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Running Head: SHARED LEADERSHIP AND TEAM CREATIVITY

Shared Leadership and Team Creativity: Examining Effects of Shared Leadership Level and Concentration and the Countervailing Mechanisms

Junfeng Wu
Associate Professor of Management
University of Texas at Dallas
Email: Junfeng.Wu@utdallas.edu

Zhen Zhang
Professor of Management
Southern Methodist University
Email: zhenzhang@smu.edu

Lynda Jiwen Song
Professor of Management
University of Leeds
Email: L.Song@leeds.ac.uk

Li Zhu
Research Associate Professor of Management
Peking University
Email: paperlizhu@nsd.pku.edu.cn

Author Note. Correspondence concerning this article should be addressed to Junfeng Wu, Naveen Jindal School of Management, University of Texas at Dallas, 800 West Campbell Road, SM43 Richardson, TX 75080, E-mail: Junfeng.Wu@utdallas.edu, or to Li Zhu, National School of Development, Peking University, No.5 Summer Palace Road, Haidian District, Beijing, China 100871, Email: paperlizhu@nsd.pku.edu.cn.

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Abstract

Integrating insights from team hierarchy literature and shared leadership research, we propose and test a model that illuminates the positive and negative team processes through which shared leadership relates to team creativity. We use a social network lens to examining both shared leadership level (indexed by team density of informal leadership ties) and shared leadership concentration (indexed by team centralization of such ties). With a sample of 136 work teams and three waves of surveys, we found that shared leadership concentration weakens the positive effect of shared leadership level on team creativity. We explicated the positive and negative mediating roles played by team information elaboration and team status conflict, respectively. Our findings show that shared leadership concentration serves as an enabler or inhibitor on which mediating mechanism is in play, such that when shared leadership concentration is higher, there is a negative indirect effect of shared leadership level on team creativity via team status conflict. In contrast, when shared leadership concentration is lower, shared leadership level has a positive indirect effect on team creativity via team information elaboration. Our work provides nuanced insights into how to maximize the potential benefits of shared leadership in enhancing team creativity.

Keywords: shared leadership; informal leadership; team processes; team creativity

Shared leadership—defined as "a team property whereby leadership is distributed among team members rather than focused on a single designated leader" (Carson et al., 2007, p. 1217)—has garnered significant interest from scholars and practitioners alike (Kozlowski et al., 2016; Pearce & Conger, 2003). In contemporary team-based work, specialized expertise is often required, thus necessitating that team members exercise leadership in applying their skills to complete tasks and address new challenges creatively (Pearce, 2004; Pearce & Manz, 2005). Therefore, shared leadership has been considered an effective approach to enhancing team creativity (i.e., the generation of novel and useful ideas by a team of employees; Shin & Zhou, 2007). The creativity of work teams is important because organizations rely on teams to tackle complex problems (Anderson et al., 2014). Seminal essays on shared leadership have proposed enhanced creativity as one of the primary consequences of shared leadership (Pearce & Conger, 2003). While a substantial portion of shared leadership research adopts ad-hoc teams without designated leaders (e.g., student teams or project-based temporary teams), recent studies have examined shared leadership in teams with formally appointed leaders, showing that shared leadership emerges in teams with formal leaders (Porter et al., 2024) and it has important implications for team creativity (Ali et al., 2020; Klasmeier & Rowold, 2020).

As a relational phenomenon that involves the mutual influences among team members (DeRue & Ashford, 2010), shared leadership is often studied using a social network approach (Carter et al., 2015; Mayo et al., 2003). This approach allows for more nuanced investigations into the dyadic ties (i.e., informal leadership influences) within all pairs of members in a team, and researchers have used the within-team amount and distributive pattern of these informal leadership ties to depict shared leadership (Carson et al., 2007; Mayo et al., 2003). The majority of prior research used the network density of informal leadership ties to capture shared

leadership (e.g., Carson et al., 2007; Chiu et al., 2016; Mathieu et al., 2015), whereas a smaller portion of prior studies adopted network centralization of such ties (DeRue et al., 2015; Small & Rentsch, 2010) as an indicator of shared leadership.

Despite the growing research on network-based shared leadership, some important questions remain unaddressed. Specifically, prior studies have used density and centralization measures interchangeably to capture shared leadership, overlooking their distinct theoretical underpinnings (D'Innocenzo et al., 2016). While informal leadership density reflects the level of informal leadership exhibited by team members, informal leadership centralization depicts the distributive pattern of informal leadership ties within the team (DeRue et al., 2015; Small & Rentsch, 2010). To accurately reflect such theoretical distinctions, we differentiate between and simultaneously examine the roles played by *shared leadership level* (as captured by density of informal leadership ties) and *shared leadership concentration* (as captured by centralization of such ties) in intact work teams. We contend that in teams with similar shared leadership levels, there may exist different distributive patterns of informal leadership—to visually demonstrate this possibility, Figure 1 displays illustrative teams. Therefore, a theoretically pertinent question that remains unaddressed is how the effect of shared leadership level may vary based on its concentration. Indeed, our knowledge of shared leadership remains incomplete if we overlook potential interactive effects of shared leadership level and concentration (D'Innocenzo et al., 2016). We aim to extend the shared leadership literature from a singular focus on its level to a dual-foci approach by jointly examining shared leadership level and concentration.

Second, two lines of research exist in the shared leadership literature. Although the majority of research on shared leadership found its positive effects (e.g., Drescher et al., 2014; Mathieu et al., 2015), some research provided evidence for potential negative effects that could

be induced by shared leadership (e.g., Krause et al., 2015; Sinha et al., 2021; Voss & Voss, 2006). Overall, past research has developed in a fragmented manner, with studies primarily focusing on either positive or negative mechanisms explaining the effects of shared leadership. Despite the insights provided, emphasizing a singular positive or negative mechanism may result in inflated attention attributed to that mechanism, prohibiting a balanced understanding of the effects of shared leadership. Therefore, the second goal of this research is to reconcile these two lines of research and provide an integrative model that sheds light on the positive and negative team processes that link shared leadership with team creativity.

Based on the team hierarchy literature, leadership influence represents a socially important dimension by which team members are ranked in a team (Anderson & Brown, 2010; Magee & Galinsky, 2008). Thus, individual members' informal leadership shapes a team's informal hierarchy, ranging from a lack of hierarchical differences when informal leadership is more evenly shared, to heightened hierarchical differences when it is dominated by a few individuals (Klein et al., 2006). Drawing on two perspectives from the team hierarchy literature, we propose two opposing team processes that link shared leadership and team creativity (Anderson & Brown, 2010; Greer et al., 2017). On the one hand, the functional view of team hierarchy suggests that there is a positive pathway from shared leadership to team creativity through information-based processes (Anderson & Brown, 2010; Greer et al., 2018). On the other hand, the conflict perspective highlights a negative channel via team conflict-enabling processes (Greer et al., 2017). We therefore argue that, depending on shared leadership concentration, shared leadership level can be differentially related to team creativity via team information elaboration (team members exchange unique information, openly discuss ideas, and integrate perspectives and ideas; Homan et al., 2007) and via team status conflict (disputes over

team members' relative status in the team's social hierarchy; Bendersky & Hays, 2012)— two team mechanisms that play a crucial role in affecting team creativity (Hoever et al., 2012; Lee et al., 2018).

Our research aims to make two contributions to the shared leadership literature. First, by clarifying and differentiating the conceptual meanings between shared leadership level and concentration, we examine their interactive effects on team creativity. In doing so, we provide a more holistic examination of shared leadership and underscore that the effect of shared leadership level is altered by its concentration. Second, drawing on insights from the team hierarchy literature, we simultaneously examine both positive and negative team processes that translate shared leadership into team creativity. In addition to demonstrating a dual-pathway model involving two countervailing mechanisms of team information elaboration and status conflict, our interactive approach enables us to provide nuanced insights on when the positive or negative mechanism is strengthened or weakened. Departing from prior research that paints a rosy view of shared leadership and creativity, our research reveals when shared leadership negatively affects team creativity. Figure 2 depicts our conceptual model.

Theory and Hypotheses Development

Shared Leadership Level, Concentration, and Team Creativity

Compared to vertical, top-down leadership that originates from a single designated leader (Bass & Stogdill, 1990), shared leadership involves the lateral leadership influence processes among members within teams (i.e., informal leaders) where leadership functions and responsibilities are distributed among members (D'Innocenzo et al., 2016; Pearce & Conger, 2003). In teams, members emerge as informal leaders to assume leadership functions, such as setting goals, formulating plans, planning and structuring work, providing feedback, and

mentoring and motivating team members (Drescher et al., 2014; Hiller et al., 2006). As team creativity involves team members working together to identify problems, generate, select, and refine creative ideas (Amabile, 1996; Amabile & Pratt, 2016), shared leadership is recognized as an important predictor for team creativity (Ali et al., 2020; Klasmeier & Rowold, 2020). This is because when members assume more leadership roles, they actively engage in taking responsibility in team creative processes (Cox et al., 2003; Pearce & Manz, 2005).

Research on shared leadership theory suggests that for teams to benefit from shared leadership and enhance creativity, it is crucial for team members to evenly distribute leadership roles during creative processes (Wang et al., 2014). As discussed earlier, shared leadership level only captures the amount of informal leadership yet fails to capture how informal leadership is distributed in a team. By jointly considering both level and concentration, we theorize that shared leadership level interacts with shared leadership concentration in predicting team creativity. Specifically, we expect shared leadership level to have a stronger, more positive effect on team creativity when shared leadership concentration is lower. This is because as compared with when shared leadership is concentrated to one or a few members, when shared leadership is more evenly distributed among members (i.e., lower concentration), a higher level of shared leadership entails that team members assume leadership influences more evenly and are collectively more engaged in team creative processes, leading to enhanced team creativity (D'Innocenzo et al., 2016; Pearce & Conger, 2003).

> *Hypothesis 1 (H1)*: Shared leadership level interacts with shared leadership concentration to predict team creativity such that shared leadership level is more positively related to team creativity when shared leadership concentration is lower.

Unpacking Team Processes: The Role of Team Information Elaboration

Informal leadership forms a basis for team informal hierarchy, which can take on

different forms to reflect how team members are positioned along the informal leadership dimension (Anderson & Brown, 2010). When informal leadership is more concentrated, a higher shared leadership level leads to a hierarchy in which informal leadership is dominated by a few individuals. In contrast, when informal leadership is less concentrated, a higher shared leadership level still renders a flatter structure wherein the total amount of informal leadership is higher but more evenly displayed by team members (Mayo et al., 2003; Small & Rentsch, 2010). The team hierarchy literature has documented a functional perspective (e.g., Anderson & Brown, 2010) and a conflict perspective (e.g., Greer et al., 2017). We draw from both of them to explain the joint effect of shared leadership level and concentration.

Based on the functional view and team creativity literature, we theorize the mediating role of team information elaboration in linking shared leadership level and team creativity, contingent upon shared leadership concentration. Team information elaboration focuses on two aspects of team processes: the exchange and integration of information and perspectives (Homan et al., 2007; Hoever et al., 2012). To engage in team information elaboration, team members need to openly share ideas, perspectives, and information. Furthermore, the integration of information requires team members to carefully attend to and process information, perspectives, and ideas from others, understand their implications, and feed such implications back to the team (Homan et al., 2007; Hoever et al., 2012).

The traditional functional view of team hierarchy contends that a hierarchical structure enables groups to function better (Keltner et al., 2008). However, this view has been largely generalized from findings based on theoretical or measured individual-level outcomes rather than team outcomes (Greer et al., 2017). Later research updates this view and provides more nuanced insights that a hierarchy based on inequality fails to realize its benefit in teams (Bunderson et al.,

2016) and an egalitarian structure allows teams to perform better (Matusik et al., 2022). In fact, in the review by Anderson and Brown (2010, p. 65), they found that "flatter structures are often more advantageous for group and organizational success." Similarly, in a meta-analysis, Greer and colleagues (2018) found a negative relationship between hierarchy and team coordination-enabling processes within teams. Integrating these insights from the functional view of team hierarchy with shared leadership theory, we propose that when shared leadership is less concentrated, shared leadership level is more positively related to team information elaboration.

According to shared leadership research, when shared leadership is less concentrated, a higher shared leadership level implies that team members more evenly take on a larger number of leadership roles and functions (Hiller et al., 2006; Small & Rentsch, 2010). It entails that team members more actively engage in providing expertise, information, and knowledge in the course of setting team goals, making team decisions, and guiding their peers (Cox et al., 2003; Pearce, 2004). As such, teams are likely to have a larger body of diverse viewpoints, knowledge, and information, and more exchange, discussion, and integration of task-related viewpoints and information. When shared leadership is more concentrated, a higher shared leadership level entails a steeper hierarchy wherein individuals have differing status based on leadership influences. These hierarchical differences reduce team members' willingness to contribute to the group (Cronin et al., 2015), demotivate individuals with lower status to speak up (Islam & Zyphur, 2005; Janssen & Gao, 2015), and lead to disproportionate recognition or endorsement of the ideas from higher-status individuals (Howell et al., 2015; Zhou et al., 2024). As a result, the exchange, processing, and integration of information and perspectives in the team will suffer.

Team creativity involves the synthesis or recombination of diverse ideas or perspectives (Baughman & Mumford, 1995; Mobley et al., 1992). When team members engage in team

information elaboration, they actively communicate their ideas, attentively listen to others' perspectives, and integrate different viewpoints (Homan et al., 2007). As such, team information elaboration is a vital team process that contributes to team creativity (Hoever et al., 2012; Parke et al., 2022). Integrating the above arguments, we hypothesize:

> *Hypothesis 2 (H2)*: Shared leadership concentration moderates (a) the relationship between shared leadership level and team information elaboration and (b) the indirect relationship between shared leadership level and team creativity via team information elaboration, such that both relationships in (a) and (b) are more positive when shared leadership concentration is lower.

Unpacking Team Processes: The Role of Team Status Conflict

The conflict account of team hierarchy contends that hierarchy leads to conflict-enabling states as "hierarchy may motivate individuals to climb up the ranks (Magee & Galinsky, 2008), and may lead members at different ranks to have opposing interests and perspectives (Van Bunderen, Greer, & Van Knippenberg, 2017)" (Greer et al., 2018, p. 592). Based on this perspective, we contend that when shared leadership is more concentrated, shared leadership level is more positively associated with team status conflict. Status conflict is characterized by asserting or challenging the status order in a team, which can hinder team creativity (Bendersky & Hays, 2012; Lee et al., 2018). When informal leadership is more evenly shared, a hierarchy based on informal leadership is unlikely to emerge as a result of a higher shared leadership level. As such, higher shared leadership level is less likely to induce status conflict. When informal leadership is more concentrated, a higher shared leadership level creates a steeper hierarchy based on informal leadership and thus, we expect there is a more positive association between shared leadership level and team status conflict.

Specifically, by providing informal leadership, individuals with more leadership influence enjoy greater control and attain a higher status, while individuals with less leadership

influence are in an underprivileged position (Anderson & Brown, 2010). Because higher status entails more access to resources, more credit for teamwork, and more positive evaluations, individuals innately strive for status in teams (Anderson et al., 2015; Fiske, 2010). In work teams, status is often a fixed social resource, and status conflict has zero-sum outcomes, meaning that elevating one's status leads to lowering another's rank in the social hierarchy (Bendersky & Hays, 2012).

When shared leadership is more concentrated, informal leadership becomes salient in differentiating team members' status. Prior research suggests that higher-ranked individuals are motivated to protect their status, whereas lower-ranked individuals strive to attain status to reduce vulnerabilities or disadvantages (Georgesen & Harris, 2006; Greer & Dannals, 2017). A higher shared leadership level suggests that those who already have leadership influence gain more of such influence, rendering more status disparity within the team, or individuals lower on the informal leadership hierarchy move up on the informal leadership hierarchy (Hiller et al., 2006; Small & Rentsch, 2010). It follows that members with more leadership influence are likely to defend and protect their leadership roles and be vigilant about threats from other team members, whereas those with less leadership influence tend to strive for leadership roles and compete for higher status in the team (Hays & Bendersky, 2015; Greer & van Kleef, 2010). In short, we expect a more positive relationship between shared leadership level and team status conflict when shared leadership is more concentrated. In contrast, when shared leadership is less concentrated (i.e., more evenly distributed), informal leadership is not salient in differentiating team members' status, and a hierarchy based on informal leadership is unlikely to occur. As a result, team status conflict is less likely to be a function of shared leadership level (Greer et al., 2017).

We argue that team status conflict undermines team creativity as status conflict diverts the team's attention and resources from generating creative ideas to resolving the conflict (Bendersky & Hays, 2012). Additionally, when team members challenge the team's structural order, it generates intense competition, tension, and animosity, further hindering team creativity (Bendersky & Hays, 2012; Lee et al., 2018). Taken together, we hypothesize:

> *Hypothesis 3 (H3)*: Shared leadership concentration moderates (a) the relationship between shared leadership level and team status conflict and (b) the indirect relationship between shared leadership level and team creativity via team status conflict, such that the relationship in (a) is more positive and that in (b) is more negative, when shared leadership concentration is higher.

Method

Transparency and Openness

We adhered to the *Journal of Applied Psychology* methodological checklist to describe our sampling plan and measures. Data were analyzed using the *ORA social network software (Altman et al., 2019), Stata (StataCorp, 2021), and Mplus (version 8.7; Muthén & Muthén, 1998-2021). The data, analysis codes, and outputs are available on the OSF webpage (https://osf.io/rbx25/?view_only=468cf3a895814cf0b487782c7e2b440b). The study design, hypotheses, and analysis were not preregistered.

Sample and Procedures

The data were collected from a sample of intact work teams in three organizations in China, including an alternative fuel vehicle firm, an architectural design and construction firm, and a research subsidiary of a mining and manufacturing firm. Creativity and innovation are a relevant part of these teams' work[1]. Data collection was conducted in 2019 by the third author

[1] In the alternative fuel vehicle firm, employees design new electric cars and related products such as vehicle batteries and electric motors. In the architectural design and construction firm, employees primarily provide new designing services concerning building design, structural engineering, mechanical engineering, and electrical

while she was affiliated with her former institution. Although the institution did not have an institutional review board, all procedures were carried out in compliance with the APA ethics code, and voluntary participation and confidentiality were ensured. Paper-and-pencil surveys were administered on site during paid work hours at three time points. A time lag was used between each of the two adjacent waves to reduce common method bias (Podsakoff et al., 2003). At Time 1, a total of 1,124 employees working in 165 teams were invited to participate in this study. All team members were invited to fill out a survey containing an informal leadership measure, control variables, and their demographic information (response rates = 88%); team leaders were invited to fill out a survey of their demographic information (response rates = 93%), and each team has its own designated team leader. At Time 2 (one month after Time 1), team members filled out surveys containing measures of team information elaboration and team status conflict (response rates = 88%). At Time 3 (two months after Time 2), team leaders were invited to rate team creativity (response rates = 94%). Our final sample consisted of 965 employees in 136 teams.[2] The within-team response rate ranged from 72% to 100%. Among the employees, the mean age was 33.1 years, the mean organizational tenure was 6.0 years, and 74.4% were men. In terms of education, 11.4% had associate degree or lower, 60.8% had a bachelor's degree, 27.6% had a master's degree, and 0.2% had a doctorate. Among the team leaders, the mean age was 38.5 years, the mean organizational tenure was 10.5 years, and 80.9% were men. In terms of education, 5.9% had an associate degree or lower, 65.2% had a bachelor's degree, and 28.9% had a master's degree.

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engineering. In the research subsidiary, employees engage in research and consulting services in the areas of underground excavation and construction, explosive research and testing, mineral processing, separation and recycling technology, and mining and construction safety.

[2] From company records, the size of these teams ranged from 3 to 23 members, excluding the formal leader. Teams were in various functional areas including R&D, design, manufacturing, construction, operation, sales, marketing, administration, human resources, finance, accounting, procurement, quality control, workplace safety, and informational technology.

Measures

Following the standard translation-back-translation procedures (Brislin, 1980), two of the authors, both bilingual in Chinese and English, translated the scales that were originally developed in English into Chinese. Unless otherwise indicated, all scales were on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*).

Shared leadership level. At Time 1, shared leadership level was measured by informal leadership network density in the focal team. Using a team roster listing all team members (excluding the formal leader), each member was asked to rate their peers on the item "To what degree does your team rely on this individual for leadership?" (1 = *to a very small extent* to 6 =*to a very large extent*)—an item used by Carson et al. (2007) and adopted by subsequent shared leadership research (e.g., Mathieu et al., 2015)[3]. To measure team informal leadership network density, we followed the approach of Sparrowe et al. (2001) and Carson et al. (2007) to calculate a normed density score by using *ORA software (Altman et al., 2019). Specifically, all team members' incoming leadership ties (reflecting the amount of leadership influence exerted by the focal team member) were summed and then divided by the total possible sum of ties.

Shared leadership concentration. It was measured by informal leadership network centralization at the team level. Consistent with prior research examining social networks and creativity (Perry-Smith & Shalley, 2003; Perry-Smith, 2006), we used each team member's closeness centrality in calculating team centralization using the *ORA software.[4] Closeness centrality captures how central an individual is in terms of proximity to all other individuals in

[3] In line with a social network approach to shared leadership, informal leadership was rated in a generic sense (Kozlowski et al., 2016). To examine the construct validity of this single-item measure, we conducted a separate study with 468 working employees. Appendix shows detailed results supporting its validity.
[4] Due to the low mean level of this variable, we multiplied the original scores by 100 and use the transformed variable in our analyses.

the network, thereby it "is consistent with the intuitive notion of being in the center" (Perry-Smith, 2006, p. 88).

Team information elaboration. At Time 2, team members rated team information elaboration using the four-item scale (α = .88) from Kearney and Gebert (2009). A sample item was "The members of this team complement each other by openly sharing their knowledge." We aggregated member ratings to the team level based on satisfactory inter-rater agreement (ICC1 = .11, $p < .001$, ICC2 = .46, median $r_{wg(j)}$ = .95; Biemann et al., 2012; Bliese, 2000).

Team status conflict. At Time 2, team members rated team status conflict using the four-item scale (α = .90) from Bendersky and Hays (2012). A sample item was "My team members experienced conflicts due to members trying to assert their dominance." (ICC1 = .11, $p < .001$, ICC2 = .46, median $r_{wg(j)}$ = .82).

Team creativity. We asked team leaders to rate team creativity at Time 3 (α = .89) using the four-item scale from Shin and Zhou (2007). A sample item was "How well does your team produce new ideas?" (1 = *poorly* to 7 = *very much*).

Controls. Team size was controlled because the teams in our study varied in size, and team size has the potential to influence the formation of networks and team creativity (Hülsheger et al., 2009). We included mean organizational tenure as a control because it has the potential to result in similarity in thinking or perspectives and a tendency to focus on common information among team members (Gruenfeld et al., 1996; Katz, 1982), which impacts team creativity. Because team members' affect played a role in their interpersonal liking and team creativity (Dulebohn et al., 2017; Parke et al., 2022), we controlled for team mean negative affect, which is measured at Time 1 by the three-item scale (α = .80) from Iverson et al. (1998). A sample item was "Often I get irritated at little annoyances." (ICC1 = .06, p = .002; ICC2 = .31; median $r_{wg(j)}$

= .72). Because different functional areas vary for members' task interdependence, we controlled team task interdependence, as it can influence team functioning (Wageman, 1995). At Time 1, team members rated team task interdependence using the three-item scale (α = .81) from Pearce and Gregersen (1991). A sample item was, "Team members frequently must coordinate their efforts with each other." (ICC1 = .09, p < .001; ICC2 = .41; median $r_{wg(j)}$ = .91). To account for the formal leader's influence on team creativity, we controlled for the formal leader's empowering leadership, a commonly studied leader behavior that promotes creativity (Lee et al., 2017). At Time 1, using the 12-item scale (α = .94) from Zhang and Bartol (2010), team members rated their formal team leader's behavior. A sample item was, "My team manager allows me to do my job my way." (ICC1 = .12, p < .001; ICC2 = .49; median $r_{wg(j)}$ = .97).

Results

Table 1 shows the means, standard deviations, and correlations among the variables. Since multiple variables were based on scale ratings from team members,[5] we performed multilevel confirmatory factor analyses (MCFAs) to examine the distinctiveness of these variables. To achieve an optimal ratio of sample size to the number of estimated parameters, we randomly created 3 parcels from the 12 items of empowering leadership. The other four variables used their items in the MCFA. The 5-factor model has satisfactory fit (χ^2 = 591.32, df = 235, p < .001, scaling factor = 0.6777, CFI = .97, TLI = .96, RMSEA = .040), and a significantly better fit than a series of 4-factor models (Satorra-Bentler scaled $\Delta\chi^2$ ranged from 136.41 to 453.03, Δdf = 8, p < .001; 4-factor models' CFI ranged from .75 to .91, TLI from .72 to .90, RMSEA from .064 to .109). Therefore, we proceeded to examine these variables as distinctive.

We used path analytical modeling in Mplus (version 8.7; Muthén & Muthén, 1998–2021)

[5] Variables include team information elaboration 4 items, team status conflict 4 items, negative affectivity 3 items, task interdependence 3 items, and empowering leadership 12 items.

to test the hypotheses. To test H1, we examined a main-effect model and an interaction model to show incremental explained variance for the interactive term. As shown in Model 2 of Table 2, there is a significant interaction effect between shared leadership level and concentration (b = -1.77, SE = .65, p = .006). We plotted this interaction pattern in Figure 3a. The relation between shared leadership level and team creativity is stronger when shared leadership concentration is lower (simple slope = .58, SE = .25, p = .019) rather than higher (simple slope = -.42, SE = .26, p = .104), supporting H1. Figure 3b is the Johnson-Neyman (J-N) plot showing regions of significance for this interaction effect (Preacher et al., 2006).

We proceeded to test Hypotheses 2a-3b by adding team information elaboration and team status conflict as mediators in the path models. Similarly, we examined a main-effect model (wherein the two variables served as parallel mediators in the shared leadership level and team creativity relationship) and an interaction model (wherein the interactive effect between shared leadership level and concentration was added to predict team information elaboration and status conflict). Table 3 shows the path coefficients for these models. To test H2a, Table 3 shows a significant interaction term (b = -1.57, SE = .72, p = .030). We plotted this interaction pattern in Figure 4a. The relation between shared leadership level and team information elaboration is stronger when shared leadership concentration is lower (simple slope = 1.08, SE = .15, p < .001) rather than higher (simple slope = .19, SE = .32, p = .550), supporting H2a. Figure 4b shows the J-N plot for regions of significance for this interaction effect. To test H3a, Table 3 shows a significant interaction term (b = 2.14, SE = 1.02, p = .035). We plotted this interaction pattern in Figure 5a. The relation between shared leadership level and team status conflict is positive when shared leadership concentration is higher (simple slope = .92, SE = .25, p < .001); when shared leadership concentration is lower, the relation shows a negative sign but not significant (simple

slope = -.29, *SE* = .51, *p* = .562), supporting H3a. Figure 5b shows the regions of significance for this interaction effect.

Table 3 also shows that after controlling for shared leadership level, concentration, their interaction, and the control variables, there is a positive relation between team information elaboration and team creativity (*b* = .27, *SE* = .11, *p* = .016), but a negative relation between team status conflict and team creativity (*b* = -.13, *SE* = .06, *p* = .032). To test the moderated mediation effects in H2b and H3b, we calculated the conditional indirect effects and conducted Monte Carlo bootstrapping (20,000 re-samples; Preacher et al., 2007; Preacher & Selig, 2012) to examine the 95% confidence intervals (CIs) of the effect. As shown in Figures 6a and 6b, the indirect effect of shared leadership level on team creativity via team information elaboration is stronger and positive when shared leadership concentration is lower (estimate = .29, $CI_{95\%}$ = .047, .608) but becomes non-significant when shared leadership concentration is higher (estimate = .05, $CI_{95\%}$ = -.212, .083). The difference between the two indirect effects was significant (estimate = -.24, $CI_{95\%}$ = -.825, -.007), supporting H3a. In contrast, the indirect effect via team status conflict is stronger and negative when shared leadership concentration is higher (estimate = -.12, $CI_{95\%}$ = -.166, -.015) but becomes non-significant when shared leadership concentration is lower (estimate = .037, $CI_{95\%}$ = -.142, .127). The difference between the two indirect effects is marginally significant (estimate = -.15, $CI_{90\%}$ = -.200, -.021, $CI_{95\%}$ = -.213, .016), providing partial support for H3b. As these figures show, the moderator's values determine which mediating mechanism is in play. When shared leadership concentration is lower, team information elaboration serves as the mediator, rather than team status conflict. When shared leadership concentration is higher, the mediator role switches and we found a negative indirect effect of shared leadership level on team creativity via team status conflict.

Discussion

In this research, we integrated theories on team hierarchy and shared leadership to test a dual-pathway model that explicates why and when shared leadership affects team creativity. Extending prior research on shared leadership and team creativity (e.g., Ali et al., 2020; Klasmeier & Rowold, 2020), our results show that shared leadership level alone, which is usually examined in the past literature, may not fully capture the effects of shared leadership on team creativity. The distribution of shared leadership, as captured by shared leadership concentration, substantially alters the effect of shared leadership level on team creativity.

Contributing to the shared leadership literature, our research reconciles the discrepant research that has suggested either a positive or negative effect of shared leadership on work teams (e.g., Mathieu et al., 2015; Sinha et al., 2021). Specifically, our findings show an integrative dual-pathway model illuminating the countervailing team processes induced by shared leadership level and concentration. These findings underscore the role of team shared leadership concentration as an enabler or prohibitor that shifts between the positive and negative mechanisms induced by shared leadership level. Specifically, contributing to the recent thinking and findings on the functional view of hierarchy (Greer et al., 2018), we found that when shared leadership concentration is lower, shared leadership level has a positive relationship with team information elaboration which in turn, relates positively with team creativity. As such, team information elaboration serves as a positive route that carries the positive effect of shared leadership level onto team creativity when shared leadership concentration is lower.

Supporting the conflict perspective of team hierarchy, we found that when shared leadership is more concentrated, shared leadership level has a positive relationship with team status conflict, which in turn is negatively related to team creativity. As such, when shared

leadership is more concentrated, the “dark side” of shared leadership manifests as a negative indirect effect on team creativity through team status conflict. These findings support our arguments based on the status literature that when informal leadership is more concentrated, it serves as a basis that differentiates team members’ status within a team and a higher shared leadership level is associated with more team status conflicts due to team members’ innate strive for higher status (Anderson & Kilduff, 2009). Notably, by revealing the team status conflict path, our findings challenge the previously one-sided view of shared leadership on team creativity, which focused primarily on its positive effect (Ali et al., 2020; Klasmeier & Rowold, 2020). We find, in certain instances, shared leadership can indeed hinder team creativity—an insight that would have remained unknown if the joint effect of shared leadership levels and concentration on status conflict had not been examined. Overall, our research offers a more nuanced and comprehensive understanding of the relationship between shared leadership and team creativity.

Practical Implications

Our findings underscore that informal leadership needs to be distributed more evenly among team members in order to effectively realize the benefits of shared leadership on team creativity. To promote informal leadership among team members, it is crucial to ensure that leadership responsibilities are more evenly distributed to avoid disputes over relative status in a team. Formal leaders could help to actively monitor the distribution of informal leadership within the team and promote equality in terms of informal leadership responsibilities.

Limitations and Future Research Directions

Our research also has limitations, some of which suggest potential directions for future research. First, our study sample only include teams with formal leaders. Future research is needed to address whether our findings generalize to leaderless or self-managing teams in which

formally appointed leaders are absent. We suspect that our findings may apply to these teams for two reasons. Empirically, our research measured informal leadership and used the same approach to operationalizing shared leadership as did by prior research with self-managing teams (Carson et al., 2007). In our theorizing, we isolated formal leaders and our theory focuses solely on informal leadership. In leaderless teams, informal leadership is the primary source of leadership, and thus it is likely the effect we found could become more salient in such teams. Relatedly, a second limitation of our research is that we did not address the role of formal leadership in the process of shared leadership formation. To address this issue, we conducted supplemental interviews and found that the emergence of shared leadership is impacted by four factors: formal leaders' nurturing and guidance, organizational culture cultivating or inhibiting shared leadership, individuals' task-based expertise or experiences, and individual characteristics such as personality, courage, and social skills.[6] We encourage future research to further address how formal leaders play a role in shaping shared leadership level and concentration in a team.

In addition, our analysis could be more rigorous if we had measured a round robin-based control variable such as liking. We acknowledge that while we focus on closeness centrality in calculating shared leadership concentration due to its important role in prior creativity research (Perry-Smith, 2006), other conceptually relevant centrality measures, such as betweenness centrality and degree centrality (Borgatti, 2005), are also worthy of consideration for future research. Lastly, the majority of our data were collected via questionnaires. Although our multi-source, time-lagged research design could help mitigate concerns about common method variances, readers need to exercise caution when making causal inferences.

[6] The interview findings are presented in the online supplemental file. Using these interviews, we illustrate work experiences in four types of teams, categorized by higher versus lower shared leadership level and higher versus lower shared leadership concentration. Example quotes can be found in Table S3 in the online file.

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Appendix:
Scale Validation for Shared Leadership Measure

To validate the one-item measure from Carson et al. (2007), we target-recruited China-based employees who work in teams at their workplace via sojump.com—a platform similar to Prolific.co that provides services of recruiting participants for academic research. Supplemental research was approved by the Institutional Review Board at Peking University (Title: Research on Shared Leadership; IRB#: IRB00001052-22153). Responses from 468 employees were collected. All participants passed our attention and quality checks. Among the participants, 46.6 % were male and 84.2% of them had a bachelor degree. The average age was 31.83 years (*SD* = 5.37).

Beyond Carson et al.'s (2007) one-item measure, we included the 25-item shared leadership measure developed by Hiller et al. (2006). In particular, this measure captures four dimensions of shared leadership including planning and organizing (sample items were "Organizing tasks so that work flows more smoothly"; "Providing helpful input about team's work plans."), problem solving (sample items were "Diagnosing problems quickly"; "Solving problems as they arise."), support and consideration (sample items were "Providing support to team members who need help." "Listening to complaints and problems of team members."), and development and mentoring (sample items were "Exchanging career-related advice among our team"; "Helping out when a team member is learning a new skill."). Following the standard translation-back-translation procedures (Brislin, 1980), two of the authors, who are bilingual in Chinese and English, translated the scales originally developed in English into Chinese. We instructed the participants to think of a peer member in their team and answer the questions based on the stem, "To what degree does your team rely on this individual for…?" on a 6-point scale, ranging from 1 (to a very small extent) to 6 (to a very large extent).

We performed a correlational analysis and as shown in Table A, the 1-item measure converges with the 25-item measure ($r = .69$, $p < .001$). Further, the 1-item measure highly correlates with the four dimensions captured by the 25-item measure ($r_s \geq .52$, $p < .001$). These results provided support for the validity of the 1-item measure.

Table A

Correlations for Scale Validation with Chinese Sample

Variables	***M***	***SD***	**1**	**2**	**3**	**4**	**5**	**6**
1. Shared leadership (Carson et al.'s 1-item measure)	4.32	1.09						
2. Shared leadership (Hiller et al.'s 25-item measure)	4.44	0.70	.69***	(.94)				
3. Planning and organizing dimension	4.40	0.85	.62***	.90***	(.84)			
4. Problem-solving dimension	4.34	0.79	.66***	.92***	.82***	(.85)		
5. Support and consideration dimension	4.58	0.72	.52***	.86***	.66***	.68***	(.78)	
6. Development and mentoring dimension	4.44	0.77	.63***	.89***	.70***	.75***	.73***	(.82)

Notes. $N = 468$. Cronbach's alphas are reported on the diagonal. *** $p < .001$.

Table 1

Means, Standard Deviations, and Correlations among Study Variables

Variable	***M***	***SD***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1. Team size (T1)	7.35	3.94									
2. Mean organizational tenure (T1)	6.29	4.25	-.12								
3. Team mean negative affectivity (T1)	3.27	0.64	.01	.09							
4. Task interdependence (T1)	5.80	0.52	.05	-.13	.00						
5. Empowering leadership (T1)	5.55	0.51	-.03	-.18*	-.10	.52***					
6. Shared leadership level (T1)	0.59	0.13	-.34***	-.07	-.03	.24**	.31***				
7. Shared leadership concentration (T1)	0.11	0.28	-.38***	.29***	-.03	-.19*	-.13	-.03			
8. Team information elaboration (T2)	5.75	0.52	-.01	-.04	-.12	.53***	.47***	.27**	-.05		
9. Team status conflict (T2)	3.63	0.73	.09	-.03	.12	-.27**	-.19*	-.02	-.18*	-.24**	
10. Team creativity (T3)	5.25	0.92	.04	.00	-.08	.09	.07	.02	-.10	.17*	-.11

Note. N = 136 teams. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2

Path Analytic Modeling Results for Testing H1

Variable	Team Creativity			
	Model 1		Model 2	
	b (SE)	***p***	***b (SE)***	***p***
Team size	.00 (.00)	.355	.00 (.00)	.386
Mean organizational tenure	.01 (.02)	.591	.01 (.02)	.661
Mean negative affectivity	-.13 (.17)	.431	-.12 (.16)	.455
Task interdependence	.11 (.08)	.163	.12 (.09)	.177
Empowering leadership	.05 (.11)	.643	.07 (.12)	.564
Shared leadership level	-.06 (.24)	.804	.08 (.17)	.627
Shared leadership concentration	-.34***(.04)	<.001	-.49**(.17)	.003
Shared leadership level × Shared leadership concentration			-1.77**(.65)	.006
R^2	.026		.033	
ΔR^2			.007	

Note. $^{**}p < .01$, $^{***}p < .001$. In both models all paths were estimated, and none was fixed to zero; thus, they have perfect model fit. All predictors were mean centered.

Table 3

Path Modeling Results for Testing H2 and H3

Variable	Team Information Elaboration				Team Status Conflict				Team Creativity			
	Model 1		Model 2		Model 1		Model 2		Model 1		Model 2	
	b (SE)	***p***	***b (SE)***	***p***	***b (SE)***	***p***	***b (SE)***	***p***	***b (SE)***	***p***	***b (SE)***	***p***
Team size	.01 (.01)	.396	.01 (.01)	.335	.01 (.01)	.473	.01 (.02)	.506	.00 (.00)	.696	.00 (.00)	.727
Mean org. tenure	.01 (.01)	.550	.01 (.01)	.643	-.00 (.02)	.892	-.00 (.02)	.966	.01 (.02)	.574	.01 (.02)	.635
Mean negative affectivity	-.08* (.04)	.040	-.07 (.04)	.090	.13 (.10)	.210	.12 (.11)	.298	-.09 (.17)	.589	-.09 (.16)	.591
Task interdependence	.39***(.06)	<.001	.40***(.06)	<.001	-.41***(.06)	<.001	-.42***(.05)	<.001	-.06 (.10)	.551	-.05 (.11)	.696
Empowering leadership	.25** (.09)	.007	.26**(.09)	.005	-.11 (.15)	.471	-.13 (.15)	.400	-.04 (.09)	.696	-.02 (.09)	.823
Shared leadership level	.51* (.20)	.012	.64***(.14)	<.001	.49**(.17)	.005	.31 (.28)	.255	-.14 (.26)	.592	-.05 (.25)	.843
Shared leadership concentration	.11 (.16)	.479	-.03 (.16)	.873	-.54**(.19)	.004	-.35 (.21)	.094	-.44***(.11)	<.001	-.53* (.23)	.020
Shared leadership level × Shared leadership concentration			-1.57*(.72)	.030			2.14* (1.02)	.035			-1.07 (.93)	.249
Team information elaboration									.29** (.11)	.008	.27* (.11)	.016
Team status conflict									-.14* (.06)	.028	-.13* (.06)	.032
R^2	.359		.377		.149		.166		.055		.058	
ΔR^2			.018				.017				.003	

Note. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$. These two models were both fully saturated (i.e., all paths were estimated, and none was fixed to zero) and had perfect model fit. All predictors were mean centered.

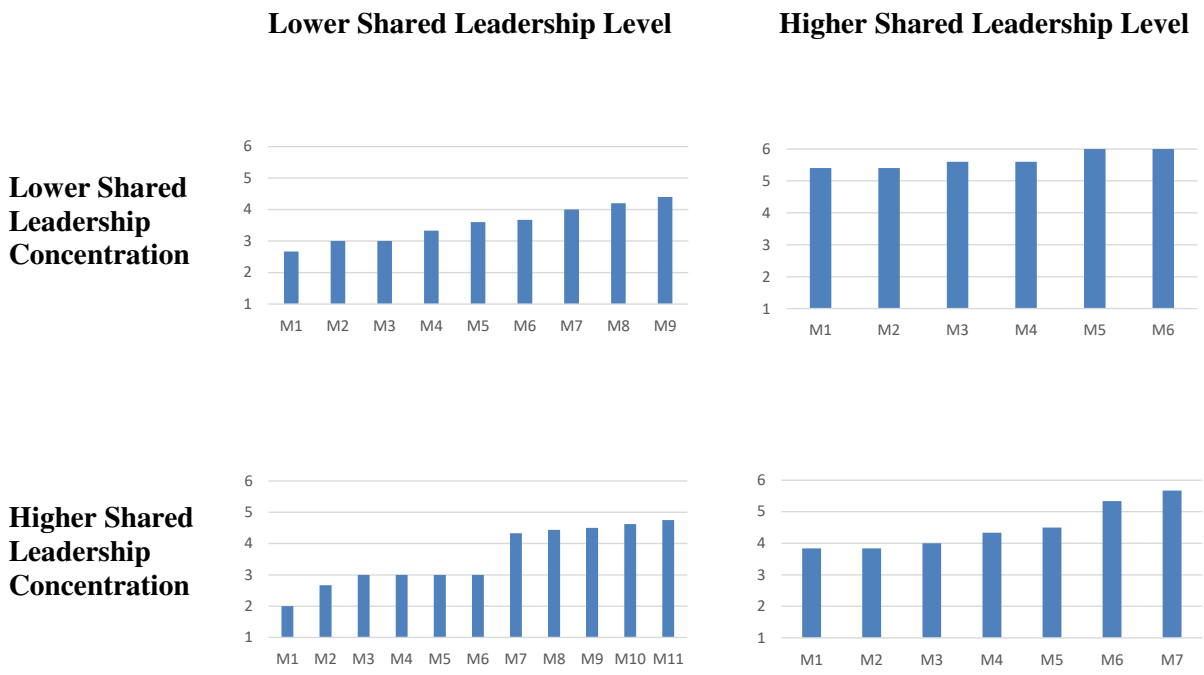

Figure 1. *Ilustrative plots for shared leadership level and concentration.*

Note. The height of the bars is arranged in ascending order and represents the amount of informal leadership for each team member (denoted as M).

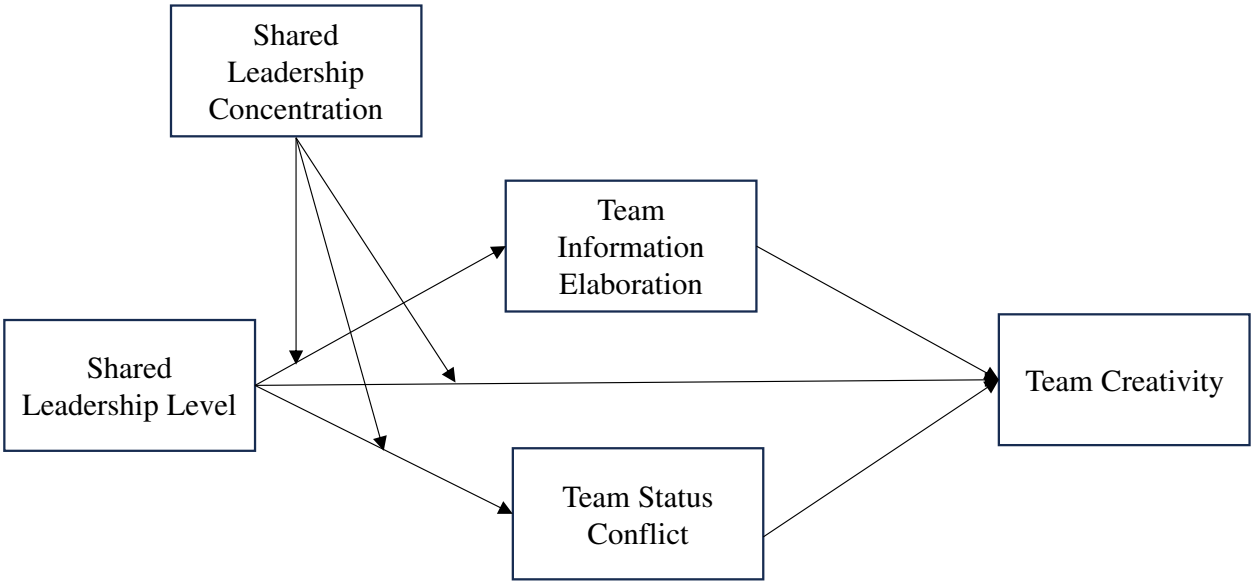

Figure 2. *Conceptual model.*

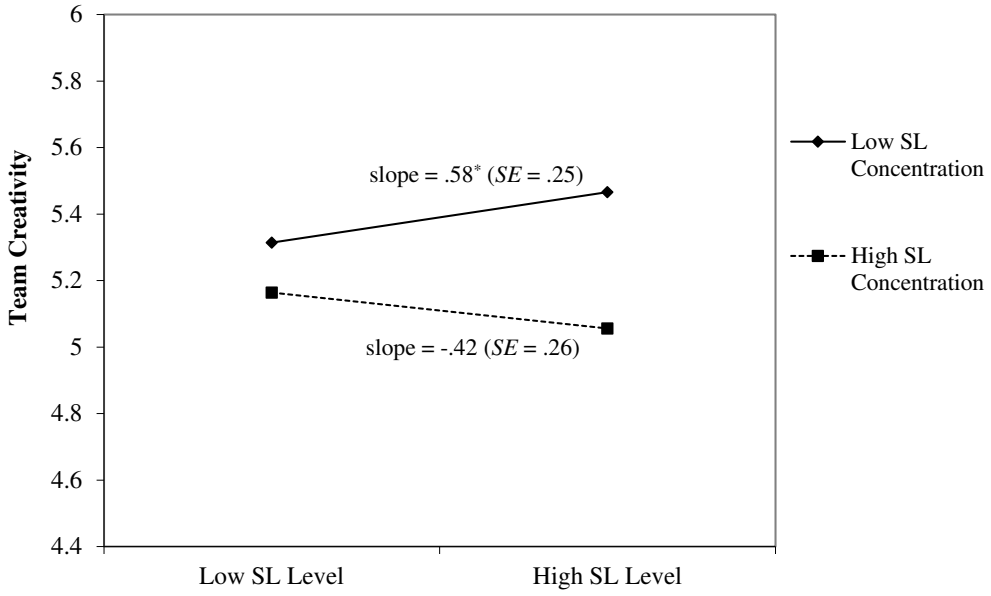

Figure 3a. *Interaction effect for Hypothesis 1.*

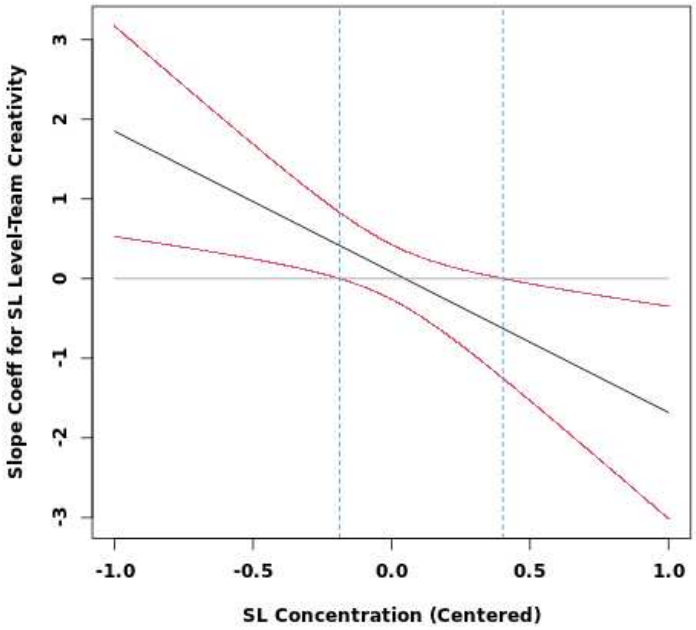

Figure 3b. *Regions of significance plot for Hypothesis 1.*

Note. * $p < .05$. SL = Shared Leadership. For the centered values of shared leadership concentration lower than -0.19, the shared leadership level-team creativity relationships are significant and positive; For the centered values of shared leadership concentration higher than 0.40, the shared leadership level-team creativity relationships are significant and negative.

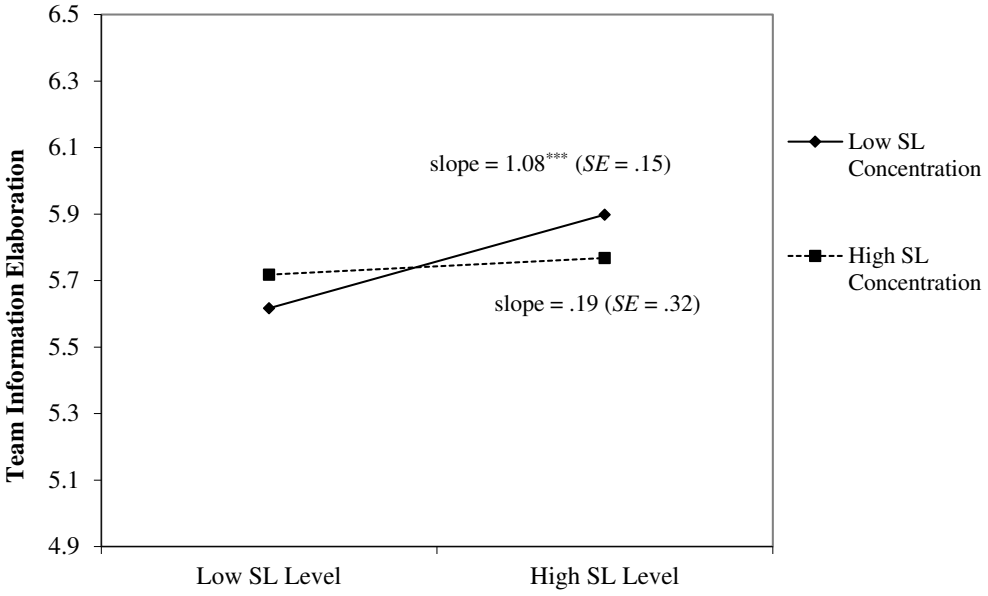

Figure 4a. *Interaction effect on team information elaboration (H2a).*

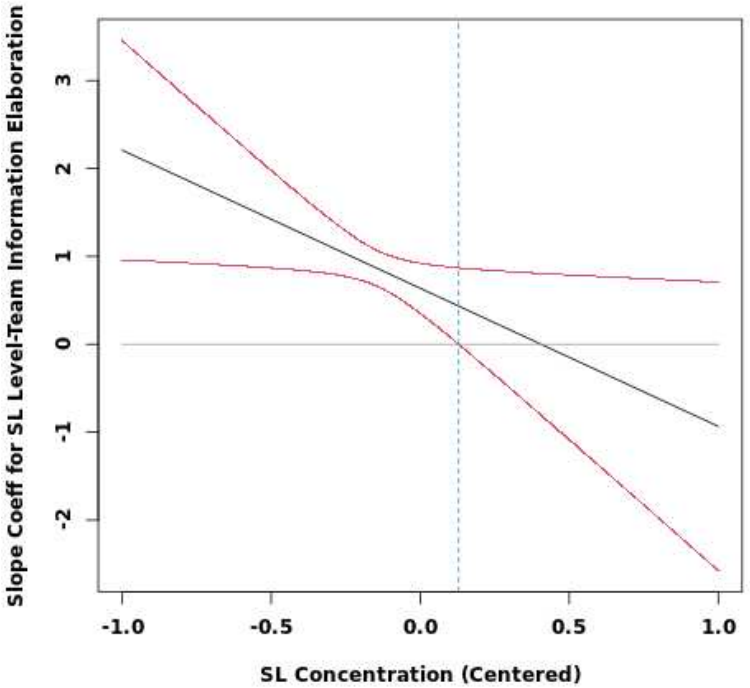

Figure 4b. *Regions of significance plot for team information elaboration (H2a).*

Note. *** $p < .001$. SL = Shared leadership. For the centered values of shared leadership concentration lower than 0.13, the shared leadership level-team information elaboration relationships are positive and significant.

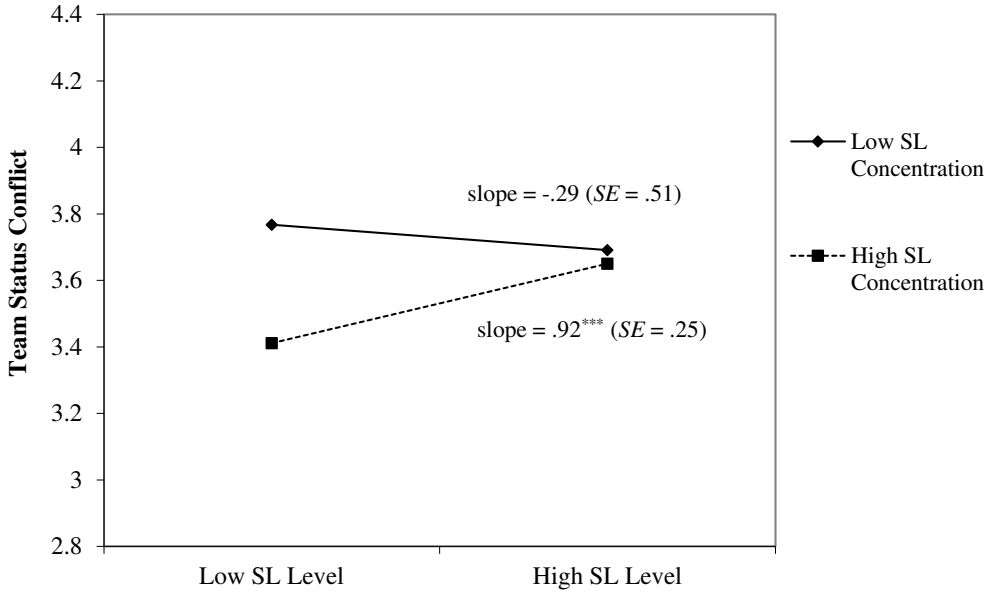

Figure 5a. *Interaction effect on team status conflict (H3a).*

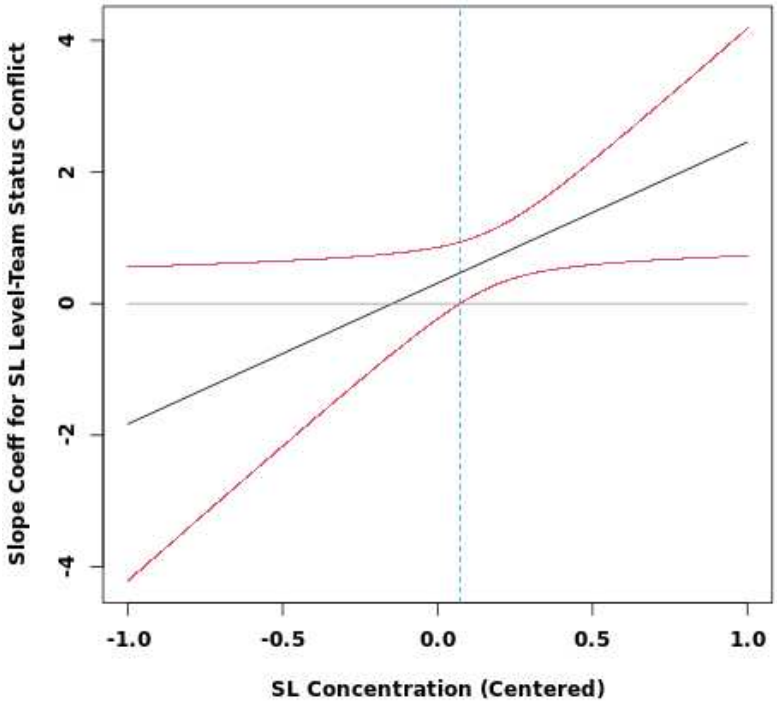

Figure 5b. *Regions of significance plot for team status conflict (H3a).*

Note. *** $p < .001$. SL = Shared leadership. For the centered values of shared leadership concentration higher than .07, the shared leadership level-team status conflict relationships are positive and significant.

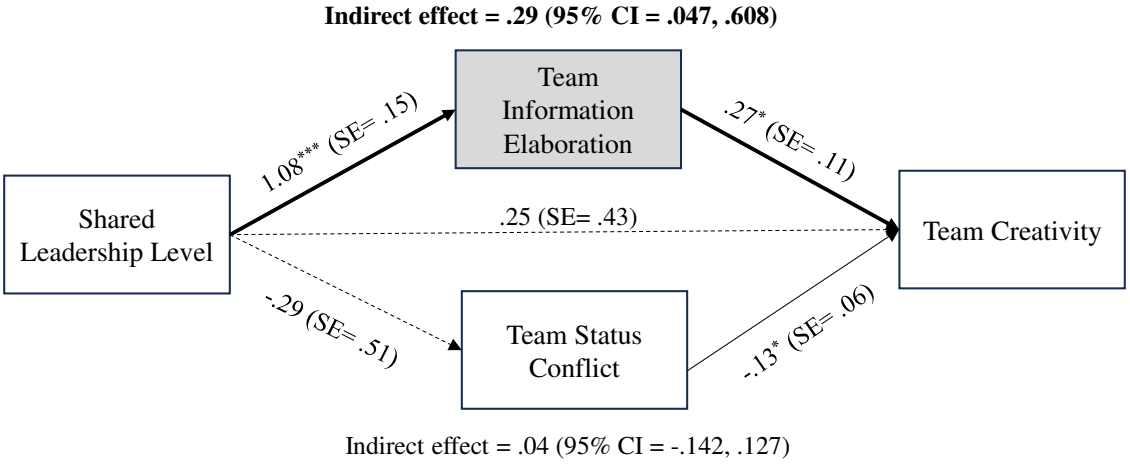

Figure 6a. *Mediation mechanism when shared leadership concentration is lower*

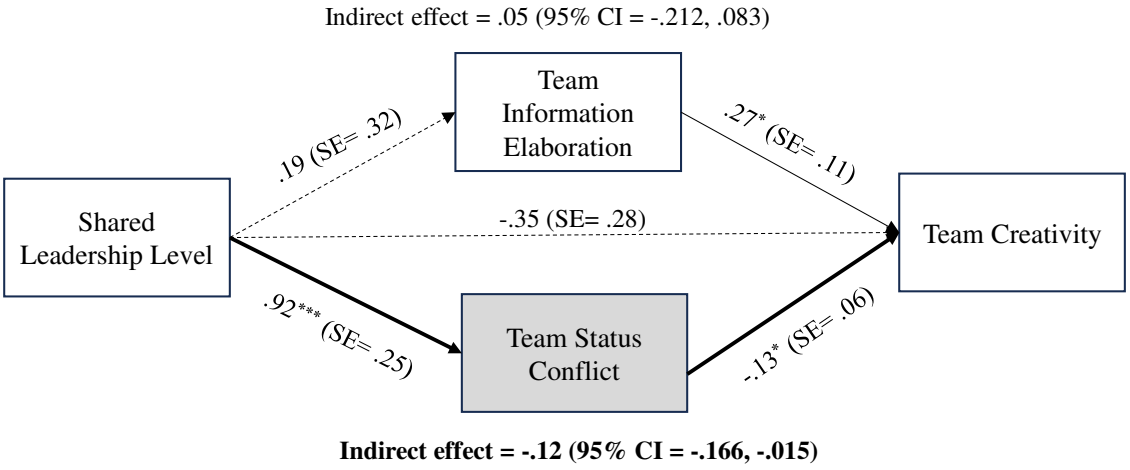

Figure 6b. *Mediation mechanism when shared leadership concentration is higher*

Note. $^{*}p < .05$, $^{***}p < .001$. Dashes arrows depict non-significant paths. Bold arrows and shaded rectangles represent mediation mechanisms.