

Upper-level managers were invited to rate the team performance of each of their teams. Supervisors were expected to rate using the eight-item scale of 1= "well below the comparative

teams," 5 = "well above the comparative teams" (Barrick et al., 1998). Sample items included "Commitment to the team" and "Overall performance." The Cronbach's α for the scale was .910.

Team creativity (T3)

I adapted the three-item scale developed by De Dreu and West (2001) to measure team creativity. A sample item was, "Team members often implement new ideas to improve the quality of our products and services." The Cronbach's α for the scale was .911.

Control variables

I controlled for team characteristics (i.e., team size, average gender, age, education, and dyadic tenure), which are provided by the Human Resource Management Department, given the established relationship with the team mental model, potency, improvisation, performance, and creativity (Akgün et al., 2007; Hu & Judge, 2017; Lim & Klein, 2006).

4.4 Analytic Strategy

To test our hypotheses, we used ordinary least squares (OLS) regression, given that all focal variables were at the same level. In addition, we ran path analysis to test the (serial) indirect effects because this analysis is able to simultaneously examine multiple mediations and dependent variables. Accordingly, I ran bootstrapping with 5000 replications to examine the confidence intervals (CIs) of the indirect effects. In addition, I ran path analysis for the full model as the robustness test, which was reported in the additional analysis section.

Chapter 5 Results

5.1 Confirmatory Factor Analyses

The means, standard deviations, and correlations among the measured variables are shown in Table 5-1. As we can see, transformational leadership is positively correlated with the team mental model ($r = .65$, $p < 0.01$), and the team mental model is positively correlated with team potency ($r = .71$, $p < 0.01$), team improvisation ($r = .78$, $p < 0.01$), and team creativity ($r = .24$, $p < 0.05$). Team potency is positively correlated with team performance ($r = .30$, $p < 0.01$) and team creativity ($r = .32$, $p < 0.01$). Team improvisation is positively correlated with team creativity ($r = .37$, $p < 0.01$). These results provided primary support for the hypotheses.

Prior to hypothesis testing, I conducted multilevel confirmatory factor analyses (MCFA) in Mplus 8 (Muthén & Muthén, 2017) to ensure the distinctiveness of the measures and to rule out common method variances. Given that transformational leadership, task variety, external team context, team mental model, team potency, and team improvisation are reported by the same source, I ran a six-factor model. The results suggested that the three-factor model ($\chi^2[120 = 165.253, p < 0.01$; CFI $= .971$, RMSEA $= .068$, SRMR $= .047]$) fit the data better than any of the five-factor models, supporting the discriminant validity of the measured constructs.

Table 5-1 Means, Standard Deviations, and Correlations

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Team size	7.78	5.02													
2. Team average age	33.93	4.33	-.16												
3. Team average gender	1.42	.36	-.03	-.42**											
4. Team average education	1.84	.30	-.17	.25*	.11										
5. Dyadic tenure	5.34	3.41	-.05	.76**	-.35**	-.02									
6. Transformational leadership	4.10	.31	.16	-.17	-.16	-.07	-.07								
7. Task variety	5.08	.58	.07	.14	-.39**	.32**	.01	.04							
8. External team context	2.53	.22	-.09	.01	.03	-.11	.03	-.50**	-.09						
9. Team mental model	4.17	.30	.11	-.04	-.25*	-.17	.05	.65**	.02	-.48**					
10. Team potency	4.19	.33	.17	.06	-.31**	-.12	.14	.64**	.19	-.57**	.71**				
11. Team improvisation	4.09	.27	.10	-.04	-.22	-.16	.12	.52**	.07	-.41**	.78**	.70**			
12. Team performance	3.76	.61	.21	.10	-.30**	-.01	.09	.12	.33**	-.03	.16	.30**	.19		
13. Team creativity	4.57	1.24	.25*	-.18	-.33**	-.05	-.14	.10	.33**	-.20	.24*	.32**	.37**	.59**	--

Note: * $p < 0.05$, ** $p < 0.01$, two-tailed. N = 81 teams.

5.2 Hypothesis Testing

We applied OLS regression to test the direct and moderation hypotheses and path analysis to test the chain mediation model. The results are shown in Tables 5-2, 5-3, 5-4, and 5-5.

As expected, after controlling for team size, team average age/gender/education, and dyadic tenure, transformational leadership related positively to the team mental model (B =.62, p <.001), and the team mental model related positively to team creativity (B = 1.06, p <.05), in support of hypotheses 1 and 2b. However, the relationship between the team mental model and team performance was not significant (B =.18, p =.545), failing to support hypothesis 2a.

The results of the test of the mediating effects are shown in Table 5-5. With 5000 bootstrap replications, I did not find a significant indirect effect of transformational leadership on team performance (indirect effect = -.11, 95% CI [-.60,.42]) or team creativity (indirect effect = -.33, 95% CI [-1.12,.37]) through the team mental model. Thus, hypotheses 3a and 3b were not supported.

Table 5-2 Regression Analyses Predicting Team Mental Model

Variable	Team mental model					
	β	*SE*	β	*SE*	β	*SE*
Control variable						
Team size	.00	.01	.00	.01	-.00	.01
Team average age	-.02	.01	.00	.01	-.00	.01
Team average gender	-.26*	.11	-.10	.09	-.17+	.10
Team average education	-.06	.12	-.11	.10	-.07	.11
Dyadic tenure	.01	.02	.00	.01	.01	.01
Independent variable						
TL			.62***	.09	.50***	.11
Task variety					-.08	.06
ETC					-.29*	.13
TL × Task variety					.29*	.12
TL × ETC					-.68	.40+
Team mental model						
Team potency						
Team improvisation						
Constant	5.13***	.45	1.94**	.59	3.70***	.89
F	1.86		10.16***		8.41***	
R^2	0.11		.45		.55	

Note: $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, two-tailed. N = 81 teams. TL = transformational leadership, ETC = external team context.

Table 5-3 Regression Analyses Predicting Team Potency/Improvisation

	Team potency				Team improvisation			
Variable	β	*SE*	β	*SE*	β	*SE*	β	*SE*
Control variable								
Team size	.00	.01	.00	.01	.00	.01	-.00	.00
Team average age	.01	.01	.01	.01	-.01	.01	-.01	.01
Team average gender	-.13	.09	-.08	.08	-.09	.09	-.02	.07
Team average education	-.07	.10	-.02	.09	-.06	.10	.02	.08
Dyadic tenure	.01	.01	.01	.01	.02	.01	.02+	.01
Independent variable								
TL	.66***	.10	.36**	.11	.44***	.09	.02	.09
Team mental model			.49***	.11			.67***	.09
Team potency								
Team improvisation								
Constant	1.53*	.62	.58	.59	2.80***	.59	1.50**	.47
F	11.23***		15.08***		5.92***		17.44***	
R^2	.48		.59		.32		.63	

Note: $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$, two-tailed. N = 81 teams.
TL = Transformational leadership.

As shown in Table 5-3, the team mental model was positively related to team potency (B = 1.49, p <.001) and team improvisation (B =.67, p <.001), providing evidence for hypotheses 4a and 4b. The results in Table 5-4 revealed a significant and positive relationship between team improvisation and team creativity (B = 1.68, p <.05, shown in Table 5-5). However, I did not find a significant relationship between team potency and team performance (B =.60, p =.075) or team creativity (B =.98, p =.088) or between team improvisation and team performance (B =.09, p =.832). Thus, hypothesis 6b was supported, but hypotheses 5a, 5b, and 6a were not.

Table 5-4 Regression Analyses Predicting Team Performance/Creativity

Variable	Team performance				Team creativity			
	β	*SE*	β	*SE*	β	*SE*	β	*SE*
Control variable								
Team size	.02+	.01	.02	.01	.05*	.03	.05*	.02
Team average age	.00	.03	.00	.03	-.12*	.05	-.11*	.05
Team average gender	-.47*	.22	-.43+	.22	-1.73***	.40	-1.61***	.37
Team average education	.13	.25	.14	.25	.70	.45	.68	.42
Dyadic tenure	-.00	.03	-.01	.03	-.01	.06	-.04	.06
Independent variable								
Transformational leadership	-.03	.29	-.25	.31	-1.00^{+}	.53	-1.39*	0.53
Team mental model	.18	.29	-.18	.39	1.06*	.53	-.54	.67
Team potency			.60^{+}	.33			.98^{+}	.57
Team improvisation			.09	.41			1.68*	.70
Constant	3.33*	1.59	2.85+	1.68	9.09**	2.88	6.00*	2.86
F	1.66		1.78+		5.00***		5.92***	
R^2	.14		.18		.32		.43	

Note: $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, two-tailed. N = 81 teams.
TL = Transformational leadership.

Table 5-5 Summary of (Serial) Indirect Effects

Path and effects	Estimates	*SE*	95% confidence intervals
TL→Team mental model→Team performance	-.11	.26	[-.60, .42]
TL→Team mental model→Team creativity	-.33	.38	[-1.12, .37]
TL→Team mental model→Team potency→Team performance	**.18**	**.11**	**[.03, .52]**
TL→Team mental model→Team improvisation→Team performance	.04	.19	[-.38, .38]
TL→Team mental model→Team potency→Team creativity	**.30**	**.23**	**[.01, .97]**
TL→Team mental model→Team improvisation→Team creativity	**.69**	**.32**	**[.16, .1.45]**

Note. TL = transformational leadership. Bold type indicates significant indirect effects. N = 81 teams.

Furthermore, I test the serial indirect effect of the team mental model and team potency/improvisation on the relationship between transformational leadership and team performance/creativity (hypotheses 7-8). The results indicated the positive sequential mediation effect of the team mental model and team potency on the relationship between transformational leadership and team performance (indirect effect =.18, 95% CI [.03,.52]) or team creativity (indirect effect =.30, 95% CI [.01,.97]), supporting hypotheses 7a and 7b. Similarly, the results supported hypothesis 8b for the positive sequential mediation effect of the team mental model and team improvisation on the relationship between transformational leadership and team creativity (indirect effect =.69, 95% CI [.16,.1.45]). However, the sequential mediation effect of the team mental model and team improvisation on the relationship between transformational leadership and team performance (indirect effect =.04, 95% CI [-.38,.38]) was not significant. Thus, hypothesis 8a was not supported.

As shown in Table 5-2, the moderating role of task variety on the relationship between transformational leadership and the team mental model was significant and positive (B =.29, p <.05) but external team context was not. Following Aiken and West's (1991) suggestion, we plotted the simple slope (Figure 2) to illustrate the interaction pattern above and below the mean of task variety. The results indicated that the slopes of transformational leadership for high task variety (B =.66, $p < 0.001$) and low task variety (B =.33, $p < 0.05$) were both significant. As seen in Figure 5-1, the slope of high task variety was steeper than that of the low group. Thus, hypothesis 9a was supported and 9b was not.

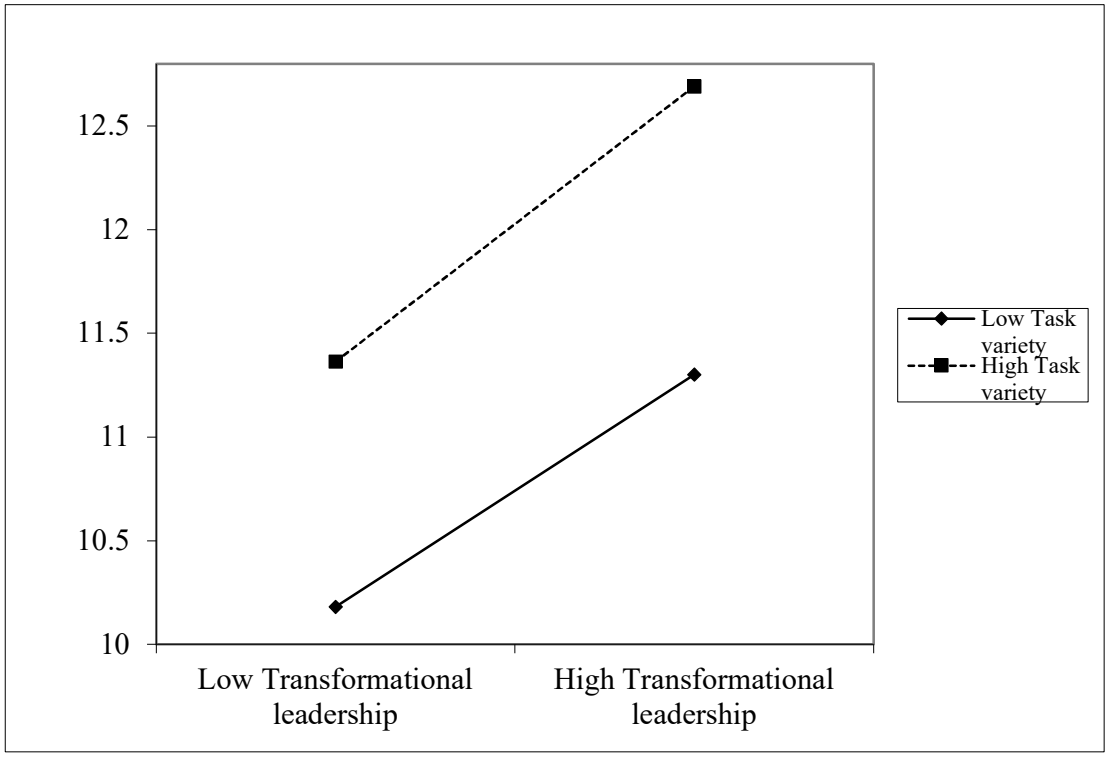

Figure 5-1 The Moderating Role of Task Variety on the Relationship Between Transformational Leadership and Team Mental Model

5.3 Additional Analysis

As a robustness test, I further ran a path analysis to replicate my findings. As shown in Figure 5-2 of the full model path analysis results, among all of the direct effects, transformational leadership had a significantly positive effect on the team mental model (B =.50, p <.001), which in turn was positively related to team potency (B =.49, p <.01) and team improvisation (B =.67, p <.001); thus, team improvisation was positively associated with team creativity (B = 1.68, p <.05). However, I did not find a significant relationship between the team mental model and team performance (B = -.18, p >.05) and team creativity (B = -.54, p >.05), between team potency and team performance (B =.60, p >.05) and team creativity (B =.98, p >.05), or between team improvisation and team performance (B =.09, p >.05). These results were the same as those of the OLS regression.

Furthermore, the indirect tests with 5,000 bootstrapping replications discovered the same results in PROCESS above: the serial indirect effect of transformational leadership on team performance via the team mental model and team potency was significantly positive (B =.15, 95% CI = [.04,.42]). The serial indirect effect of transformational leadership on team creativity via the team mental model and team potency was significantly positive (B =.24, 95% CI = [.01,.79]) or via the team mental model and team improvisation (B =.56, 95% CI = [.14, 1.29]). However, similar to the OLS regression, I did not find an indirect effect of transformational leadership on team performance via the team mental model (B = -.09, 95% CI = [-.50,.36]), and the indirect effect of transformational leadership on team creativity via the team mental model (B = -.27, 95% CI = [-.95,.29]) was not significant.

The results of the interactive effect of transformational leadership with task variety on the team mental model became nonsignificant in the path analysis (B =.29, p =.08) and was significantly positive in the OLS regression. The moderating role of the external team context on the relationship between transformational leadership and the team mental model remained nonsignificant (B = -.68, p >.05). The inconsistent moderation results indicated that the effects of these two boundary conditions in the current study were weak.

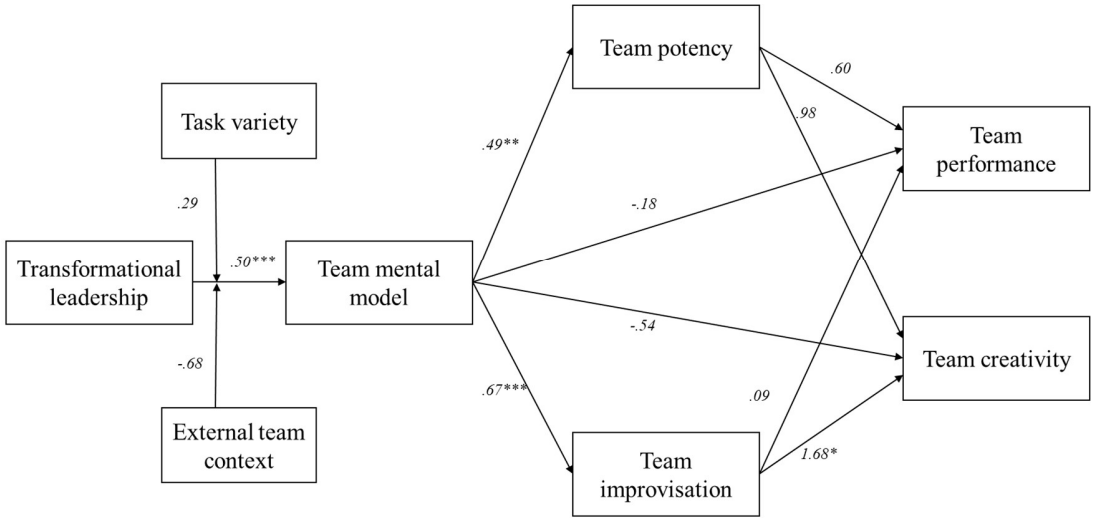

Figure 5-2 The Results of Path Analysis for the Entire Model

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, two-tailed. N = 81 teams. Unstandardized coefficients are reported.

Chapter 6 Discussion

6.1 Summary of Results

Based on the team resilience model (Stoverink et al., 2020) and proactive motivation model (Parker et al., 2010), the current study establishes a team resilient proactive model to explain the relationship between transformational leadership and team performance and team creativity, especially under complex internal and external team environments. In particular, the current study reveals the effects of transformational leadership on team resilience and team outcomes. Specifically, I propose that transformational leadership is positively associated with the team mental model, which in turn enhances team potency and team improvisation, further facilitating team performance and team creativity. The results revealed that transformational leadership related positively to the team mental model, and the team mental model related positively to team potency and team improvisation. However, I found only a significant and positive relationship between team improvisation and team creativity when the relationship between team potency/improvisation and team outcomes was considered.

I also theorize the two mechanisms as the serial indirect effects that the team mental model and team potency/improvisation serially mediate the relationship between transformational leadership and team performance/creativity. Except for the chain mediation of the team mental model and team improvisation on the relationship between transformational leadership and team performance, the other serial indirect effects were significant and positive.

In addition, I predict that task variety and external team context are the internal and external vital factors that define the relationship between transformational leadership and the team mental model. A summary of the hypothesized relationships is reported in Table 6-1.

Table 6-1 Summary of Hypotheses and Found Relationships

Hypotheses	**Findings**
H1: Transformational leadership is positively related to the team mental model.	Supported
H2a: The team mental model is positively related to team performance.	Not supported
H2b: The team mental model is positively related to team creativity.	Supported
H3a: The team mental model mediates the relationship between transformational leadership and team performance.	Not supported
H3b: The team mental model mediates the relationship between transformational leadership and team creativity.	Not supported
H4a: The team mental model is positively related to team potency.	Supported
H4b: The team mental model is positively related to team improvisation.	Supported
H5a: Team potency is positively related to team performance.	Not supported
H5b: Team potency is positively related to team creativity.	Not supported
H6a: Team improvisation is positively related to team performance.	Not supported
H6b: Team improvisation is positively related to team creativity.	Supported
H7a: The team mental model and team potency play a chain-mediating role in the relationship between transformational leadership and team performance.	Supported
H7b: The team mental model and team potency play a chain-mediating role in the relationship between transformational leadership and team creativity.	Supported
H8a: The team mental model and team improvisation play a chain-mediating role in the relationship between transformational leadership and team performance.	Not supported
H8b: The team mental model and team improvisation play a chain-mediating role in the relationship between transformational leadership and team creativity.	Supported
H9a: Task variety moderates the relationship between transformational leadership and the team mental model, such that the relationship is strengthened when task variety is high.	Supported
H9b: External team context moderates the relationship between transformational leadership and the team mental model, such that the relationship is strengthened when the external team context is high.	Not supported

Although hypothesis H2a, which posited that team mental models are positively related to team performance, was not supported, hypothesis H2b, which suggested that team mental models are positively related to team creativity, was supported (Mathieu et al., 2000). This could be because a strong team mental model, which refers to the shared understanding and perspective among team members, can foster creativity by encouraging the exploration of a wider range of ideas and perspectives (Paulus & Nijstad, 2003). However, team performance is influenced by multiple factors, such as task complexity, individual skills, and available resources, and it may not necessarily improve due to a shared mental model (Hackman, 1987). In other words, a shared mental model can facilitate creative idea generation but may not always translate to better execution of those ideas and immediate performance improvements. Furthermore, creativity often involves taking risks and exploring unconventional ideas, which may not always yield success in the short term. Hence, it is possible that a team with a strong mental mode may be more creative but not necessarily more successful in the short run. At the same time, the relationship between transformational leadership, team mental models, and team performance may be influenced by contextual factors such as organizational culture, team composition, or task complexity. If these contextual factors are not taken into account, it may be difficult to establish a clear relationship between these variables, which is a possible reason that H3a, which states that the team mental model mediates the relationship between transformational leadership and team performance, was not supported (Ensley et al., 2006).

On the one hand, team performance and team creativity both contribute to overall team productivity (Smith, 2022), and they are often interconnected rather than mutually exclusive. On the other hand, my results indicate that the sources of team resilience (such as team mental models,

team potency, and team improvisation) have a stronger correlation with team creativity than with team performance. This suggests that team resilience resources may be more closely associated with performance in non-standard situations, such as those requiring creativity from the team (Stoverink et al., 2020).

Several reasons could explain the fact that team mental models are positively related to team creativity but do not mediate the relationship between transformational leadership and team creativity (H3b). First, it is possible that team mental models and transformational leadership are both important factors that contribute to team creativity but do not have any direct causal relationship with each other. Second, it is also possible that the relationship between transformational leadership and team creativity is stronger or more direct than the relationship between the team mental model and team creativity. In this case, the team mental model may still be a positive contributor to team creativity, but its impact may be smaller than that of transformational leadership. Finally, it is important to note that the relationship between these variables may depend on the specific context and conditions of the team. For example, some teams may benefit more from a strong team mental model, while others may respond better to transformational leadership. The specific characteristics and dynamics of the team may also play a role in determining the impact of these variables on team creativity (Ensley et al., 2006).

Team potency is the shared belief among team members in their collective ability to successfully accomplish tasks and achieve goals. Team potency may not be as strongly related to team performance (H5a) because the relationship between beliefs and actual performance is complex. Even if team members believe in their collective abilities, other factors may impact their ability to

perform, such as individual skills and experience, task complexity, and the external factors of resources and time constraints. Moreover, strong team potency may lead to overconfidence and complacency, which could negatively impact team performance. For example, team members may become less vigilant in monitoring their work, making errors or overlooking important details that could affect their overall performance (West et al., 2002).

While it is often assumed that higher team potency should lead to higher team creativity (H5b), empirical research on this topic has reported mixed results. Some studies have found a positive relationship between team potency and creativity (Tierney, Farmer, & Graen, 1999), while others have found no significant relationship (e.g., Zhou & Shalley, 2003) or even a negative relationship (e.g., De Dreu et al., 2012). One possible explanation for the lack of consistent findings regarding such a relationship is that team potency may be more closely related to the implementation of creative ideas than to the generation of novel ideas (Shin & Zhou, 2007). In other words, a team with high potency may be more effective at executing creative ideas but not necessarily better at generating new and innovative ideas in the first place. Additionally, other factors such as team diversity, communication, and leadership style may also play a role in determining team creativity, thus making it difficult to isolate the specific effects of team potency (De Dreu et al., 2012).

While research has generally supported the idea that team improvisation is positively related to team performance (H6a) (e.g., Shalley et al., 2004), some studies have not found a significant relationship in this context (e.g., Yukl et al., 1996). These findings could be due to various factors, such as sample characteristics (e.g., team size, task interdependence, and team member diversity)

and contextual factors (e.g., task type, industry, organizational culture, and leadership style) that could influence the effectiveness of team improvisation (Shalley et al., 2004).

Team improvisation can facilitate the factors that are necessary for the generation of novel and useful ideas by creating a supportive environment that encourages the free exchange of ideas, encouraging the exploration of different perspectives, and promoting the generation of new and unusual solutions (Shalley et al., 2004). When team members feel safe when expressing their ideas without fear of judgment or reprisal, they are more likely to engage in creative thinking and generate innovative solutions. In addition, team improvisation can also help break down mental barriers and entrenched ways of thinking that may limit creative output. By encouraging team members to think outside their usual ways of thinking and to take risks in their ideation, team improvisation can help to expand the range of potential solutions and promote more original and creative thinking. Therefore, it is theoretically plausible that team improvisation may be positively related to team creativity (H6b) (Shalley et al., 2004).

Team mental models and team improvisation may play a chain-mediating role in the relationship between transformational leadership and team creativity (H8b) but not team performance (H8a) for a few reasons. First, creativity is often associated with the ability to think outside the box and produce novel solutions, which can benefit from team members having a shared understanding of their task and goals (Gibson & Vermeulen, 2003). Second, improvisation requires flexibility and a willingness to take risks, both of which are qualities that are encouraged by transformational leaders (Shin & Zhou, 2007). Finally, team performance may be influenced by factors beyond the

control of the team or its leadership, such as the availability of resources, organizational policies, or external factors, such as market conditions (Shin & Zhou, 2007).

High task variety situations require team members to work together closely and rely on each other's expertise to complete tasks successfully (Mathieu et al., 2000). Transformational leaders can provide the necessary direction, support, and motivation to facilitate effective teamwork and enhance the team's mental model in such contexts (Jung & Avolio, 1999).

However, the external team context may not have a significant impact on the relationship between transformational leadership and the team mental model (H9b) (Ensari & Murphy, 2010). Namely, the external team context may not directly affect task variety or how team members work together. Therefore, the impact of the external team context may be less pronounced than the impact of task variety.

6.2 Theoretical Contributions

By examining a team resilient proactive model, the current study contributes to the transformational leadership literature, team resilient theory and proactive motivation theory.

First, my study proves a team resilience model that addresses transformational leadership, team performance, and creativity via the team mental model and team proactive motivation (team potency as “can do,” team improvisation as “reason to”). The study enriches the understanding of the effects of transformational leadership by proving how it enhances team outcomes through resilient and proactive team states. This study also shows that the internal team complex environment represented by team task variety plays a more important role than does the external

team complex environment represented by the ETC in strengthening the effects of transformational leadership on team emergent states and outcomes. My study adds to the literature on leadership and team effectiveness by providing empirical evidence for a team resilient model that accounts for complex internal and external team environments. These findings have implications for organizational leaders and managers who seek to enhance team performance and creativity through effective leadership and team management practices.

Second, the study integrates team resilience theory (Stoverink et al., 2020) and proactive motivation theory (Parker et al., 2010), which further contributes to the literature in both areas. I prove that different team resilience resources are progressive rather than juxtaposed. In particular, the team mental model as a basis for team knowledge is antecedent of team potency as "can do" and team improvisation as "reason to," which is consistent with Parker et al.'s proactive motivation (Parker et al., 2010). Furthermore, I elevate Parker et al.'s proactive motivation theory to the team level. The integration of team resilience theory and proactive motivation theory provides a more comprehensive and nuanced understanding of team performance and highlights the critical role of team mental models in driving team action and motivation. By combining these two theories, we can gain a deeper understanding of how teams can effectively navigate challenging situations while remaining motivated and engaged. In this integrated approach, team mental models play a critical role in driving team action and motivation. Mental models refer to the shared beliefs, assumptions, and values that team members hold about their tasks, goals, and work processes. When team members share a common mental model, they are more likely to coordinate their actions and work together effectively.

Third, the study provides initial evidence of how variables representing internal and external team environmental complexes monitor the positive effect of transformational leadership, team emergent states, and team performance and creativity. However, only the hypothesis on the moderation of team task variety is proven, while that on the moderation of ETC is not. The results may suggest that even in VUCA time, the internal team environment may still exert direct influences on teams' emergent states and outcomes. This study contributes to our understanding of the role of internal and external team environmental factors in shaping team performance and creativity and highlights the importance of considering these factors when studying the impact of transformational leadership on team outcomes.

6.3 Practical Implications

Our study illustrates the importance of transformational leadership in developing team mental modes as well as team potency and team improvisation. The practical implications of the positive relationship among transformational leadership, team mental model, team potency, team improvisation, team performance, and team creativity are significant for organizations seeking to improve their team outcomes. The following are some practical implications.

Invest in transformational leadership development

Organizations should prioritize the development and training of their leaders in transformational leadership styles, which can be achieved through various means.

Customized Leadership Training Programs. Organizations can design customized leadership training programs that align with their values, vision, and goals. These programs can be delivered through a variety of methods, such as in-person workshops, online courses, or a combination of

both, and should focus on building the skills and competencies required for transformational leadership.

Coaching and Mentoring. Pairing leaders with experienced coaches or mentors who can provide guidance and support can help leaders develop their transformational leadership skills. These coaches or mentors can offer feedback, provide insights, and help leaders identify areas where they can improve their leadership abilities.

Leadership Assessments. Organizations can use leadership assessments to evaluate their leaders' strengths and weaknesses and identify areas for improvement in their transformational leadership skills. This can help leaders create a plan for enhancing their leadership abilities.

Ongoing Leadership Development Opportunities. Organizations can provide continuous opportunities for leaders to develop and improve their transformational leadership skills. This can involve offering access to conferences, seminars, webinars, and other relevant learning opportunities.

Leading by Example. Leaders can lead by example by modeling transformational leadership behaviors, such as demonstrating a commitment to excellence, fostering innovation and creativity, and promoting a positive work environment. This can create a culture of inspiration and motivation, leading to improved team performance and creativity.

By investing in developing and training leaders in transformational leadership styles, organizations can establish a culture of excellence that can drive long-term success. This can cultivate a sense of inspiration and motivation, which can boost team performance and foster creativity.

Foster the development of a shared mental model within a team

Developing a shared mental model within a team is essential for achieving strong performance and success. Doing so requires a focus on communication, collaboration, and continuous learning and adaptation; however, the benefits are well worth the effort.

Improved Communication. A shared mental model can improve communication within the team, as it helps team members understand each other's perspectives, assumptions, and knowledge. This understanding can lead to more effective and efficient communication, reduce misunderstandings, and improve the overall quality of communication.

Increased Coordination. When team members have a shared mental model, they are better able to coordinate their efforts toward achieving a common goal. This is because they are all working from the same understanding of the task, the resources available, and the expectations of the team.

Better Decision Making. A shared mental model can help the team make better decisions, as they can leverage each other's expertise and knowledge. This can lead to better-informed decisions that consider multiple perspectives and factors, improving the overall quality of the team's decision making.

Improved Performance. When team members have a shared mental model, they are better equipped to anticipate each other's needs and respond quickly and effectively to changes in the task or environment. This can lead to improved performance, as the team can work together more efficiently and effectively toward achieving their goals.

Develop team potency

Organizations should focus on developing team potency by providing resources and support that promote team members' confidence in their ability to work together effectively. This can be done through training, team-building exercises, and recognition programs that emphasize team accomplishments.

Provide Training. Organizations can provide training programs that focus on developing team skills, such as communication, collaboration, and conflict resolution. These programs can help team members build their confidence and develop the skills they need to work effectively as a team.

Facilitate Team-Building Exercises. Organizations can facilitate team-building exercises that help team members become more familiar with each other better and build trust. These exercises can help team members feel more comfortable working together and develop a stronger sense of team identity.

Emphasize Team Accomplishments. Organizations can recognize and celebrate team achievements, such as successful project completions, to help boost team members' confidence

and sense of accomplishment. This recognition can help team members feel valued and motivated to continue working together.

Provide Resources. Organizations can provide resources that support team members' efforts to work together more effectively, such as tools for collaboration and communication, as well as access to experts or mentors who can offer guidance and support.

Encourage team improvisation

Encouraging team improvisation by promoting adaptability and providing resources and support for creative problem solving is important for promoting team creativity. This can be achieved through training, brainstorming sessions, and innovation workshops. Promoting team improvisation and creativity is crucial for any organization looking to remain competitive in today's constantly changing business landscape. Encouraging adaptability and providing resources and support for creative problem solving can help teams develop innovative solutions to complex challenges.

Training sessions can help team members develop the skills they need to think creatively and adapt to changing circumstances. Brainstorming sessions can provide a space for team members to generate new ideas and explore different perspectives. Innovation workshops can offer opportunities for hands-on learning and experimentation, as well as access to the latest tools and technologies.

In addition to these formal training opportunities, it is also important for leaders to create a culture that supports improvisation and creativity. This means celebrating successes and failures alike, providing opportunities for experimentation, and encouraging open communication and collaboration among team members.

Ultimately, a focus on improvisation and creativity can help teams stay ahead of the curve and find new and innovative ways to solve problems and achieve their goals.

By implementing these practical implications, organizations can create a culture of transformational leadership, foster a positive team culture, and support the development of team mental models, team potency, and team improvisation. This, in turn, can lead to improved team outcomes, increased team performance, and enhanced creativity.

6.4 Limitations and Directions for Future Research

Despite the theoretical and practical implications of the current research, I acknowledge that this study has several limitations that require additional attention. First, although the current study employed a multisource, three-wave design to reduce common method variance, and the CFA results indicated that the team mental model, team potency, and team improvisation had good distinctiveness, collecting these data at the same point in time is still inevitably subject to common method bias. As such, future research could use a longitudinal design to collect these variables or replicate my model using an experimental design.

Second, this study focuses on the effect of transformational leadership on the team mental model. The team mental model can be divided into accuracy and similarity (Ayoko & Chua, 2014) or

teamwork and taskwork (Lim & Klein, 2006). However, I pay attention to only one dimension of the team mental model. Thus, I recommend that future research extend my research by exploring the antecedents and outcomes of the team mental model using a comprehensive measurement.

Third, since the moderating role of the external team context was not supported, previous research has provided evidence for a similar variable in the marketing or R&D context, such as environmental turbulence that strengthens the relationship between incentive pay and innovative performance (Sung, Choi, & Kang, 2017) or environmental turbulence that facilitates new product exploration (Danneels & Sethi, 2011). However, the sample of this study consists of finance, accounting, consulting, and technology. Employees in these industries may not experience a high degree of environmental turbulence (in my sample, the mean value of the external team context is 2.53). As such, future research could explore the effect of the external team context in other appropriate samples or invite team leaders to rate this context because they know the resources surrounding the team better than their subordinates.

Fourth, my sample is from China, which is commonly regarded as having a large power distance (Farh, Hackett, & Liang, 2007) that could influence employees' perception of transformational leadership (Kirkman et al., 2009). Future research could conduct investigations across Eastern and Western cultures to examine the differences caused by power distance and generalize the findings of this study under different cultures。

Chapter 7 Conclusion

For this research, I conclude that transformational leadership has a positive impact on team performance and team creativity through team mental mode and team potency, as well as team improvisation. I also conclude that task variety plays a moderating role in relationship between these two factors, i.e., transformational leadership and team mental model.

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Appendixes

The measurement details are as following.

Transformation leadership

1. Articulates a vision.

2. Provides an appropriate model.

3. Facilitates the acceptance of group goals.

4. Makes it clear to me that she or he expects me to give 110 percent all of the time.

5. Insists on only the best performance.

6. Will not settle for second best.

7. Acts without considering my feelings. (R)

8. Considers my personal feelings before acting.

9. Shows respect for my personal feelings.

10. Treats me without considering my personal feelings. (R)

11. Challenges me to think about old problems in new ways.

12. Asks questions that prompt me to think about the way I do things.

13. Has stimulated me to rethink the way I do some things.

14. Has ideas that have challenged me to reexamine some of my basic assumptions about my work.

Team task complexity

1. How much variety is there in the job in your team? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents?

2. The job requires me to use a number of complex or high-level skills.

3. The job is quite simple and repetitive. (R)

External team environment

1. My team operates in an environment that has a large number of resources.

2. My team operates in an environment that has many resources.

3. My team operates in an environment that has high-quality resources.

4. My team operates in an environment that has sufficient-quality resources.

5. The resources in my team's environment are highly interrelated with each other.

6. The resources in my team's environment are tightly linked together.

7. The critical resources in my team's environment are declining over time.

8. The critical resources in my team's environment are decreasing over time.

9. The critical resources in my team's environment change fast.

10. The critical resources in my team's environment change quickly.

11. The critical resources in my team's environment are highly volatile.

12. The critical resources in my team's environment change unexpectedly.

13. The critical resources my team needs are found external to my company.

14. The critical resources my team needs are found primarily outside my company.

15. The critical resources my team needs are located far from my team.

16. The critical resources my team needs are distant from my team.

17. The critical resources my team needs are easily accessible by my team.

18. The critical resources my team needs are easily available to my team.

19. The critical resources my team needs are tightly coupled with my team.

20. Changes in our team environment (e.g., the market) are very intense.

21. Clients in our team environment (e.g., the market) regularly demand completely new products and/or services.

22. The environment (e.g., the market) in which our team operate are constantly experiencing changes.

23. Demand fluctuates rapidly and frequently in our team environment (e.g., the market).

Team potency

1. This team has confidence in itself.

2. This team believes it can become unusually good at producing high-quality work.

3. This team expects to be known as a high-performing team.

4. This team feels it can solve any problem it encounters.

5. This team believes it can be very productive.

6. This team can get a lot done when it works hard.

Team improvisation

1. Team members think on their feet when carrying out actions.

2. The team tries new approaches to problems.

3. The team identifies opportunities for new work processes.

Team mental model

1. Team members work well together.

2. Team members trust each other.

3. Team members communicate openly with each other.

4. Team members agree on decisions made in the team.

5. Team members back each other up in carrying out team tasks.

6. Team members are aware of other team members' abilities.

7. Team members treat each other as friends.

Team performance

1. Knowledge of tasks

2. Quality of work

3. Quantity of work

4. Initiative

5. Interpersonal skills

6. Planning and allocation

7. Commitment to the team

8. Overall performance

Team creativity

1. Team members often implement new ideas to improve the quality of our products and services.

2. Team members often produce new services, methods, or procedures.

3. This is an innovative team.

Note: R represents the item is reverse coded.