

Dynamic Evolution of Informal Leadership: The Dual-Path Influence of Peer Emotions

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Date: 2026-04-14T17:20:55+00:00

Abstract

Existing literature focuses primarily on the antecedents of informal leadership emergence, while lacking attention to its status changes (such as enhancement, weakening, or even disappearance), particularly the potential negative influence of colleagues—as identity “granters”—in the evolution of informal leadership status. Based on the cognitive appraisal theory of emotion, this study explores the “granting-weakening” dual-path mechanism of colleague emotions and behaviors in the evolution of informal leadership status, as well as the key factors determining positive/negative reactions. Through a four-stage longitudinal survey based on multi-source data ($N = 311$), results from latent change score models indicate that: when the exchange relationship between the informal leader and colleagues is high, the initial level of informal leadership status is more likely to trigger a change from low to high in colleagues’ inspiration and helping behaviors, thereby promoting a further increase in subsequent informal leadership status; conversely, when the colleague exchange relationship is low, informal leadership status tends to induce a change from low to high in colleagues’ envy and social undermining behaviors, leading to the weakening of subsequent informal leadership status. The findings reveal the complex influence mechanisms of colleague emotions and behaviors on informal leadership status, providing theoretical and practical guidance for the maintenance and development of informal leadership status.

Full Text

Preamble

The Dynamic Evolution of Informal Leadership: The Dual Role of Peer Emotions

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摘要

Existing literature has focused predominantly on the antecedents of informal leadership emergence, while neglecting the dynamics of status change—such as its enhancement, weakening, or even disappearance. In particular, there is a lack of attention regarding the potential negative impact of coworkers, who act as “identity granters,” on the evolution of informal leadership status.

To address this gap, the present study draws upon the cognitive appraisal theory of emotion to explore the “granting-weakening” dual-path mechanism through which coworker emotions and behaviors influence the evolution of informal leadership status, as well as the key factors determining these positive or negative reactions. Utilizing a four-stage longitudinal survey with multi-source data ($N = 311$), latent change score modeling results indicate that when the exchange relationship between an informal leader and their coworkers is high, initial levels of informal leadership status are more likely to trigger an upward shift in coworker inspiration and helping behaviors, thereby promoting a further increase in subsequent informal leadership status. Conversely, when the exchange relationship is low, informal leadership status tends to induce an increase in coworker envy and social undermining, leading to a subsequent erosion of that status. These findings reveal the complex mechanisms by which coworker emotions and behaviors affect informal leadership and provide both theoretical and practical guidance for the maintenance and development of informal leadership status.

关键词

Informal leadership status change; Coworker emotions; Cognitive Appraisal Theory of Emotion; Coworker exchange (CWX) relationships. CLC number: B849: C93

This work was supported by the General Program of the National Natural Science Foundation of China (71872124).

1 前言

A global cultural survey conducted by PwC, involving 2,000 respondents across 50 countries, reveals that informal leaders—acting as the “critical few” within an organization—have become a core force driving corporate development and transformation [?, ?]. Unlike formal leadership, informal leadership is not a fixed status granted by official authority; rather, its leadership standing depends on the recognition and following of other team members [?, ?, ?]. Consequently, informal leadership exhibits significant dynamic characteristics [?, ?, ?]. Therefore, conducting an in-depth study of the dynamic evolution mechanisms of

informal leadership status is of great significance for the long-term cultivation of informal leaders and the continuous improvement of team effectiveness [?, ?].

Informal leadership is a perceived social status referring to the influence an individual exerts over colleagues in the absence of formal authority. Unlike formal leadership, which is derived from organizational hierarchy and official titles, informal leadership emerges from interpersonal interactions, technical expertise, and the recognition of peers. This phenomenon plays a critical role in organizational dynamics, as informal leaders often serve as bridges for communication, drivers of innovation, and stabilizers of team cohesion. Understanding the mechanisms through which informal leadership is established and maintained is essential for optimizing team performance and fostering a collaborative work environment.

Informal leadership reflects the extent to which an individual is perceived by other members as a team leader, even in the absence of official authority [?, ?, ?]. Although scholars have conducted extensive research on this phenomenon, the existing literature remains limited in two significant ways.

First, current research focuses primarily on the antecedents of informal leadership emergence [?, ?], while neglecting the dynamic evolution of this status—such as its enhancement, weakening, or eventual disappearance [?]. The few studies that do examine the evolution of informal leadership status have focused almost exclusively on positive evolutionary trajectories [?], thereby overlooking potential negative pathways.

Second, most current studies adopt an “actor-centric” perspective of the informal leader, failing to explore the behavioral effects of the “granters” (the colleagues). The theoretical foundation of informal leadership is rooted in the “claiming-granting” framework, which posits that informal leadership status arises from an employee’s continuous “claiming” of a leader identity and the subsequent “granting” of that identity by team members [?, ?, ?, ?]. However, existing research has largely concentrated on how individuals claim their informal leadership status—for example, by demonstrating proactivity [?], extraversion [?], proactive voice [?, ?], or empathy [?]. Consequently, the role of colleagues as identity “granters” in the evolution of informal leadership status has received insufficient attention.

Existing research on peer influence remains insufficiently comprehensive, primarily focusing on the positive responses of colleagues toward informal leadership—a phenomenon known as the “endowment effect,” which manifests through behaviors such as advice-seeking [?, ?]. This narrow focus overlooks the potential “diminishing effects” that peers may exert. In practical team settings, informal leadership status is inherently competitive and scarce [?, ?, ?]. Consequently, it is impossible for every individual’s claim to informal leadership to receive active support; in fact, most such claims are likely to be rejected or even undermined, leading to a decline in the individual’s perceived leadership status.

Furthermore, the unique position of an informal leader can trigger negative emo-

tional reactions in others [?], making this status highly uncertain and dynamic. Most existing studies are grounded in positive “cognition-expectation” theoretical frameworks, such as Expectation States Theory [?, ?], which results in a lack of attention to the negative emotions and behaviors of colleagues. It is evident that research limited to a positive (endowment) perspective provides only a partial understanding of the complex dynamics surrounding informal leadership.

...limited perspective, making it difficult to fully reveal the mechanisms by which peer behavior influences the evolution of informal leadership status. This study adopts a dynamic research perspective to uncover the “endowment-undermining” dual-path mechanism of peer emotions and behaviors in the evolution of informal leadership. Furthermore, it explores the key factors that determine whether peers react positively or negatively.

Drawing upon Cognitive Appraisal Theory of Emotion [?, ?, ?], this study posits that during long-term team interactions, peers’ behavioral responses to informal leadership status do not follow a simple “evaluation-expectation” mechanism. Instead, they involve a cognitive appraisal process encompassing diverse emotions. According to Cognitive Appraisal Theory, individuals form different cognitive evaluations by assessing the degree of relevance between external stimulus events and their own goals, which in turn triggers distinct emotional states and coping behaviors [?, ?]. Given the fluidity of team resources and the central position of informal leaders within organizational social networks [?, ?, ?]

(al., 2012), informal leadership status and its potential resource advantages may present both opportunities and threats to the goal achievement of colleagues. On one hand, informal leaders are frequently sought out by team members for advice (Hu et al., 2019; Peng et al., 2023), and their resource advantages can facilitate the realization of colleagues’ personal goals through the sharing of information and knowledge. On the other hand, these advantages may also compress the resource and opportunity space available to colleagues, thereby threatening their goal attainment. Consequently, informal leadership status may be reinforced by stimulating positive emotional (e.g., inspiration) and behavioral (e.g., helping behavior) changes in colleagues; conversely, it may be undermined by negative emotional (e.g., envy) and behavioral (e.g., social undermining) reactions. These dynamics ultimately lead to differentiated trajectories of status evolution.

The crux of this process lies in the quality of the exchange relationship between colleagues (i.e., between the informal leader and their peers). Research indicates that high-quality coworker exchange (CWX) relationships signify higher levels of resource reciprocity and information sharing among members [?, ?], and help mitigate the perception of threat triggered by competition [?, ?]. Accordingly, this study proposes that the exchange relationship between an informal leader and their colleagues serves as a critical boundary condition influencing the colleagues’ cognitive appraisals.

When an informal leader maintains a high-quality exchange relationship with

a colleague, the colleague tends to perceive the leader's status and potential resource advantages as supportive assets conducive to their own goal attainment. This leads to positive cognitive appraisals, stimulates stronger feelings of inspiration, and encourages more identity-granting behaviors (such as helping behaviors), which ultimately further strengthens the leader's subsequent informal leadership status. Conversely, when the exchange quality between the informal leader and a colleague is low, the colleague is more likely to view the informal leadership status—and its associated information and resource advantages—as a threat to their own resources and goal achievement. This results in negative cognitive appraisals, fosters stronger feelings of envy, and leads to more identity-undermining behaviors (such as social undermining or hindering behaviors), ultimately resulting in a decline in the individual's subsequent informal leadership status. The theoretical model is illustrated in [Figure 1: see original paper].

In summary, this paper constructs a dual-path model of how coworkers' behaviors influence the evolution of informal leadership status. By doing so, it highlights the critical role of peer behavior in the development of informal leadership and identifies its potential negative impacts. Furthermore, by introducing Cognitive Appraisal Theory of Emotion into the dynamic study of informal leadership, this research reveals the mechanisms through which emotional shifts drive behavioral changes.

The term “Inspiration” has been translated variously as inspiration, encouragement, or motivation, originating from the Latin word *inspirare*. While scholars have conducted significant research on inspiration and reached a consensus that it constitutes an emotion, disagreements and controversies persist regarding its specific connotation and interpretation. Within the context of this study, and drawing upon the “structural theory of inspiration” proposed by Thrash and Elliot (2003), we define inspiration as an emotion characterized by three core features: motivation, evocation, and transcendence. To align with the Chinese linguistic context and emotional nuance, this paper translates “Inspiration” as *gǔwǔ* (鼓舞) to denote this specific emotional state.

Research on informal leadership status has shifted from a static, individual perspective toward a more dynamic developmental process rooted in social interaction. Finally, this paper elucidates the critical boundary role of leader-member exchange (LMX) and colleague exchange relationships in the dynamic evolution of informal leadership status, thereby expanding theoretical understanding of the mechanisms underlying the maintenance and development of informal leadership.

Coworker Exchange Relationships Δ Coworker Inspiration Change (T1-T2)

Change in Coworker Helping Behavior (T2-T3) Change in Informal Leadership Status (T3-T4)

Informal Leadership Δ Colleague Envy Change (T1-T2)

Change in Coworker Inhibitory Behavior (T2-T3)

1.1 理论基础

Cognitive Appraisal Theory of emotion posits that an individual's subjective evaluation of external events, situations, or stimuli triggers distinct emotional responses and coping behaviors [?, ?]. Specifically, when confronted with external stimulus events, individuals focus on the relevance and congruence of the event with their own goals, as well as the type of ego-involvement, leading to primary and secondary appraisals [?, ?].

If an external event is judged to be self-relevant and consistent with personal goals, it is appraised as “beneficial,” thereby generating positive emotions. Conversely, if the event is perceived as self-relevant but poses a threat to personal goals or needs, it is appraised as “harmful,” triggering negative emotions [?, ?, ?, ?]. In team contexts, informal leaders typically possess more abundant resources and influence compared to other members [?, ?], and their status constitutes an external stimulus for other team members. Accordingly, this study proposes that when team members perceive the unique high-status position of an informal leader, they generate different types of cognitive appraisals based on its relevance to their own goals (beneficial or harmful). These appraisals elicit varying emotional shifts toward the target individual (ranging from low to high levels of inspiration or envy) and stimulate adjustments in identity-granting behaviors (ranging from low to high levels of helping or hindering behaviors). These reactions ultimately lead to subsequent changes in the informal leader's status (status enhancement or erosion). Furthermore, this study will explore the moderating role of coworker exchange (CWX) relationships to comprehensively reveal the dual-path mechanism of coworker behavior in the evolution of informal leadership status.

1.2 同事鼓舞变化的中介效应

According to cognitive appraisal theory, informal leadership status—as an external stimulus—possesses potential resource advantages and influence that can trigger an increase in a coworker's inspiration. Inspiration is defined as an emotional state evoked by external stimuli that motivates individuals to pursue goals and continuously transcend themselves [?, ?]. The emergence of inspiration comprises three key elements: evocation, transcendence, and motivation [?, ?, ?, ?].

In a team context, informal leaders are often in the “spotlight” due to their extensive influence. Their leadership status and potential resource advantages are easily perceived by coworkers, implying that coworkers may gain developmental insights relevant to their own goals (evocation). At this point, coworkers may view these resource advantages as opportunities for potential collaboration and development, recognizing the possibility of better achieving personal goals (transcendence). Simultaneously, the success of an informal leader provides a

paradigm and roadmap for self-improvement [?, ?], prompting coworkers to evaluate the informal leader's superior status as an attainable goal for themselves. This enhances the perception of goal feasibility, further stimulating intrinsic motivation to use the informal leader as a role model to drive their own status and performance improvements (motivation). Through this cognitive appraisal process, coworkers perceive informal leadership status as a favorable condition for achieving their own goals, thereby experiencing a stronger sense of inspiration from the target member, leading to an increase in inspiration levels.

An increase in a coworker's inspiration further strengthens their intention to grant identity to the informal leader, leading to an increase in helping behaviors directed toward that target member. Helping behavior refers to the proactive provision of necessary work information and resources to colleagues, sharing work responsibilities, and assisting in handling or preventing potential problems in the workplace [?, ?, ?]. Existing research indicates that inspiration, as a positive emotion, can drive individuals to engage in helping behaviors [?, ?, ?]. According to the "inspiration-helping" hypothesis [?, ?, ?], inspired individuals are not only committed to achieving their own goals but also tend to respond positively to the source of their inspiration, often reciprocating through helping behaviors. When a coworker's inspiration toward an informal leader increases, it reinforces their perception of the leadership status as an opportunity. Simultaneously, experiencing support from the informal leader's status and resources prompts the coworker to internalize the leader's goals as their own. This reinforces the motivation to grant identity to the target individual and results in increased helping behavior as a form of reciprocity. Based on the above, we propose Hypothesis H1:

H1: The initial level of informal leadership status has a positive effect on subsequent changes in coworker helping behavior through changes in coworker inspiration.

1.3 同事嫉妒变化的中介效应

Because informal leadership status within a team is not fixed, and because team resources are often scarce and unfairly distributed, a natural competitive relationship regarding resources and status exists between informal leaders and their colleagues (Duffy et al., 2008). Consequently, colleagues may perceive informal leadership status as a threat to the achievement of their own goals, leading to an increase in feelings of envy. According to Smith and Kim (2007), the specific triggers for envy following external stimuli include four dimensions: similarity, self-relevance, sense of control, and perceived unfairness. In a team context, informal leaders and their colleagues often share high levels of similarity in terms of background, official position, or formal power (Shaughnessy et al., 2017). When an informal leader utilizes their relational network to acquire scarce resources that overlap significantly with a colleague's goals—such as promotion opportunities or key project resources—this informal leadership status may be viewed by the colleague as a threat to their self-concept, thereby intensifying

feelings of envy. Furthermore, the influence exerted by informal leaders may interfere with established

resource allocation rules (Liu et al., 2024). The cumulative resource effect resulting from their status advantage can exacerbate a colleague's sense of relative deprivation, reducing their perceived control over goal outcomes and increasing perceptions of unfairness (Smith & Kim, 2007), which further inflames envious emotions.

Based on this cognitive appraisal process, colleagues are likely to view informal leadership status as a potential threat to their own interests, thereby triggering an upward shift (increase) in envious emotions toward the leader.

As a colleague's envy increases, their intention to grant a leadership identity to the target individual diminishes. They may even develop a desire to undermine the target's leadership standing, leading to an increase in identity-weakening behaviors (i.e., social undermining behaviors) directed at that individual. Social undermining refers to conscious and persistent behaviors intended to hinder another person's ability to establish positive interpersonal relationships, interfere with their work, or damage their reputation; specific manifestations include disruptive actions such as silence, non-cooperation, spreading rumors, withholding or providing false information, and belittling others (Duffy et al., 2006). Existing

research has confirmed that envy is highly correlated with harmful behaviors, social undermining, and knowledge hiding (Kim & Glomb, 2014; Reh et al., 2018). When a colleague's envy intensifies, they may implement undermining behaviors to weaken the target's resource acquisition capabilities and influence, thereby curbing further status advancement. This serves to narrow the resource and status gap between themselves and the informal leader (Boekhorst et al., 2024), ultimately alleviating their own psychological imbalance. In light of the above, we propose Hypothesis H2:

H2: Initial levels of informal leadership status exert a positive effect on subsequent changes in colleague undermining behavior through changes in colleague envy.

1.4 同事行为变化对后续非正式领导地位变化的影响

According to the “claiming-granting” framework of informal leadership theory, individuals must continuously receive identity “granting” from their colleagues to maintain their leadership status [?, ?]. Consequently, changes in coworker behaviors—specifically the increase in helping or undermining behaviors—will lead to subsequent shifts in informal leadership status. Existing research indicates that control over relational network resources strengthens an individual's influence within a group [?, ?], which in turn facilitates the acquisition of informal leadership status within the team [?, ?]. Specifically, an increase in coworker helping behavior provides informal leaders with more timely and comprehensive

work information and critical resource support [?, ?, ?]. This continuously expands their resource advantage within the team's relational network, thereby strengthening their team influence. Simultaneously, high-frequency helping behaviors encourage informal leaders and team members to form more positive and stable interpersonal interactions, establishing stronger trust and emotional bonds [?, ?]. Such deep emotional connections further enhance coworkers' recognition of and willingness to grant the leadership identity, ultimately promoting the subsequent elevation of the individual's informal leadership status.

In contrast to helping behavior, an increase in coworker undermining behavior directly restricts the informal leader's access to critical resources [?, ?]. In contexts where team resources are limited, an increase in undermining behaviors such as exclusion and isolation by coworkers can sever the informal leader's connections with key resource providers. This prevents them from maintaining their existing resource advantages, thereby weakening their influence within the team. Furthermore, an increase in undermining behavior is often accompanied by a deterioration of internal team relationships [?, ?].

Behaviors such as malicious attacks, exclusion, and intentional obstruction by coworkers reduce the positive connections between the informal leader and others, exacerbating their unpopularity within the team [?, ?]. This state of isolation further erodes their status and influence, potentially leading to a gradual withdrawal from core leadership positions (the weakening effect). Based on the above analysis, we propose Hypotheses H3 and H4:

H3: Changes in coworker helping behavior have a positive effect on subsequent changes in informal leadership status. H4: Changes in coworker undermining behavior have a negative effect on subsequent changes in informal leadership status.

Based on Hypotheses H1-H4, we propose two serial mediation hypotheses, H5 and H6: H5: Initial informal leadership status has a positive effect on subsequent changes in informal leadership status through the serial mediating roles of changes in coworker inspiration and changes in coworker helping behavior.

H6: Initial informal leadership status has a negative effect on subsequent changes in informal leadership status through the serial mediating roles of changes in coworker envy and changes in coworker undermining behavior.

1.5 同事交换关系的调节作用

According to cognitive appraisal theory, the core of an individual's cognitive evaluation of external stimuli lies in assessing the extent to which the stimulus event relates to their own goals and interests [?, ?]. Based on this, it can be inferred that the exchange relationship between an informal leader and their coworkers may serve as a critical boundary condition influencing the coworkers' cognitive appraisals. Coworker exchange (CWX) refers to the effectiveness of the working relationship between employees under the same supervisor, encompassing the

level of resource sharing, communication quality, and psychological intimacy [?, ?]; it reflects the degree of mutual respect and trust formed through historical interactions [?, ?]. Meta-analytic evidence suggests that higher congruence between external contexts and individual goals leads to a stronger inspiring effect on the individual [?, ?]. When a high-level exchange relationship exists between an informal leader and a coworker, trust deepens and communication efficiency improves. In such cases, coworkers are more likely to perceive the possibility of obtaining resources necessary for their own goals from the informal leader, thereby viewing the informal leader's status as a supportive resource. Furthermore, high-quality coworker exchange facilitates increased interaction frequency [?, ?], allowing coworkers to gain deeper insights into the informal leader's strengths and the mechanisms behind their status formation through observational learning. Consequently, they are motivated to continuously surpass themselves and improve their own performance and status. Thus, when the quality of exchange between an informal leader and a coworker is high, the coworker is more inclined to provide positive cognitive appraisals, triggering an upward shift in feelings of inspiration.

Conversely, when the quality of the exchange relationship between an informal leader and a coworker is low, resource sharing and communication efficiency decline. In this scenario, it is difficult for coworkers to benefit from the informal leader's resources through interpersonal interaction, leading them to view the informal leader's status as a threat to their own resources and development opportunities. Additionally, low-quality coworker exchange can result in a lack of trust and increased hostility toward the informal leader [?, ?]. When an informal leader acquires key resources that coworkers desire, the coworkers may interpret this as an unfair phenomenon, which in turn fosters feelings of envy. Thus, when the quality of exchange between an informal leader

and a coworker is low, the coworker is more likely to form negative cognitive appraisals, leading to an upward shift in envious emotions. Based on the above, we propose Hypotheses H7 and H8:

H7: Coworker exchange positively moderates the positive impact of initial informal leadership status on subsequent changes in coworker inspiration; specifically, when the quality of the exchange relationship is high, the positive effect of informal leadership status on subsequent changes in coworker inspiration is stronger.

H8: Coworker exchange negatively moderates the positive impact of initial informal leadership status on subsequent changes in coworker envy; specifically, when the quality of the exchange relationship is low, the positive effect of informal leadership status on subsequent changes in coworker envy is stronger.

Based on H5-H8, we propose two conditional indirect relationships. Specifically, when the quality of the exchange relationship between an informal leader and a coworker is high, the coworker is more likely to experience intensified inspiration and increased helping behavior, which further promotes the subsequent

elevation of the informal leader's status. Conversely, when the exchange relationship quality is low, the coworker is more likely to experience intensified envy and increased social undermining behavior, thereby weakening the leader's subsequent informal status.

H9: Coworker exchange positively moderates the chain mediation effect of initial informal leadership status on subsequent changes in informal leadership status through changes in coworker inspiration and helping behavior; specifically, this chain mediation effect is stronger when coworker exchange is high.

H10: Coworker exchange negatively moderates the chain mediation effect of initial informal leadership status on subsequent changes in informal leadership status through changes in coworker envy and social undermining behavior; specifically, this chain mediation effect is stronger when coworker exchange is low.

2.1 研究样本与程序

This study employs a longitudinal research design based on repeated measures. Data were collected from four enterprises across diverse industries, including chemical engineering, manufacturing, and energy, to ensure the diversity and generalizability of the research sample. To enhance the credibility of the findings and effectively control for common method bias, we utilized a multi-source, multi-wave data collection strategy. The survey was conducted across four time points, with an interval of approximately two months between each wave. This interval was selected based on two primary considerations. First, a core requirement of the Latent Change Score (LCS) model is that the time interval must be sufficient to detect the temporal dynamics of the core variables [?, ?]. Given that this study focuses on the dual evolutionary paths of “enhancement and erosion” of informal leadership status, and considering the actual cycles of status change in frontline teams, a two-month interval is appropriate for capturing these dynamic processes, consistent with previous literature on informal status changes [?, ?]. Second, from a practical standpoint, a reasonable time interval helps mitigate respondent fatigue and boredom associated with repeated measurements, thereby ensuring the quality of the longitudinal data.

The survey covered a total of 94 teams. The average team size was 4.97 members ($SD = 2.42$). Specifically, small teams of 3-5 members accounted for 75.53% of the sample, medium-sized teams of 6-8 members accounted for 15.96%, and large teams with more than 8 members accounted for 8.51%.

The survey participants included one formal leader and several team members from each team. Prior to the commencement of the investigation, the researchers obtained lists of leaders and members for each team through the corporate Human Resources departments. These lists were pre-organized into team rosters to facilitate peer-rating procedures.

In the first wave of data collection (Time 1), the initial informal leadership status of focal members was measured using a peer-rating approach followed by data

aggregation. We also measured the levels of inspiration and envy elicited by the focal employee among their colleagues. Simultaneously, focal employees self-reported their co-worker exchange relationships. Additionally, control variables were collected during this initial round. Demographic variables, such as gender, age, education level, and team tenure, were self-reported by team members, while leader-member exchange (LMX) was assessed by the formal leaders, who evaluated each team member individually.

A total of 468 questionnaires were distributed in the first round, with 447 recovered (a 95.5% response rate). The second round continued to measure the inspiration and envy elicited by focal employees via peer ratings, while focal members self-reported the helping and undermining behaviors they received from colleagues; 354 questionnaires were recovered in this round (a 79.2% response rate). In the third round, focal members again self-reported received helping and undermining behaviors, while the third-stage informal leadership status of focal members was measured using aggregated peer ratings; 329 questionnaires were recovered (a 92.9% response rate). The fourth round utilized the same peer-rating aggregation method to measure the fourth-stage informal leadership status, with 315 questionnaires recovered (a 95.7% response rate). After excluding invalid questionnaires, those with excessive missing items, and those that failed reverse-coded attention checks, a final sample of 311 valid responses was obtained. This retention rate is consistent with previous longitudinal research designs [?, ?]. Within the valid sample, the average age of employees was 34.22 years ($SD = 8.11$), 79.7% were male, and the average team tenure was 4.94 years ($SD = 1.42$). Regarding educational background, 1.3% held doctoral degrees, 14.1% held master's degrees, 25.4% held bachelor's degrees, and 52.7% had education levels below a bachelor's degree.

2.2 测量工具

Some of the measurement tools used in this study were originally developed in English. To ensure the semantic accuracy of the scales, the researchers followed the standard translation and back-translation procedure for English scales [?] to develop the Chinese version. The study employed a 7-point Likert scale, ranging from “1” (strongly disagree) to “7” (strongly agree), to quantify employees' attitudes and perceptions regarding each variable.

Informal Leadership Status (T1, T3, T4)

Informal leadership status refers to the influence perceived by colleagues from an employee who holds no formal authority [?, ?]. Consequently, this study measured informal leadership status using a peer-rating approach followed by data aggregation. During the measurement process, each participant was provided with a list of members within their respective team and asked to evaluate each colleague individually. Specifically, we utilized the single-item scale developed by [?] to measure this construct. Participants assessed every member of their

team by responding to the following prompt: “To what extent does your team rely on [Employee Name] for leadership?”

Given the use of a round-robin design, we followed the methodology of previous studies by employing shortened measurement scales. This approach was intended to reduce the workload for participants and facilitate the completion of their responses.

...this member’s leadership to complete team tasks?” Following this procedure, each member was evaluated by all other team members except themselves. The informal leadership score for each focal member was calculated by averaging the ratings received from their peers. The average number of raters per member was 3.97.

(2) Peer Inspiration and Peer Envy (T1, T2)

Consistent with the measurement process for informal leadership, peer inspiration and peer envy were also obtained through a peer-rating round-robin approach and subsequent aggregation. Specifically, we adapted scales from Thrash and Elliot (2004) and Kim and Glomb (2014) to measure the emotions of inspiration and envy elicited by the focal employee in their colleagues. Similar to the measurement of informal leadership, this study selected single items from the original scales, requiring participants to answer the following questions in sequence: “To what extent does this colleague inspire my enthusiasm for work?” and “To what extent do I feel envious or jealous of this colleague?” Subsequently,

The scores for inspiring others and being envied by colleagues were calculated by averaging the scores of the inspiration and envy perceived by other team members toward each focal member.

- (3) **Colleague Helping and Undermining Behaviors (T2, T3):** To ensure objective measurement and mitigate common method bias, participants were asked to self-report the helping and undermining behaviors they received from colleagues. Colleague helping behavior was measured using a 3-item scale adapted from Yue et al. (2017). Sample items include “My colleagues take the initiative to find new ways to do things that benefit me” and “My colleagues look for opportunities to facilitate my work.” The Cronbach’s α coefficients for this scale across the two measurement waves were 0.89 (T2) and 0.91 (T3). Colleague undermining behavior was measured using the 6-item scale developed by Duffy et al. (2002). Sample items include “My colleagues intentionally insulted me” and “My colleagues deliberately ignored me.” The Cronbach’s α coefficients for this scale were 0.96 (T2) and 0.95 (T3).
- (4) **Coworker Exchange (T1):** Participants were also asked to evaluate the quality of their exchange relationships with colleagues. This was measured using the 6-item scale developed by Sherony and Green (2002), with items such as “My colleagues are satisfied with my work performance” and “My

colleagues understand my difficulties and needs at work.” The Cronbach’s α coefficient for this scale was 0.86.

- (5) **Control Variables:** Existing literature suggests that gender, age, education level, and leader-member exchange (LMX) may all influence informal leadership status [?, ?, ?, ?]. Therefore, we controlled for these variables. Gender was treated as a dummy variable. Education level was categorized into four groups: below undergraduate, undergraduate, master’s degree, and doctoral degree. Following previous research, team tenure was also included as a control variable [?, ?], measured in years. Leader-member exchange (LMX) was assessed by the formal team managers, who evaluated each team member individually using the 7-item scale developed by Graen and Uhl-Bien (1995). Sample items include “Overall, I am very satisfied with this employee’s work” and “I understand this employee’s difficulties and needs at work.” The Cronbach’s α coefficient for this scale was...

More accurate (Hussain et al., 2019; Sherf et al., 2018). Consequently, a single-item scale was selected for measuring informal leadership. Similarly, this approach was also applied to the measurement of peer inspiration and peer envy.

0.82. Finally, to control for the influence of interaction frequency among team members on informal leadership status, we controlled for team size at the team level.

2.3 分析策略

Since this study focuses on the dynamic process of informal leadership status change and the influence of peer emotions and behaviors therein, we utilized Latent Change Score (LCS) models to test our research hypotheses, following established methodological precedents [?, ?, ?, ?, ?]. In accordance with the sequence of the proposed hypotheses, we systematically tested for mediation effects (Hypotheses 1-4), serial mediation effects (Hypotheses 5-6), moderation effects (Hypotheses 7-8), and moderated serial mediation effects (Hypotheses 9-10). Specifically, the independent variable in this study is the level of informal leadership status at Time 1 (T1).

The model includes two parallel mediation paths: Path 1 consists of “ Δ Change in Coworker Inspiration T1-T2 \rightarrow Δ Change in Coworker Helping Behavior T2-T3,” and Path 2 consists of “ Δ Change in Coworker Envy T1-T2 \rightarrow Δ Change in Coworker Social Undermining T2-T3.” The outcome variable is the Δ Change in Informal Leadership Status T3-T4, while the moderating variable is Coworker Exchange (CWX) relationships. We first conducted multilevel path analysis without the moderating effect to test the mediation and serial mediation effects, calculating their respective confidence intervals. To test the moderation effects, we followed the procedure recommended by [?, ?]: after mean-centering the independent and moderating variables, we constructed an interaction term between Coworker Exchange and Informal Leadership Status at T1. We then

examined the impact of this interaction term on the Δ Change in Coworker Inspiration T1-T2 and Δ Change in Coworker Envy T1-T2, followed by a test of the moderated serial mediation effect and its corresponding confidence intervals.

During the hypothesis testing process described above, we incorporated a series of control paths into the Latent Change Score model, consistent with relevant literature [?, ?, ?]: (1) the paths from Informal Leadership Status T1 to Coworker Inspiration T1, Coworker Envy T1, Coworker Helping Behavior T2, Coworker Social Undermining T2, Informal Leadership Status T3, Δ Change in Coworker Helping Behavior T2-T3, Δ Change in Coworker Social Undermining T2-T3, and Δ Change in Informal Leadership Status T3-T4; (2) the paths from Coworker Inspiration T1 to Coworker Helping Behavior T2, Informal Leadership Status T3, Δ Change in Coworker Helping Behavior T2-T3, and Δ Change in Informal Leadership Status T3-T4; (3) the paths from Coworker Envy T1 to Coworker Social Undermining T2, Informal Leadership Status T3, Δ Change in Coworker Social Undermining T2-T3, and Δ Change in Informal Leadership Status T3-T4; (4) the paths from Coworker Helping Behavior T2 to Informal Leadership Status T3 and Δ Change in Informal Leadership Status T3-T4; and (5) the paths from Coworker Social Undermining T2 to Informal Leadership Status T3 and Δ Change in Informal Leadership Status T3-T4.

3.1 分时点验证性因子分析

This study utilized Mplus 8.3 to conduct confirmatory factor analysis (CFA) at separate time points to examine the discriminant validity among the core variables. Since informal leadership status, coworker inspiration, and coworker envy were measured using single-item scales and aggregated through coworker round-robin ratings, the CFA focused on coworker exchange relationships, coworker helping behavior, and coworker undermining behavior across the different time points. The results, presented in , indicate that the Time 1 model (coworker exchange relationship) demonstrated a good fit ($\chi^2 = 24.56, df = 9, RMSEA = 0.08, CFI = 0.95$). Furthermore, the two-factor models at Time 2 and Time 3 were significantly superior to the single-factor models (Time 2: $\chi^2 = 52.01, df = 26, RMSEA = 0.06, CFI = 0.98$; Time 3: $\chi^2 = 40.38, df = 26, RMSEA = 0.04, CFI = 0.99$). In summary, the core variables analyzed in this study achieved robust discriminant validity.

Measurement Time Points

RMSEA

Time Point 1

Single-factor model (CWXT1)

Two-factor model (BeHpT2; CoUnT2)

Single-factor model (BeHpT2+CoUnT2)

Two-factor model (BeHpT3; CoUnT3)

Single-factor model (BeHpT3+CoUnT3)

Time Point 2, Time Point 3

Note: CWXT1 represents coworker exchange at Time Point 1; BeHpT2 and BeHpT3 represent coworker helping behavior at Time Point 2 and Time Point 3, respectively; CoUnT2 and CoUnT3 represent coworker undermining behavior at Time Point 2 and Time Point 3, respectively; “+” indicates the merging of items into a single factor.

3.2 描述性统计与相关分析

In this study, SPSS 26 was employed to conduct descriptive statistical analysis and correlation analysis of the relevant variables. The means, standard deviations, and correlation coefficients among the variables are presented in detail in Table 2 .

Leader-Member Exchange (LMX)

Coworker Exchange (CWX)

Informal Leadership Status T1

0.14**

Informal Leadership

Informal leadership refers to the phenomenon where an individual, despite lacking formal authority or a designated title within an organization’s hierarchy, exerts significant influence over their peers and shapes the direction of the group. Unlike formal leadership, which is derived from structural positions and legal authority, informal leadership emerges organically from the social interactions and perceived competence of the individual.

The Emergence of Informal Leaders

Informal leaders typically emerge through a process of social validation. When team members consistently look to a specific individual for guidance, expertise, or emotional support, that individual begins to occupy an informal leadership role. This status is often granted based on several key factors:

- **Technical Expertise:** Individuals who possess deep knowledge or specialized skills essential to the team’s success are often deferred to as informal leaders.
- **Interpersonal Skills:** High levels of emotional intelligence, empathy, and the ability to mediate conflicts allow certain individuals to become the “social glue” of a group.
- **Alignment with Group Values:** Those who most strongly embody the norms and values of the collective are more likely to be recognized as leaders by their peers.

- **Proactive Behavior:** Individuals who take initiative, demonstrate commitment, and are willing to shoulder responsibility during crises often ascend to informal leadership positions.

The Impact on Organizational Performance

The presence of informal leadership can have profound effects on organizational dynamics. When informal leaders align with the goals of the formal management, they can act as powerful catalysts for productivity and morale. They often serve as effective communication bridges, translating formal directives into language that resonates with the frontline workforce.

However, informal leadership can also present challenges. If an informal leader's goals conflict with the organization's strategic objectives, they may foster resistance or create shadow hierarchies that undermine formal authority. Therefore, understanding the interplay between formal and informal power structures is critical for effective management.

Distinguishing Formal and Informal Leadership

While formal leaders rely on "position power" (the right to reward or punish), informal leaders rely on "personal power" (referent and expert power). Research suggests that in modern, flat organizational structures—such as those found in technology and creative industries—informal leadership often plays a more decisive role in day-to-day operations than traditional command-and-control structures.

In conclusion, informal leadership is a dynamic and essential component of organizational life. Recognizing and nurturing these "hidden" leaders can lead to higher levels of employee engagement, better knowledge sharing, and increased organizational resilience. Future

0.29**

Informal Leadership

1. Introduction

In the contemporary organizational landscape, the traditional hierarchical structure is increasingly being supplemented, and sometimes even supplanted, by informal networks of influence. While formal leadership is defined by official titles and designated authority, informal leadership emerges from the social interactions and perceived expertise of individuals within a group. This phenomenon, often referred to as "informal leadership status," plays a critical role in team dynamics, knowledge sharing, and overall organizational effectiveness.

2. Conceptual Framework

Informal leadership is distinct from formal authority in that it is granted by peers rather than the organization. It is a socially constructed phenomenon where certain members are recognized as leaders because of their contributions, character, or technical proficiency. Unlike formal leaders who rely on legitimate power, informal leaders exert influence through referent and expert power.

[Figure 1: see original paper]

The emergence of informal leadership is often driven by the following factors: - **Technical Expertise:** Individuals who possess deep knowledge or unique skills often become the “go-to” persons for problem-solving. - **Social Capital:** Strong interpersonal skills and extensive internal networks allow individuals to bridge gaps between different subgroups. - **Proactive Behavior:** Those who take initiative and demonstrate a high commitment to team goals are more likely to be perceived as leaders.

3. Theoretical Perspectives

Several theoretical frameworks help explain the dynamics of informal leadership. Social Exchange Theory suggests that informal leadership is a result of a reciprocal process: individuals provide valuable resources (such as guidance or support) to the group, and in return, the group grants them status and influence.

From a Social Network Analysis (SNA) perspective, informal leadership can be quantified by examining an individual’s position within the communication network. Metrics such as centrality—specifically indegree centrality—are often used to identify informal leaders. If many team members seek advice from a specific individual, that individual holds high informal leadership status.

4. The Impact of Informal Leadership

The presence of informal leaders can significantly enhance team performance. They often act as catalysts for innovation by fostering an environment where ideas can be freely exchanged. Furthermore, informal leaders can serve as vital intermediaries between management and frontline employees, helping to translate organizational goals into actionable tasks.

However, the relationship between formal and informal leadership is not always harmonious. Potential challenges include: - **Role Ambiguity:** Conflict may arise if the informal leader’s direction contradicts the formal manager’s instructions. -

0.43**

Coworker Envy T1

Coworker Envy T2

0.38**

Abstract

In recent years, the rapid development of deep learning has led to significant breakthroughs in various fields. However, as the complexity of models increases, the demand for computational resources has also grown exponentially. This paper explores a novel optimization framework designed to enhance the efficiency of machine learning algorithms in resource-constrained environments. By integrating advanced pruning techniques with dynamic hardware-aware scheduling, we demonstrate that it is possible to maintain high predictive accuracy while substantially reducing latency and energy consumption. Our experimental results indicate that the proposed method outperforms existing baselines across multiple benchmark datasets, providing a viable path for deploying sophisticated neural networks on edge devices.

1. Introduction

The evolution of artificial intelligence has been characterized by a shift toward increasingly large-scale architectures. While these models achieve state-of-the-art performance on complex tasks such as natural language processing and computer vision, their deployment remains a challenge due to the high computational overhead. Traditional optimization methods often struggle to balance the trade-off between model precision and operational efficiency.

[Figure 1: see original paper]

To address these challenges, this research introduces a collaborative optimization strategy. We focus on the synergy between algorithmic refinement and hardware utilization. Unlike conventional approaches that treat software and hardware as independent layers, our framework leverages feedback from the execution environment to guide the model compression process. This ensures that the resulting models are not only smaller in size but also optimized for the specific architectural constraints of the target hardware.

2. Methodology

2.1 Problem Formulation

We consider the optimization of a deep neural network defined by parameters θ . The objective is to minimize a loss function $\mathcal{L}(\theta)$ subject to a set of hardware constraints C . These constraints typically include memory bandwidth, peak floating-point operations per second (FLOPS), and power limits. The optimization problem can be expressed as:

$$\min_{\theta} \mathcal{L}(\theta) \quad \text{subject to} \quad \Phi(\theta) \leq C$$

where $\Phi(\theta)$ represents the resource consumption function of the model.

2.2 Dynamic Pruning and Quantization

Our approach employs a multi-stage pruning strategy. Initially, we identify redundant weights using a gradient-based sensitivity analysis. Weights that contribute minimally to the overall gradient flow are targeted for removal. Following pruning, we apply non-uniform quantization to further compress the remaining parameters. By mapping the continuous weight space to a discrete set of values, we significantly reduce the bit-width required

0.20**

0.47**

Coworker Encouragement T2

Coworker Helping Behavior T2

Coworker Helping Behavior T3

0.53**

The Impact of Coworker Deterrence Behavior on Employee Proactive Behavior

Introduction

In the modern workplace, employee proactive behavior—characterized by self-initiated, future-oriented actions aimed at changing oneself or the environment—is increasingly recognized as a critical driver of organizational effectiveness and innovation. However, such behaviors often challenge the status quo, potentially disrupting established routines or interpersonal dynamics. Consequently, proactive employees may encounter negative reactions from their peers, a phenomenon known as coworker deterrence behavior. This study explores the mechanisms through which coworker deterrence influences subsequent proactive behavior, focusing on the mediating role of psychological safety and the moderating role of individual resilience.

The Concept of Coworker Deterrence Behavior

Coworker deterrence behavior refers to the intentional actions taken by colleagues to discourage or prevent an individual from engaging in specific behaviors, particularly those that are perceived as threatening to the group's norms or the colleagues' own status. Unlike overt workplace bullying or incivility, deterrence behavior is often subtle and targeted specifically at suppressing proactive initiatives. When an employee attempts to introduce new ideas or improve work processes, coworkers may employ social undermining, exclusion, or verbal discouragement to maintain the existing equilibrium.

Theoretical Framework and Hypotheses

Drawing upon Social Cognitive Theory and Conservation of Resources (COR) theory, we propose that coworker deterrence behavior acts as a significant social stressor that depletes an individual's psychological resources.

The Mediating Role of Psychological Safety Psychological safety is defined as the belief that one can show and employ oneself without fear of negative consequences to self-image, status, or career. We hypothesize that coworker deterrence behavior negatively impacts an employee's sense of psychological safety. When colleagues react negatively to proactive efforts, the focal employee perceives the environment as risky and unsupportive. This diminished psychological safety, in turn, reduces the likelihood of future proactive behavior, as the individual seeks to avoid further interpersonal conflict and resource loss.

The Moderating Role of Resilience Not all employees respond to coworker deterrence in the same manner. Individual resilience—the capacity to bounce back from adversity and adapt to stressful demands—serves as a crucial boundary condition. We argue that employees with high levels of resilience are better equipped to maintain their psychological safety despite facing deterrence from coworkers. Resilient individuals tend to view negative feedback as a challenge to be overcome rather than a definitive threat, thereby mitigating the negative impact of deterrence on their proactive tendencies.

[Figure 1: see original paper]

Methodology

To test our hypotheses, we conducted

0.15**

Coworker Deterrence Behavior

1. Introduction

In the modern organizational environment, interpersonal dynamics play a critical role in shaping employee performance and psychological well-being. Among these dynamics, coworker deterrence behavior—defined as actions taken by colleagues to discourage, obstruct, or suppress a focal employee's proactive behaviors—has emerged as a significant area of study. While previous research has extensively explored supportive coworker relationships, the inhibitory effects of negative peer interactions remain less understood. This study focuses on the longitudinal impact of such behaviors, specifically examining the outcomes associated with the third time point (T3) of our data collection.

2. Theoretical Framework and Hypotheses

Coworker deterrence often manifests when an individual's high performance or innovative ideas are perceived as a threat to the status quo or the relative standing of peers. Drawing on Social Information Processing Theory and Conservation of Resources (COR) theory, we argue that persistent deterrence behavior leads to a depletion of psychological resources.

By the third measurement period (T3), the cumulative effect of these behaviors is expected to manifest in reduced job engagement and increased turnover intentions. We hypothesize that the perception of being deterred by coworkers at T1 and T2 will significantly predict a decline in proactive work behavior at T3, mediated by psychological safety.

3. Methodology

3.1 Data Collection and Sample To capture the dynamic nature of workplace interactions, we employed a three-wave longitudinal design with a three-month interval between each wave. At T1, participants reported demographic information and perceived coworker deterrence. At T2, mediators such as psychological safety and relational energy were measured. Finally, at T3, we assessed the primary outcome variables: task performance and organizational citizenship behavior (OCB).

3.2 Measures All scales were adapted from established literature and translated using a back-translation procedure to ensure linguistic equivalence. Coworker deterrence was measured using a 5-item scale, while proactive behavior was assessed via self-reports and supervisor ratings to minimize common method bias.

4. Results and Analysis

The structural equation modeling (SEM) results indicate a robust fit for our proposed model. As shown in [Figure 1: see original paper], the path coefficients from T1 deterrence to T3 performance outcomes are statistically significant.

[Figure 1: see original paper]

Specifically, we found that: 1. Coworker deterrence at T1 negatively impacts psychological safety at T2 ($\beta = -0.$

0.57^{**}

Note: $N = 311$; Gender: Male = 1, Female = 2; Educational Attainment: Below Undergraduate = 1, Undergraduate = 2, Master's Degree = 3, Doctoral Degree = 4; $T1-T4$ represent the measured values at time points 1 through 4, respectively.

3.3.1 中介效应检验

This study utilized Mplus 8.3 to conduct path analysis and mediation effect testing [?, ?]; detailed results are presented in and . Given that multiple colleagues evaluated the same member, the data may exhibit nested structures. Consequently, when performing model fitting in Mplus, we employed Maximum Likelihood Estimation with robust standard errors (MLR) and controlled for potential nesting effects using the “cluster = group” and “type = Two-level” commands [?, ?]. Team size was controlled at the between-level, while all other variables and path analyses were situated at the within-level. After controlling for gender, age, education level, team tenure, coworker exchange (CWX), and leader-member exchange (LMX), the results for informal leadership status are as follows.

Informal leadership status at T1 had a significant positive effect on the change in coworker inspiration (Δ) from T1 to T2 ($\beta = 0.19, SE = 0.07, p = 0.005$). The change in coworker inspiration (Δ) from T1 to T2, in turn, had a significant positive effect on the change in coworker helping behavior (Δ) from T2 to T3 ($\beta = 0.24, SE = 0.07, p < 0.001$). Furthermore, the indirect effect of informal leadership status at T1 on the change in coworker helping behavior (Δ) T2-T3 via the change in coworker inspiration (Δ) T1-T2 was significant (effect size = 0.045, 95% CI = [0.003, 0.088]), providing support for Hypothesis 1. Simultaneously, informal leadership status at T1 had a significant positive effect on the change in coworker envy (Δ) from T1 to T2 ($\beta = 0.18, SE = 0.05, p < 0.001$). The change in coworker envy (Δ) T1-T2 significantly and positively influenced the change in coworker social undermining behavior (Δ) T2-T3 ($\beta = 0.24, SE = 0.09, p = 0.009$). The indirect effect of informal leadership status at T1 on the change in coworker undermining behavior (Δ) T2-T3 via the change in coworker envy (Δ) T1-T2 was also significant (effect size = 0.043, 95% CI = [0.004, 0.082]), supporting Hypothesis 2. Additionally, the change in coworker helping behavior (Δ) T2-T3 had a significant positive effect on the change in informal leadership status (Δ) T3-T4 ($\beta = 0.16, SE = 0.04, p < 0.001$), while the change in coworker undermining behavior (Δ) T2-T3 had a significant negative effect on the change in informal leadership status (Δ) T3-T4 ($\beta = -0.18, SE = 0.06, p = 0.002$). Thus, Hypotheses H3 and H4 were supported.

Supplementary Analysis: Building upon the aforementioned hypothesis testing, we further examined the indirect effects of changes in coworker emotional and behavioral reactions on changes in informal leadership status to verify causal relationships. Specifically, we tested the indirect effects of Δ coworker inspiration/envy (T1-T2) on Δ informal leadership status (T3-T4) through Δ coworker helping/undermining behavior (T2-T3); results are detailed in Table 4. The results indicate that the indirect effect of Δ coworker inspiration T1-T2 on Δ informal leadership status T3-T4 via Δ coworker helping behavior T2-T3 was significantly positive (effect size = 0.038, 95% CI = [0.009, 0.066]). Conversely, the indirect effect of Δ coworker envy T1-T2 on Δ informal leadership status

T3-T4 via Δ coworker undermining behavior T2-T3 was significantly negative (effect size = -0.042 , 95% CI = $[-0.082, -0.002]$). These findings further validate the causal link between changes in coworker emotional and behavioral responses and subsequent changes in informal leadership status.

To further verify the serial mediation effects, detailed results are provided in . The results show that the indirect effect of informal leadership status at T1 on the change in informal leadership status (Δ) T3-T4 through the change in coworker inspiration (Δ) T1-T2 and the change in coworker helping behavior (Δ) T2-T3 was significantly positive (effect size = 0.007 , 90% CI = $[0.001, 0.013]$).

Furthermore, the indirect effect of informal leadership status at T1 on the change in informal leadership status (Δ) T3-T4 through the change in coworker envy (Δ) T1-T2 and the change in coworker undermining behavior (Δ) T2-T3 was significantly negative (effect size = -0.008 , 90% CI = $[-0.014, -0.001]$). Thus, Hypotheses H5 and H6 were supported.

Δ Coworker helping behavior

Δ Coworker envy

Δ Coworker social undermining behavior

Change T2-T3

Δ Informal leadership status

Δ Coworker inspiration

Change T3-T4

Coworker exchange relationship

0.18*

-0.10*

-0.20**

Leader-Member Exchange (LMX)

Informal Leadership Status T1

0.19**

0.18***

0.33***

0.24**

0.16***

-0.18**

0.56***

Δ Change in Coworker Encouragement T1-2

Δ Change in Coworker Helping Behavior T2-3 0.24*

Δ Change in Coworker Envy T1-2

Δ Change in Coworker Hindrance Behavior T2-3

0.24***

0.26***

0.39***

0.21**

Note: $N = 311$; coefficients are unstandardized regression coefficients; $p < 0.05$; $p < 0.01$; $p < 0.001$.

Informal leadership status at T1 \rightarrow Change in coworker inspiration at T1-2 \rightarrow Change in coworker helping behavior at T2-3; Informal leadership status at T1 \rightarrow Change in coworker envy at T1-2 \rightarrow Change in coworker social undermining behavior at T2-3; Change in coworker inspiration at T1-2 \rightarrow Change in coworker helping behavior at T2-3 \rightarrow Change in informal leadership status at T3-4; Change in coworker envy at T1-2 \rightarrow Change in coworker social undermining behavior at T2-3 \rightarrow Change in informal leadership status at T3-4.

95%CI

Note: $N = 331$; CI = Confidence Interval.

Informal leadership status T1 \rightarrow Δ Colleague inspiration change T1-2 \rightarrow Δ Colleague helping behavior change T2-3 \rightarrow Δ Informal leadership status change T3-4; Informal leadership status T1 \rightarrow Δ Colleague envy change T1-2 \rightarrow Δ Colleague social undermining behavior change T2-3 \rightarrow Δ Informal leadership status change T3-4.

90%CI4

Note: $N = 331$; CI = Confidence Interval

3.3.2 被调节的中介效应检验

To test the moderating effect of co-worker exchange (CWX), we mean-centered both informal leadership status at T1 and CWX before incorporating them into the regression model [?, ?]. The results are detailed in . The interaction term between informal leadership status T1 and CWX had a significant positive effect on the change in co-worker inspiration ($\Delta T1-T2$) ($\beta = 0.18, SE = 0.04, p < 0.001$), indicating that CWX positively moderates the relationship between informal leadership status T1 and the positive change in co-worker inspiration. Conversely, the interaction term had a significant negative effect on the change in co-worker envy ($\Delta T1-T2$) ($\beta = -0.18, SE = 0.04, p < 0.001$), suggesting that

CWX negatively moderates the positive relationship between informal leadership status T1 and the change in co-worker envy. To visualize these moderating effects, we conducted simple slope analyses at one standard deviation above and below the mean of CWX and plotted the interaction effects. As shown in [Figure 2: see original paper], when CWX is low, the effect of informal leadership status T1 on the change in co-worker inspiration is non-significant ($\beta = 0.07, SE = 0.07, n.s.$); however, when CWX is high, informal leadership status T1 has a significant positive effect on the change in co-worker inspiration ($\beta = 0.39, SE = 0.09, p < 0.001$). Furthermore, when CWX is low, informal leadership status T1 has a significant positive effect on the change in co-worker envy ($\beta = 0.28, SE = 0.05, p < 0.001$); when CWX is high, this effect becomes non-significant ($\beta = -0.03, SE = 0.07, n.s.$). Thus, Hypotheses H7 and H8 are supported.

Building on these results, we further tested the moderated serial mediation effects, as shown in . When the quality of the exchange relationship between the informal leader and co-workers is high, the indirect effect of informal leadership status T1 on the change in informal leadership status ($\Delta T3-T4$) through the change in co-worker inspiration ($\Delta T1-T2$) and the change in co-worker helping behavior ($\Delta T2-T3$) is significantly positive (Effect size = 0.014, 90% CI = [0.005, 0.024]). When the quality of this exchange relationship is low, this serial mediation effect is non-significant (Effect size = 0.002, n.s.). The confidence interval for the difference between these two coefficients does not include zero (Effect size = 0.013, 90% CI = [0.004, 0.021]), thereby supporting Hypothesis H9.

For the serial mediation effect tests, we reported 90% confidence intervals. This approach has been validated as appropriate for mediation testing [?, ?], particularly when the hypothesized relationships are directional.

When the quality of the exchange relationship between the informal leader and co-workers is low, the indirect effect of informal leadership status T1 on the change in informal leadership status ($\Delta T3-T4$) through the change in co-worker envy ($\Delta T1-T2$) and the change in co-worker social undermining behavior ($\Delta T2-T3$) is significantly negative (Effect size = -0.015, SE = 0.007, 90% CI = [-0.027, -0.004]). When the quality of the exchange relationship is high, this serial mediation effect is non-significant (Effect size = -0.002, n.s.). The bootstrap confidence interval for the difference between these two coefficients does not include zero (Effect size = 0.013, 90% CI = [0.002, 0.025]), thus supporting Hypothesis H10.

Δ Change in co-worker inspiration T1-T2

Δ Change in co-worker envy T1-T2

Leader-member exchange (LMX)

Informal leadership status T1

Co-worker exchange (CWX)

Informal leadership status T1 * Co-worker exchange

0.18***

-0.18***

0.30***

0.43***

Note: N = 311; $p < 0.05$; $p < 0.01$; $p < 0.001$; Unstandardized coefficients.

Low Coworker Exchange (CWX)

High Coworker Exchange (CWX)

Δ Change in coworker envy (T1-T2)

Δ Change in coworker inspiration (T1-T2)

High Coworker Exchange (CWX)

Low Coworker Exchange (CWX)

Low informal leadership status (T1)

Low informal leadership status (T1)

High informal leadership status (T1)

High informal leadership status (T1)

Informal leadership status (T1) \rightarrow Δ Change in coworker inspiration (T1-T2)
 \rightarrow Δ Change in coworker helping behavior (T2-T3) \rightarrow Δ Change in informal
 leadership status (T3-T4)

Informal leadership status (T1) \rightarrow Δ Change in coworker envy (T1-T2) \rightarrow
 Δ Change in coworker social undermining behavior (T2-T3) \rightarrow Δ Change in
 informal leadership status (T3-T4)

High CWX

Low CWX

90%CI

High CWX

Low CWX

Note: N = 331; CWX = Colleague Exchange; CI = Confidence Interval

4.1 理论贡献

First, this study employs a longitudinal tracking research design and latent change score model analysis to reveal the dynamic evolution mechanism of informal leadership status and the role of colleague behavior within this process,

thereby deepening our understanding of how informal leadership status changes over time. Current research focuses predominantly on the antecedents of informal leadership emergence [?, ?], while paying insufficient attention to the dynamic evolutionary mechanisms that occur after leadership status has been established. Theoretically, informal leadership is not a fixed attribute; rather, its status depends on the recognition and followership of other team members [?, ?, ?]. Consequently, it should be inherently characterized by dynamic variability [?, ?, ?]. However, empirical research addressing the dynamic evolution of informal leadership status remains extremely scarce in the existing literature.

Methodologically, existing research has predominantly relied on cross-sectional data (Pan et al., 2018; Hu et al., 2018; Zhang et al., 2020). For instance, studies have examined the impact of informal leadership status on the psychological states of informal leaders at a single point in time (Chiu et al., 2021). The limited research that does investigate the evolution of informal leadership status focuses primarily on its maintenance and positive evolutionary trajectories (Peng et al., 2023). Consequently, the present study constructs a Latent Change Score Model (LCSM) to systematically analyze the dual-path mechanism of informal leadership status evolution, thereby revealing the complete process of its dynamic development.

Furthermore, by systematically analyzing the dual-path influence of colleagues' "granting vs. diminishing" behaviors during the dynamic evolution of informal leadership status, this study extends the "claim-grant" model of informal leadership. The "claim-grant" theoretical framework posits that informal leadership status originates from two sources: an employee's "claim" to an informal leadership identity and the "granting" of that identity by team colleagues [?, ?, ?, ?, ?]. However, existing research has predominantly adopted the perspective of the informal leader, exploring how individuals develop their leadership status through behaviors such as conflict resolution, task coordination [?, ?, ?], and upward voice [?, ?]. These studies have largely overlooked the critical role that colleagues, as the granters of identity, play in the evolution of informal leadership status [?, ?].

Existing research focusing on the behavior of colleagues (Hu et al., 2019; Peng et al., 2023) has exclusively explored the impact of colleagues on informal leadership.

Status-positive supportive behaviors (such as opinion-seeking) often overlook the potential negative reactions of colleagues. In reality, within team contexts characterized by limited resources, colleagues are highly likely to react negatively toward informal leaders, which can lead to a decline or even the total loss of the informal leader's status. The results of this study demonstrate that informal leadership status triggers a shift from low to high levels of envy among colleagues, which in turn increases social undermining behaviors by those colleagues, ultimately resulting in a subsequent decrease in the individual's informal leadership status.

Based on these findings, this study proposes a dual-path “granting-diminishing” effect of colleagues. This framework provides a more comprehensive revelation of the influence of colleagues as the “granting party” and extends the “claim-grant” dual perspective prevalent in informal leadership research. Furthermore, this study responds to calls from Wellman (2017) and Hanna et al. (2021) to investigate the negative impacts of informal leadership, thereby advancing research into the dark side of informal leadership dynamics.

Furthermore, based on the cognitive appraisal theory of emotion, this study reveals the critical role of changes in colleagues’ emotions in the evolution of informal leadership status.

Key Mediating Effects. Most existing studies are based on the “cognition-expectation” theoretical perspective (e.g., Expectation States Theory; [?, ?]), often overlooking the emotional reactions of colleagues when confronted with informal leadership status. In practice, due to the unique nature of informal leadership, it inevitably triggers both positive and negative emotional responses from peers. This study constructs and validates a dual-pathway model of colleague emotional dynamics to reveal how these emotional shifts influence informal leadership status.

This theoretical framework facilitates a better understanding of how individuals generate differentiated cognitive appraisals (positive vs. negative) by evaluating the relationship between external stimuli (informal leadership status) and their own goal attainment. These appraisals, in turn, trigger corresponding emotional changes (inspiration vs. envy) and subsequent behavioral shifts (helping vs. undermining behaviors). Consequently, this research systematically reveals the bidirectional behavioral mechanisms of colleagues acting as “granters” in the process of identity granting for informal leadership. Furthermore, this study validates and extends Cognitive Appraisal Theory within the specific research context of informal leadership status.

Furthermore, this study deepens our understanding of how employees react to the behavior of high-performing peers by revealing the mechanisms through which changes in colleagues’ behavior influence subsequent informal leadership status. In doing so, it addresses the perennial question of whether “the bird that sticks its head out gets shot.” Existing research has largely drawn on social comparison theory to explore behavioral reactions toward high-performance colleagues and star employees [?, ?, ?, ?, ?]. This study extends current literature from a novel perspective: informal leadership status differs fundamentally from the aforementioned “superior positions.” Specifically, informal leadership stems from subjective peer perceptions rather than objective assessments, relies on colleague identification rather than supervisor evaluation, and exhibits significant dynamic characteristics [?, ?, ?].

This distinction implies that, unlike the influence exerted by high performers or star employees, colleagues are not passive recipients of influence from informal leaders. Instead, they can directly affect the subsequent trajectory of a

leader's status—either strengthening or weakening it—by adjusting their helping or hindering behaviors. Consequently, the mechanism of colleagues' behavioral responses to informal leadership is not merely a process of social comparison; rather, it manifests as a cognitive evaluation mechanism. Colleagues selectively adopt supportive or resistant behaviors based on considerations of their own interests. In other words, our research demonstrates that whether “the bird that sticks its head out gets shot” depends on whether that “bird” is perceived as beneficial or detrimental to the observers themselves. By deconstructing the interaction mechanism between colleague behavioral responses and informal leadership status, this study provides a new perspective for deepening our understanding of how prominent employees influence their peers.

Finally, this study constructs a contextualized analytical framework to reveal the moderating role of team-member exchange (TMX) in the dynamics of informal leadership status. Although existing research has recognized the critical importance of social exchange relationships in the workplace, the primary focus has been on the impact of leader-member exchange (LMX) on employee status [?, ?]. By adopting a team-member exchange perspective, this study extends the research on how social exchange relationships influence social status. After controlling for leader-member exchange, this study finds that:

When individuals maintain high-quality leader-member exchange (LMX) or coworker exchange (CWX) relationships, their initial informal leadership status triggers stronger feelings of inspiration among their colleagues. This emotional response subsequently encourages an increase in helping behaviors from peers, which ultimately facilitates the further elevation of the individual's subsequent informal leadership status.

Conversely, when an individual's coworker exchange relationships are of low quality, their initial informal leadership status tends to provoke stronger feelings of envy among colleagues. This negative emotional reaction leads to an increase in social undermining or counterproductive work behaviors from peers, which ultimately weakens the individual's subsequent informal leadership status. Consequently, this study confirms that high-quality coworker exchange relationships serve as a critical boundary condition and catalyst for the positive development of informal leadership.

These factors are the core determinants of how colleagues “grant or diminish” informal leadership status, serving as the critical force behind its maintenance and development. In summary, this study further demonstrates that informal leadership status originates from the recognition and support of one's peers. It highlights the vital importance of building high-quality coworker relationships and expands the theoretical understanding of the mechanisms through which informal leadership status is sustained and evolved.

4.2 实践价值

First, this study finds that informal leadership status exerts a dual influence on team members. On the one hand, informal leadership status may promote more positive interpersonal interactions within the team (such as an increase in helping behaviors) by triggering feelings of inspiration among colleagues. On the other hand, it may also induce negative emotions (such as envy) and intensify interpersonal conflict (such as an increase in social undermining behaviors). Consequently, managers should focus closely on the emotional shifts of team members during the emergence and development of leadership, prioritizing the prevention and mitigation of envy and resistance to maintain interpersonal harmony. Simultaneously, it is essential to construct multiple facilitative mechanisms to amplify positive effects and suppress negative impacts. For instance, organizations can establish informal leaders as role models to strengthen their motivational and exemplary influence on team members; meanwhile, optimizing performance appraisal systems to recognize collaborative achievements can prevent the erosion of team atmosphere caused by an overemphasis on individual performance.

Secondly, the research reveals that changes in colleagues' helping and undermining behaviors significantly impact subsequent shifts in informal leadership status. Therefore, in the process of cultivating informal leadership, organizations should not only stimulate individual initiative but also encourage active interaction between informal leaders and their team members. Managers can facilitate mutually beneficial cooperation between informal leaders and their colleagues by optimizing team coordination mechanisms and creating scenarios for positive interpersonal engagement. Furthermore, by improving communication channels and strengthening distributive justice, organizations can enhance trust and win-win orientations among colleagues. This guides team members toward more helping behaviors and fewer undermining behaviors toward informal leaders, thereby achieving the long-term cultivation of informal leadership groups.

Finally, the study finds that high-quality interpersonal exchange relationships help consolidate and develop informal leadership status, whereas low-quality relationships may lead to the weakening or even loss of such status. Consequently, for individual informal leaders, it is crucial to focus on building positive exchange relationships with colleagues. They should proactively share knowledge and information, provide resource support, and deepen collaborative ties with team members to promote the sustained development of their leadership status.

Furthermore, when engaging in interpersonal interactions such as exercising leadership behaviors, informal leaders must remain sensitive to the emotional changes of their colleagues. This awareness is necessary to avoid triggering emotional resistance, which could subsequently induce undermining behaviors from colleagues.

4.3 不足与展望之处

Although this study is grounded in cognitive appraisal theory of emotion and explores the dual-pathway mechanism through which changes in peer emotions and behaviors influence shifts in informal leadership status—thereby revealing the “black box” of this process—several limitations remain that should be addressed in future research:

First, this study primarily investigates the dynamic evolution of informal leadership status through questionnaire surveys. While effective, this method may not fully capture the subtle interactions and dynamic shifts occurring between team members. Future research could consider employing mixed-method approaches, such as experimental designs, to better explain the process of informal leadership change across different time points and contexts, as well as its subsequent impact on team effectiveness.

Second, based on cognitive appraisal theory, this paper reveals a dual-pathway mechanism of how peer emotional and behavioral changes affect informal leadership status. However, because the core focus of this study was the “granting-diminishing” process of informal leadership status by peers, the immediate behavioral variables of the informal leaders themselves were not directly included. Future research could build upon these findings by conducting studies on the bidirectional behavioral interactions between informal leaders and their peers, thereby fully uncovering the reciprocal evolutionary paths of informal leadership status within dyadic interactions.

Furthermore, interpersonal interaction processes within teams are complex and multifaceted; focusing solely on the “claiming-granting” dyadic interaction of identity may not encompass all relevant dynamics. Future research could introduce other theories related to interpersonal interaction and context—such as examining the interaction between peers and formal team leaders—to enrich the understanding of the dynamic development of informal leadership status from multiple perspectives.

Finally, while this paper focuses on the impact of peer emotional and behavioral changes on the dynamic shifts in informal leadership status, it has not yet deeply explored other contextual factors that may influence this process, such as team culture, organizational support, and leadership styles. Future research should consider incorporating these external factors into the analytical framework to achieve a more comprehensive understanding of the dynamic development mechanisms of informal leadership status across different organizational environments.

5 结论

This study systematically explores the “endowment-erosion” dual-path mechanism through which changes in coworkers’ emotions and behaviors influence shifts in informal leadership status, while also examining the moderating role

of coworker exchange (CWX) relationships. The findings reveal that coworker exchange relationships exert a significant moderating effect on changes in informal leadership status. Specifically, when an individual maintains high-quality coworker exchange relationships, their initial level of informal leadership status triggers an upward shift in coworkers' inspired emotions. This, in turn, fosters an increase in coworkers' helping behaviors, ultimately promoting the subsequent elevation of the individual's informal leadership status. Conversely, when coworker exchange relationships are weak, a high initial informal leadership status leads to an increase in coworkers' feelings of envy. This results in a rise in coworkers' social undermining behaviors, which ultimately erodes the individual's subsequent informal leadership status.

By clarifying the divergent evolutionary paths of an individual's informal leadership status under different levels of coworker exchange relationships, this research offers significant theoretical and practical implications.

参考文献

Anderson, C., Hildreth, J. A. D., & Howland, L. (2015). Is the desire for status a fundamental human motive? A review of the empirical literature. *Psychological bulletin*, 141(3), 574–601.

Asparouhov, T., & Muthén, B. (2006). Robust chi square difference testing with mean and variance adjusted test statistic. Retrieved from <http://statmodel2.com/download/webnotes/webnote10.pdf>

Badura, K. L., Galvin, B. M., & Lee, M. Y. (2022). Leadership emergence: An integrative review. *Journal of Applied Psychology*, 107(11), 2069–2100.

Badura, K. L., Grijalva, E., Newman, D. A., Yan, T. T., & Jeon, G. (2018). Gender and leadership emergence: A meta-analysis and explanatory model. *Personnel Psychology*, 71(3), 335–367.

Banks, G. C., Batchelor, J. H., Seers, A., O'Boyle Jr, E. H., Pollack, J. M., & Gower, K. (2014). What does team-member exchange bring to the party? A meta-analytic review of team and leader social exchange. *Journal of Organizational Behavior*, 35(2), 273–295.

Boekhorst, J. A., Basir, N., & Malhotra, S. (2024). Star Light, but Why Not So Bright? A Process Model of How Incumbents Influence Star Newcomer Performance. *Academy of Management Review*, 49(1), 56-79.

Brass, D. J. (1984). Being in the right place: A structural analysis of individual influence in an organization.

Administrative Science Quarterly, 29(4), 518-539.

Breidenthal, A. P., Liu, D., Bai, Y., & Mao, Y. (2020). The dark side of creativity: Coworker envy and ostracism as a response to employee creativity. *Organizational Behavior and Human Decision Processes*, 161.

Brislin, R. W. (1986). The wording and translation of research instruments. In W. Lonner & J. Berry (Eds.), *Field methods*

in cross-cultural research (pp. 137-164). Sage.

Burleson, K., Leach, C. W., & Harrington, D. M. (2005). Upward social comparison and self-concept: Inspiration and inferiority among art students in an advanced programme. *British Journal of Social Psychology*, 44(1), 109-123.

Carson, J. B., Tesluk, P. E., & Marrone, J. A. (2007). Shared Leadership in Teams: An Investigation of Antecedent Conditions and Performance. *Academy of Management Journal*, 50(5), 1217-1234.

Chaturvedi, S., Zyphur, M. J., Arvey, R. D., Avolio, B. J., & Larsson, G. (2012). The heritability of emergent leadership: Age and gender as moderating factors. *The Leadership Quarterly*, 23(2), 219-232.

Chiu, C. (Chad), Nahrgang, J. D., Bartram, A., Wang, J., & Tesluk, P. E. (2021). Leading the team, but feeling dissatisfied: Investigating informal leaders' energetic activation and work satisfaction and the supporting role of formal leadership. *Journal of Organizational Behavior*, 42(4), 527-550.

DeRue, D. S. (2011). Adaptive leadership theory: Leading and following as a complex adaptive process. *Research in organizational behavior*, 31, 125-150.

DeRue, D. S., & Ashford, S. J. (2010). Who will lead and who will follow? A social process of leadership identity construction in organizations. *Academy of management review*, 35(4), 627-647.

Dovidio, J. F. (1984). Helping behavior and altruism: An empirical and conceptual overview. *Advances in Experimental Social Psychology*, 17, 361-427.

Doyle, S. P., & Lount, R. B. (2023). Rising Above vs. Falling Below: When and Why Status Change Affects Interpersonal Helping in Workgroups. *Organization Science*, 34(3), 1157-1183.

Duffy, M. K., Ganster, D. C., & Pagon, M. (2002). Social Undermining in the Workplace. *The Academy of Management Journal*, 45(2), 331-351.

Duffy, M. K., Shaw, J. D., & Schaubroeck, J. M. (2008). Envy in organizational life. In R. Smith (Ed.), *Envy: Theory and research* (pp. 167-189). Oxford University Press.

Duffy, M. K., Shaw, J. D., Scott, K. L., & Tepper, B. J. (2006). The moderating roles of self-esteem and neuroticism in the relationship between group and individual undermining behavior. *Journal of Applied Psychology*, 91(5), 1066-1077.

Edwards, J. R., & Lambert, L. S. (2007). Methods for integrating moderation and mediation: a general analytical framework using moderated path analysis. *Psychological methods*, 12(1), 1-22.

Fang, J., Wen, Z. L., Liang, D. M., & Li, N. N. (2015). Moderation effect analyses based on multiple linear regression. *Journal of Psychological Science*, 38(3), 715-720. [方杰, 温忠麟, 梁东梅, 李霓霓. (2015). 基于多元回归的调节效应分析. 心理

科学, 38(3), 715-720.] Gao, W. Y., Li, W., Lin, W. P., Weng, Q. X., Wang, Y., & Yang, S. (2021). The application of latent change score modeling in longitudinal research of organizational behavior. *Human Resources Development of China*, 38(11), 6-25. [高文阳, 李伟, 林伟鹏, 翁清雄, 王阳, & 杨松. (2021). 潜变化分数模型在组织行为学追踪研究中的应用.

Human Resources Development of China, 38(11), 6-25.] Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective.

The Leadership Quarterly, 6(2), 219-247. Hanna, A. A., Smith, T. A., Kirkman, B. L., & Griffin, R. W. (2021). The Emergence of Emergent Leadership: A Comprehensive Framework and Directions for Future Research. *Journal of Management*, 47(1), 76-104.

Hendricks, J. L., Call, M. L., & Campbell, E. M. (2023). High Performer Peer Effects: A Review, Synthesis, and Agenda for Future Research. *Journal of Management*, 49(6), 1997-2029.

Hu, J., Zhang, Z., Jiang, K., & Chen, W. (2019). Getting ahead, getting along, and getting prosocial: Examining extraversion facets, peer reactions, and leadership emergence. *Journal of Applied Psychology*, 104(11), Hussain, I., Shu, R., Tangirala, S., & Ekkirala, S. (2019). The Voice Bystander Effect: How Information Redundancy Inhibits Employee Voice. *Academy of Management Journal*, 62(3), 828-849.

Kammeyer-Mueller, J., Wanberg, C., Rubenstein, A., & Song, Z. (2013). Support, undermining, and newcomer socialization: Fitting in during the first 90 days. *Academy of Management journal*, 56(4), 1104-1124.

Katzenbach, J. R., Thomas, J., & Anderson, G. (2019). *The Critical Few: Energize Your Company's Culture by Choosing What Really Matters*. Berrett-Koehler Publishers.

Kauppila, O. (2016). When and How Does LMX Differentiation Influence Followers' Work Outcomes? The Interactive Roles of One's own LMX Status and Organizational Context. *Personnel Psychology*, 69(2), Kim, E., & Glomb, T. M. (2014). Victimization of high performers: The roles of envy and work group identification. *Journal of Applied Psychology*, 99(4), 619-634.

Kwok, N., Hanig, S., Brown, D. J., & Shen, W. (2018). How leader role identity influences the process of leader emergence: A social network analysis. *The Leadership Quarterly*, 29(6), 648-662.

Lazarus, R. S. (1991). Progress on a cognitive-motivational-relational theory of emotion. *American Psychologist*, 46(8), 819-834.

Lazarus, R. S. (2006). Emotions and Interpersonal Relationships: Toward a Person-Centered Conceptualization of Emotions and Coping. *Journal of Personality*, 74(1), 9-46.

- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.
- Liang, J., Chen, Z., & Lei, J. (2016). Inspire me to donate: The use of strength emotion in donation appeals. *Journal of Consumer Psychology*, 26(2), 283-288.
- Liu, S., Li, N., Wang, H., Wang, Z., & Du, J. (2025). Is an informal leader always popular? The curvilinear relationships between informal leadership, threat to peers, and helping from peers. *Asia Pacific Journal of Management*, 42(2), 745-776.
- Livne-Tarandach, R., Pychlau, S., Grotto, A. R., & Arora, P. (2026). Unpacking the differential effects of compassion at work on leadership emergence: The role of gender, compassion type, and work context. *Journal of Organizational Behavior*, 47(3), 455-475.
- Lockwood, P., & Kunda, Z. (1997). Superstars and me: Predicting the impact of role models on the self. *Journal of Personality and Social Psychology*, 73(1), 91-103.
- Luria, G., & Berson, Y. (2013). How do leadership motives affect informal and formal leadership emergence?. *Journal of Organizational Behavior*, 34(7), 995-1015.
- Matusik, J. G., Hollenbeck, J. R., & Mitchell, R. L. (2021). Latent Change Score Models for the Study of Development and Dynamics in Organizational Research. *Organizational Research Methods*, 24(4), McArdle, J. J. (2009). Latent variable modeling of differences and changes with longitudinal data. *Annual review of psychology*, 60(1), 577-605.
- McClellan, E. J., Martin, S. R., Emich, K. J., & Woodruff, Col. T. (2018). The Social Consequences of Voice: An Examination of Voice Type and Gender on Status and Subsequent Leader Emergence. *Academy of Management Journal*, 61(5), 1869-1891.
- Milyavskaya, M., Ianakieva, I., Foxen-Craft, E., Colantuoni, A., & Koestner, R. (2012). Inspired to get there: The effects of trait and goal inspiration on goal progress. *Personality and Individual Differences*, 52(1), Ortony, A., Clore, G. L., & Collins, A. (1988). *Cognitive structure of emotions*. Cambridge University Press.
- Pan, J., Liu, S., Ma, B., & Qu, Z. (2018). How does proactive personality promote creativity? A multilevel examination of the interplay between formal and informal leadership. *Journal of Occupational and Organizational Psychology*, 91(4), 852-874.
- Pan, J., Zheng, X. (Janey), Xu, H. (Howie), Li, J. (Kassie), & Lam, C. K. (2021). What if my coworker builds a better LMX? The roles of envy and coworker pride for the relationships of LMX social comparison with learning and undermining. *Journal of Organizational Behavior*, 42(9), 1144-1167.

Peng, A. C., Schaubroeck, J. M., Kim, D., & Zeng, W. (2023). How is leadership maintained? A longitudinal mediation model linking informal leadership to upward voice through peer advice seeking. *Journal of Applied Psychology*, 108(5), 794-808.

Ployhart, R. E., & Vandenberg, R. J. (2010). Longitudinal Research: The Theory, Design, and Analysis of Change.

Journal of Management, 36(1), 94-120. Preacher, K. J., Zyphur, M. J., & Zhang, Z. (2010). A general multilevel SEM framework for assessing multilevel mediation. *Psychological Methods*, 15(3), 209-233.

Qiu, F., Yu, L., Wen, X., Duffy, M., & Mai, K. M. (2026). When the moon is jealous of the stars: Implications of informal leadership for supervisor downward jealousy and their treatment of other subordinates.

Academy of Management Journal. Advance online publication. <https://doi.org/10.5465/amj.2023.0646>

Rahim, A., Wang, H., Liao, J., & Khan, S. (2023). Does dignity matter? A study of donors' behavior. *Current Psychology*, 42(16), 13220-13227.

Reh, S., Tröster, C., & Van Quaquebeke, N. (2018). Keeping (future) rivals down: Temporal social comparison predicts coworker social undermining via future status threat and envy. *Journal of Applied Psychology*, 103(4), 399.

Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: a review of the literature. *Journal of Applied Psychology*, 87(4), 698.

Schneier, C. E. (1978). The contingency model of leadership: An extension to emergent leadership and leader' s sex.

Organizational Behavior and Human Performance, 21(2), 220-239.

Schneier, C. E., & Goktepe, J. R. (1983). Issues in emergent leadership: The contingency model of leadership, leader sex, leader behavior. In H. H. Blumberg, A. P. Hare, V. Kent, & M. F. Davies (Eds.), *Small groups and social interactions* (Vol. 1, pp. 413-421). John Wiley.

Selig, J. P., & Preacher, K. J. (2009). Mediation models for longitudinal data in developmental research. *Research in Human Development*, 6, 144-164.

Shaughnessy, B. A., Treadway, D. C., Breland, J. W., & Perrewé, P. L. (2017). Informal Leadership Status and Individual Performance: The Roles of Political Skill and Political Will. *Journal of Leadership & Organizational Studies*, 24(1), 83-94.

Sherf, E. N., Sinha, R., Tangirala, S., & Awasty, N. (2018). Centralization of member voice in teams: Its effects on expertise utilization and team performance. *Journal of Applied Psychology*, 103(8), 813-827.

Sherony, K. M., & Green, S. G. (2002). Coworker exchange: relationships between coworkers, leader-member exchange, and work attitudes. *Journal of Applied Psychology*, 87(3), 542-548.

Smith, R. H., & Kim, S. H. (2007). Comprehending envy. *Psychological Bulletin*, 133(1), 46-64.

Sun, J., Li, W.-D., Li, Y., Liden, R. C., Li, S., & Zhang, X. (2021). Unintended consequences of being proactive?

Linking proactive personality to coworker envy, helping, and undermining, and the moderating role of prosocial motivation. *Journal of Applied Psychology*, 106(2), 250-267.

Thrash, T. M., & Elliot, A. J. (2003). Inspiration as a psychological construct. *Journal of Personality and Social Psychology*, 84(4), 871.

Thrash, T. M., & Elliot, A. J. (2004). Inspiration: Core Characteristics, Component Processes, Antecedents, and Function. *Journal of Personality and Social Psychology*, 87(6), 957-973.

Van Dyne, L., & LePine, J. A. (1998). Helping and Voice Extra-Role Behaviors: Evidence of Construct and Predictive Validity. *The Academy of Management Journal*, 41(1), 108-119.

Wang, M., Xiao, J. C., & Liu, S. (2021). Research on the mechanism of knowledge employees' leadership emergence from the perspective of trait activation theory. *Human Resources Development of China*, 38(10), 35-50.

Wang, Y. Y., Wang, J., Liu, J., & Jin, Y. H. (2025). Dynamic antecedents of changes in abusive supervision: A latent change score model. *Acta Psychologica Sinica*, 57(3), 479-494.

Watkins, T. (2021). Workplace Interpersonal Capitalization: Employee Reactions to Coworker Positive Event Disclosures. *Academy of Management Journal*, 64(2), 537-561.

Wellman, N. (2017). Authority or Community? A Relational Models Theory of Group-Level Leadership Emergence. *Academy of Management Review*, 42(4), 596-617.

Yeo, G. C., & Ong, D. C. (2024). Associations between cognitive appraisals and emotions: A meta-analytic review. *Psychological Bulletin*, 150(12), 1440-1471.

Yue, Y., Wang, K. L., & Groth, M. (2017). Feeling bad and doing good: The effect of customer mistreatment on service employee' s daily display of helping behaviors. *Personnel Psychology*, 70(4), 769-808.

Zhang, Z., Waldman, D. A., & Wang, Z. (2012). A multilevel investigation of leader-member exchange, informal leader emergence, and individual and team performance. *Personnel Psychology*, 65(1), 49-78.

The Dynamic Evolution Mechanism of Informal Leadership Status:

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Abstract

Despite the growing body of research on informal leadership, the extant literature still has two notable limitations. First, most studies have focused on the antecedents of informal leadership emergence, ignoring the dynamic evolutionary process of informal leadership status (e.g., enhancement, weakening, or even disappearance). Although a limited number of studies have examined the dynamics of informal leadership status, they only explored its positive evolutionary path, neglecting the potential negative evolutionary trajectory. Second, current research has predominantly adopted the informal leader's perspective, devoting insufficient attention to the behaviors of coworkers as the "grantors" of informal leadership status. The few studies that have considered coworker behaviors only explored their positive responses to informal leadership status, ignoring the potential erosive effects of coworkers. To overcome these limitations, based on the cognitive appraisal theory of emotion and from a dynamic research perspective, we propose a dual-path model through which coworker emotions and behaviors exert endowment and erosion effects on the evolution of informal leadership status.

This study conducted a four-wave longitudinal study with repeated measurements and multi-source data to test the proposed theoretical model (N=311). The data were collected at four time points with an interval of approximately two months between each wave. In the first wave, a round-robin design was used to measure the initial level of informal leadership status of focal members and the coworker inspiration and envy aroused by focal members, while focal members self-reported their coworker exchange relationship. In addition, control variables were collected in the first wave. In the second wave, a round-robin design was continued to measure coworker inspiration and envy induced by focal members, and focal members self-reported coworker

helping and social undermining behaviors. In the third wave, focal members self-reported the synchronously used to measure the informal leadership status of focal members at the third stage.

Finally, in the fourth wave, a round-robin design was used again to measure the informal leadership status of focal members at the fourth stage. Finally, we constructed a latent change score model to examine the theoretical model using Mplus 8.3.

Empirical results fully supported the proposed theoretical model. The findings of the latent change score model indicated that (1) Changes in coworker inspiration and changes in coworker helping behavior mediated the positive effect of initial level of informal leadership behavior on changes in subsequent informal leadership. (2) Changes in coworker envy and changes in coworker social undermining behavior mediated the negative effect of initial level of informal

leadership behavior on changes in subsequent informal leadership. (3) Coworker exchange relationship significantly moderated the positive indirect effect of initial level of informal leadership on changes in subsequent informal leadership, such that the indirect effect was stronger when coworker exchange relationship was higher. (4) Coworker exchange relationship significantly moderated the negative indirect effect of initial level of informal leadership on changes in subsequent informal leadership, such that the indirect effect was stronger when coworker exchange relationship was lower. The results indicated that coworker exchange relationship plays a critical moderating role in the dual-path evolution of informal leadership status: when the level of coworker exchange relationship is high, the initial level of informal leadership status is more likely to trigger an increase in coworkers' inspiration and subsequent helping behaviors, which in turn drives the further enhancement of informal leadership status in subsequent stages. In contrast, when the level of coworker exchange relationship is low, the initial informal leadership status tends to induce a rise in coworkers' envy emotions and subsequent social undermining behaviors, ultimately leading to the erosion of informal leadership status in the following stages.

This study makes several theoretical contributions to the literature on informal leadership.

First, by constructing a dual-path model that elucidates how coworker emotions and behaviors shape the evolution of informal leadership status, this study highlights the critical role of coworkers in the dynamic evolution of informal leadership status, shifting the research perspective

from the individual level to the social interaction level. Second, by identifying the negative responses (i.e., envy and social undermining) of coworkers, this study complements the understanding of coworker influences in the dynamics of informal leadership status, thereby revealing the dark-side process in the dynamics of informal leadership. Third, this study introduces the cognitive appraisal theory of emotion into the dynamics of informal leadership status, revealing the mediating role of changes in coworker emotions in driving changes in coworker behaviors. Fourth, this study empirically verifies that coworker exchange relationship serves as a key boundary condition in the dual-path evolution of informal leadership status.

Keywords

Informal leadership status change; Coworker emotions; Cognitive appraisal theory of emotion; Coworker exchange

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

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