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Effects of Three Dimensions of Shared Leadership on Team Members' Perceptions on Trust and Team Performance

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Abstract: We conducted a survey with teams to identify the underlying dimensions of shared leadership and examine the effects of shared leadership on the level of trust and team performance.

Keywords: three dimensions of shared leadership, team trust, team performance

Several scholars have stressed the importance of shared leadership and its impact on team performance in adult education settings (Han, Lee, Beyerlein, & Kolb, 2018; Mathieu, Kukenberger, D'Innocenzo, & Reilly, 2015). However, no agreement has been made among scholars on specific dimensions of shared leadership (Zhu, Liao, Yam, & Johnson, 2018). Under the concept of shared leadership, task-oriented and relation-oriented shared leadership were categorized separately (Grille & Kauffeld, 2015). In this study, we added and tested one more sub-dimension called *creativity-oriented shared leadership* that was found from video analysis on shared leadership behaviors (Leight, Xie, Han, Beyerlein, & Zarestky, 2018).

We aim to examine the relationships between shared leadership and team performance as scholars have found different results in regards to the relationship between the two (Mathieu et al., 2015; Serban & Roberts, 2016). More studies need to investigate the relationship between shared leadership and team performance and their different functions.

The inconsistent results of shared leadership and its dimensions may be a result of the way shared leadership has been conceptualized (Wang, Waldman, & Zhang, 2014). Some studies measured shared leadership with the aggregation of a team-level, social network approach, density of a network, or network centralization as an index of shared leadership in teams (D'Innocenzo, Mathieu, & Kukenberger, 2016). Likewise, earlier studies on shared leadership have not used consistent measurements or instruments to capture leadership distribution, so the proposed relationships have not been tested directly; this should draw future researchers' attention.

The importance of trust in teams has been addressed in many studies (Barczak, Lask, & Mulki, 2010; De Jong, Dirks, & Gillespie, 2016). However, only a few scholars examined how trust impact the relationship between shared leadership and team performance (Drescher, Korsgaard, Welp, Picot, & Wigand, 2014). More studies are needed to explore the effects of trust and the role it plays in shared leadership and team performance relationship.

Research Purpose

To address the above-mentioned gaps, the purpose of this paper is to identify the underlying dimensions of shared leadership and examine the relationships among team members' perceptions on shared leadership, team trust, and team performance. To achieve this purpose, we suggested the following research questions:

Research Question 1 (RQ1): What are the underlying dimensions of shared leadership in student project teams?

Research Question 2 (RQ2): What structural relationships emerge among shared leadership, trust, and team performance?

Theoretical Framework

Shared leadership refers to an emergent team property that results from the distribution of leadership influence across multiple team members (Carson, Tesluk, & Marrone, 2007). We used the sub-dimensions of relation-oriented shared leadership (ROSL), task-oriented shared leadership (TOSL), and creativity-oriented shared leadership (COSL). Scholarly work on ROSL and TOSL has been well established. Behaviors related to TOSL include coordination activities (Yukl, 2006), and ROSL behaviors respect team members' opinions and connect emotionally to members (Mannix & Neale, 2005).

Compared to ROSL and TOSL, COSL is a newly discovered dimension. Leight et al., (2018) focused on shared leadership behaviors from high-performance student project teams and found a pattern of COSL. They noted that COSL allows the sharing of new ideas in a safe environment. Based on this research, we have included COSL as a construct to test the dimensions of shared leadership.

Some scholars have theoretically proposed (Ensley, Pearson, & Pearce, 2003) or found that shared leadership was positively related to team performance (Ishikawa, 2012), and D'Innocenzo et al. (2016) provided meta-analytic support for the positive relationship between shared leadership and team performance. However, several scholars failed to find support for the idea that shared leadership led to better team performance (Boies, Lvina, & Martens, 2010).

We also proposed that trust may work as a mediator between shared leadership and team performance. The meta-analysis of shared suggested that intragroup trust significantly moderate shared leadership and team outcomes relationships (Wu, Cormican, & Chen, 2018). To confirm the mediating effect of trust between shared leadership with new dimension (COSL) and team performance, we designed the following research methods.

Methods

Participants. We invited students from organized graduate and undergraduate courses in an educational human resource department at a large Southwestern university. The data collection targeted students who performed group-level activities to get team characteristics. This study collected data through online-questionnaires for three consecutive semesters from the fall semester of 2017 to the fall semester of 2018. A total of 256 students were asked to respond to the survey, once at the beginning and once at the end of the semester.

Analysis Procedures

First, construct validity for shared leadership was examined to determine the number of dimensions of shared leadership (RQ1). For a better validation process, students' initial responses at the beginning were used for exploratory factor analysis (EFA) and the final responses at the end of the semester were used for confirmatory factor analysis (CFA). After determining the number of dimensions using factor analyses, a structural model was tested among shared leadership, trust, and team performance (RQ2). Data analyses were conducted through *Mplus*8.2 (Muthén & Muthén, 1998-2017).

Measures. Students answered different questions in each survey. The initial survey asked about shared leadership measures only (15 items), while the second survey used 29 items, including shared leadership, trust, and team performance measures.

Shared leadership. Individuals assessed their perception of shared leadership using the questionnaire by Grille and Kauffeld (2015). Only TOSL and ROSL scales among the whole questionnaire were used for this study. Additionally, we used five items of COSL, driven from

Leight et al. (2018)'s study. All shared leadership scales used a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*).

Trust. The trust scale assessed the individual's belief about their team. Trust was measured with a 10-item scale based on measures from Hakonen's (2010) study. A 5-point scale ranging from *strongly disagree* to *strongly agree* was used.

Team performance. Team performance dealt with the overall performance on the team project, as assessed by each member. The original team performance items (Hinds & Mortensen, 2005) were modified as the current 4 items based on a 5-point scale ranging from *poor* to *excellent*. The composite score (i.e., sum of scores) of the team performance measures was used for the analysis.

Results

Exploratory Factor Analysis. To determine the number of shared leadership factors, the initial data ($N = 207$) were used for EFA with the goemin rotation. A total of 15 items measuring three leadership dimensions (i.e, TOSL, ROSL, and COSL) were analyzed. We aimed to validating the new COSL measure developed by the qualitative study (Leight et al., 2018) by examining its convergent and divergent validity with TOSL and ROSL dimensions.

A 4-factor model fitted to the data with 15 items; however, the Factor 4 explained one of the COSL items only ("*As a team we tolerate ambiguity and use it as a chance to be creative*"), and the other four COSL items were explained by the Factor 3. We dropped the item loaded on Factor 4 because it did not represent the same construct as the other COSL items. We re-ran 3-factor EFA model with 14 items. One item was dropped from final set of items, as it had cross-loadings on all three factors. Three dimensions are determined by EFA.

Confirmatory Factor Analysis. To confirm the measurement model with three dimensions, CFA was conducted with the second dataset ($N = 148$). First, we fit the correlated 3-factor model, which is derived from the EFA result. The global model fit was adequate for the 3-factor measurement model (CFI = .95, RMSEA = .086, SRMR = .40). However, factor correlations among three factors were high, especially the correlation with ROSL and the other leaderships ($\rho_{RT} = .96$, $\rho_{RC} = .92$, and $\rho_{TC} = .85$). To explain the high factor correlations, a second-order factor model was fitted to the data. The global fit of the second-order factor model is identical with the correlated 3-factor model, because they are equivalent models (Kline, 2015). We considered the second-order factor model is the adequate measurement model for better interpretation of shared leadership constructs. Three sub-leadership concepts (i.e., TOSL, ROSL, and COSL) are differentiated from each other, and general shared leadership explains the high correlations among them.

Structural Model among Constructs. To answer RQ1, discriminant and convergent validities of shared leadership were examined with factor analysis models. Based on the shared leadership CFA model, structural relationships of shared leadership with trust and team performance were tested to answer RQ2. To fit the structural model, parceling was used for the trust construct to lessen complexity among the original 10 measures, especially to avoid residual correlations among items (Little et al., 2002).

The hypothesized model is the following: (1) team performance is influenced by leadership and trust; (2) trust mediates the relationship between leadership and performance. The structural model hypothesizing those relationships was fairly fitted to the data (CFI = .95, RMSEA = .08, SRMR = .04). By looking at standardized estimates in Figure 1, all hypothesized relationships

were statistically significant. The results supported that trust functions as a mediator between shared leadership and team performance. Because the direct effect of general shared leadership on team performance was significant, we conclude that trust partially mediated their relationship (i.e., indirect effect = .36).

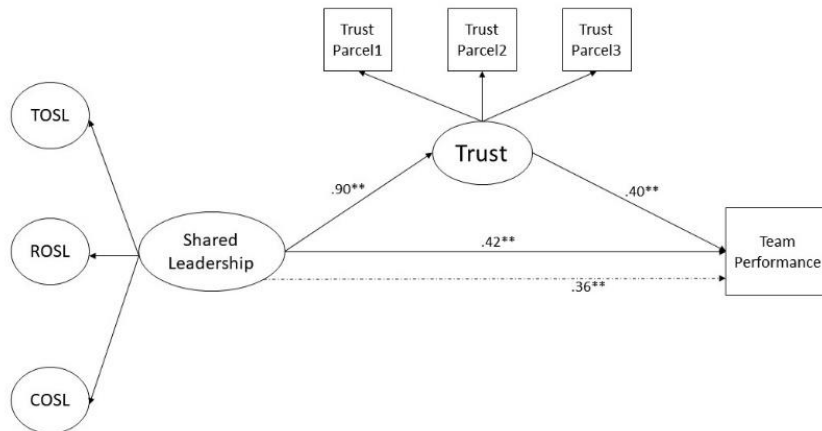


Figure 1. Standardized structural model

Note. The dotted line is indirect path of shared leadership through trust.

Discussion

This study attempted to understand if TOSL, ROSL, and COSL can be used as separate dimensions in explaining the variance of shared leadership that led to team trust and project team output.

To answer RQ1, we tested a factor analysis model of TOSL, ROSL, and COSL. The factor analysis results of this study supported a second-order factor model, explaining three sub-shared leadership constructs under the higher-order shared leadership construct, because correlations between ROSL and TOSL/COSL were high. By expanding Grille and Kauffeld (2015)'s work, this study tested the shared leadership with TOSL, ROSL, and a new COSL construct as separate dimensions for the first time with student teams. Therefore, future scholars are expected to examine these dimensions in different contexts to validate these measures to see its utility in a variety of fields. The dropped item is measuring perceptions on ambiguity, which may not reflect COSL. Based on our findings, we assume that encouraging team members to share ideas, brainstorm, and come up with new ideas may be one of the characteristics of shared leadership.

Our answers to RQ2 was that team trust partially mediated the relationship between shared leadership and team performance. By including creative-oriented shared leadership in the shared leadership model, we also confirmed that shared leadership with COSL improved team trust, which in turn, increased team performance. Our study showed the importance of shared leadership more, and it might be because that COSL captures the significant relationship with team performance, which was not considered in the previous study. As Drescher et al. (2014) surveyed participants, who joined the simulation game, outside of higher education settings, the results may be different. Shared leadership may be more commonly exhibited in a higher education setting (Han, Beyerlein,

& Lee, 2019), and, therefore, more researchers may apply this concept to different industries or contexts.

Implications for Theory and Practice

This study adds value to shared leadership research by confirming new sub-dimensions of shared leadership followed by video analysis of COSL. This quantitative study supports COSL, which shed light on the shared leadership research. Many researchers have found a positive relationship between shared leadership and team creativity (Gu, Chen, Huang, Liu, & Huang, 2018; Han et al, 2019). This may imply that creative-oriented shared leadership behaviors will emerge when performing teamwork and possibly enhance creative outcomes. This study confirms the possibility of adding a COSL component into shared leadership dimensions as a new contribution when building shared leadership models and theories.

The present findings have several implications for educators in terms of instructional design and learning culture in higher education. Educators can suggest interventions (e.g., assessment tools) for teams to build shared leadership and team trust. Our finding supports shared leadership, including ROSL, TOSL, and COSL, as an important factor for team performance because the factor has both direct and indirect effects on team performance. More importantly, shared leadership may enhance team trust, which may enhance a positive learning environment and overall culture.

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