

The effect of shared leadership on team performance in international undergraduate students

ORIGINAL PAPER

The current study examined how shared leadership influences a teams' performance among international undergraduate students. Shared leadership is a team property where two or more leaders are present in a team, sharing the lead and associated responsibilities. The study used a longitudinal design with five consecutive measurements during a six week period to inspect the temporal development and the various factors influencing shared leadership. The statistical analysis showed that shared leadership changed over time and both shared leadership and the personality trait conscientiousness predicted team performance. Correlation between motivation and team performance and an interaction effect between motivation and shared leadership could not be confirmed. Implications of the findings are discussed with reference to the current literature.

Keywords: shared leadership; team performance; conscientiousness; longitudinal study; international undergraduates

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INTRODUCTION

Organizations consider the development of leadership an important factor for their competitive advantage as it is crucial for team effectiveness (Hirst, Mann, Bain, Pirola-Merlo, & Richver, 2004; Sinclair, 1992; Zaccaro, Rittman, & Marks, 2001).

According to Pearce (2004), two particular shifts in the world of labor and economy fostered the query of the existing vertically-oriented leadership styles: First, intellectual capital utilized in organizations was growing to a degree that it can not be held by a single individual. Knowledge work (work that requires the extensive use of intellectual capital) is therefore increasingly divided among several individuals and becomes, as a result, team-based. Second, employees' attitudes changed; workers now desire a more meaningful impact on their working environment and progress. So the approach most discussed in recent literature is that of shared leadership (see e.g. Bligh, Pearce, & Kohles, 2006; Carson, Tesluk, & Marrone, 2007; Hoch, Pearce, & Welzel, 2010; Mehra, Smith, Dixon, & Robertson, 2006; Pearce, 2004; Pearce & Sims, 2002).

Even though the need for shared leadership was formulated in the 1930s already (Follet, 1924), mainstream literature ignored this approach. Instead, they distinguished between leaders and followers, and failed to recognize that leaders are not always appointed by higher authorities, but can hold other sources of power like superior knowledge or the degree to which they are favored by other members (Greenberg, 2011). In fact, high performing teams often have informal leaders (Neubert, 1999): Those with the most relevant knowledge or skill for a specific situation take the lead when the need arises. A combination of these upcoming views eventually led to the distributed leadership approach (Gronn, 2002) or shared leadership (Pearce & Sims, 2002). As defined by Carson et al. (2007), shared leadership emerges as a team property in which two or more team members engage in behavior that influences the direction and motivation of individual members and the team as a whole. Since the directing influence is distributed among members, responsibilities are shared likewise.

Although vertical leadership plays a role to form a team, lateral influences between team members are soon adapted and become the main source of team dynamics (Pearce & Sims, 2002). In accordance, Ensley, Hmieleski, and Pearce (2006) and Small and Rentsch (2010) found higher levels of shared leadership in mature teams than in newly assembled ones. However, Ensley et al. did not use a longitudinal design to confirm this assumption and Small and Rentsch only measured shared leadership at the start and the end of the study, whereas frequent measurements would provide more detailed insight into the development of shared leadership.

Regarding the effectiveness of shared leadership, recent studies mainly focus on the correlation between shared leadership and team performance. The general idea behind the concept of shared leadership is that the existence of several leading individuals in a team fosters participation and information-sharing, which in turn enhances performance (Mehra et al. 2006). However, results are inconsistent: Whereas some empirical studies found shared leadership to be a good predictor of team performance (see e.g. Pearce & Sims, 2002; Ensley et al., 2006; Carson et al., 2007), others only partly confirmed the model (see e.g. Hoch, 2007) or failed to report any significant correlations (see e.g. Mehra et al., 2006; Boies, Lvina, & Martens, 2010). Inferring from the above, shared leadership is an "approach under construction": Few influencing factors have been identified and tested empirically. One of the factors influencing shared leadership effectiveness might be the difference

in personality traits that are often associated with specific types of behavior. Some of these behaviors can be very conducive to team work, as stated by LePine and Van Dyne (2001). It was shown in their study that especially *Conscientiousness* is positively correlated to cooperative performance. This might foster behavior associated with shared leadership and, therefore, enhance team performance.

Another important factor is the common disadvantage of team work, as pointed out by Latané, Williams, and Harkins (1979): Whenever work load and responsibility are shared, there is a certain risk of free-riding (the tendency to be less productive in a group than when working individually) and social loafing (intentionally benefiting from group efforts without taking share in that effort). Teams containing one or more free riders are likely to be less effective and benefit less from shared leadership than teams consisting of exclusively motivated members.

To explore the temporal development of shared leadership, inspect its effectiveness, and empirically test the above made assumptions about influencing factors, the following hypotheses are proposed:

H_1 : Shared leadership increases over time.

H_2 : Shared leadership is positively related to team performance.

H_3 : Overall motivation of a team is positively related to team performance.

H_4 : Conscientiousness is positively related to team performance.

H_5 : Motivation positively moderates the relationship between shared leadership and team performance. More specifically: When motivation among team members is high, shared leadership and team performance are more positively related than when motivation is low.

METHOD

Procedure

Data for this study were collected at the University of Oslo from small groups of students. Participants were recruited from the undergraduate psychology course "Introduction to Organizational Psychology" (lasting one semester). Participation was voluntary, was not part of the academic curriculum, and was not rewarded financially or otherwise.

Formation of groups and group work

In addition to weekly lectures and seminars, students were obliged to prepare and hand in written assignments consisting of case studies on the different course topics. Groups for these assignments were formed by the students in a self-organized manner. However, constellation of the groups had to be stable throughout the period of the study (no switching of members). Every group had to hand in a total of five assignments; one every week, for five consecutive weeks. Students would meet up, collect information, and distribute tasks autonomously. Workload was approximated to 8 hours per assignment (although it was not monitored systematically).

Weekly questionnaires

Every week, after the respective assignment had to be handed in, students were asked to fill in the weekly questionnaire. Each questionnaire referred to the latest assignment respectively and contained the same questions for all five measurements. Participants filled in a total of five weekly questionnaires. They were informed about the procedure at the beginning of the study and were reminded to complete the questionnaire every week during seminars and via email. For every questionnaire, a due date was set at one week after the corresponding assignment had to be handed in to ensure comparability of the different measurement times.

Personal questionnaire

Students were asked to fill in one additional questionnaire to gather information about characteristics that remain relatively stable over time, such as personality and gender. This personal questionnaire could be submitted any time from the beginning of the study until two weeks after the deadline of the last assignment.

The questionnaires (weekly and personal) were constructed with UniPark (psychology online survey software). All questionnaires were accessible online, meaning that students could choose locality and time of completion (e.g. using home computer, facilities of the university, or other instances). The questionnaires were administered in English.

Participants

The sample consisted of 24 small international student groups, containing seventy eight subjects (N=78). Overall response rate was 31% (personal questionnaire: 50%; weekly questionnaires: 27%). For the weekly questionnaires, 31% provided data on only one or two measurements; 69% provided data on three or more measurements. Three groups did not return any of the questionnaires and were excluded from the study. Group size was held relatively constant with a maximum number of four members per team because smaller groups are more effective than larger groups (Levine & Moreland, 1990). 65% of the participants were Norwegian; the other 35% were exchange students from countries other than Norway (including Germany, the Netherlands, Finland, France, Singapore, Spain, and Sweden). The mean age was 23.78 (SD= 4.16), and 80% of the participants were female.

Measures

At the start of every questionnaire, participants were informed about the aim of the study and were secured that their information would be treated confidentially.

Weekly questionnaires

Team performance was assessed using questions by Hirst et al. (2004) and a five-point Likert scale (1=*disagree strongly*, 5=*agree strongly*). One of the questions used was: "The team has chosen the best available strategies for meeting project

goals.” Interitem correlations (expressed in Cronbach’s α) were calculated to inspect the internal consistency of items corresponding to the same concept (e.g. team performance). Coefficients are stated on the diagonal of Table 1. Cronbach’s α was .79 at Time 1, .84 at Time 2, .85 at Time 3, .70 at Time 4, and .77 at Time 5. Measurements at Time 2 and 3 delivered very good Cronbach’s α and can therefore compensate for slightly lower Cronbach’s α at Time 4.

Shared leadership was assessed using questions by Hoch et al. (2010) and a 21-point Likert scale slide (1=*not at all*, 21=*to a great extent*). An example of one of the questions is: “My team members are driven by higher purposes or ideals.” Cronbach’s α was .83 at Time 1, .84 at Time 2, .84 at Time 3, .82 at Time 4, and .91 at Time 5.

Group members rated team performance and the group’s leadership always in reference to one specific period of time (the period during which the group prepared their latest assignment) and in reference to the whole group rather than to individual members of the group (performance and leadership of the group during the completion of their latest assignment).

Personal questionnaire

Personality was assessed using questions from the HEXACO-Personality Inventory-Revised (Lee & Ashton, n.d.) and a five-point Likert scale (1=*disagree strongly*, 5=*agree strongly*). Since the objective was to exclusively cover participants’ scores on the dimension conscientiousness, only questions referring to this specific personality trait were used. An example of one of the items is: “I always try to be accurate in my work, even at the expense of time.” A reversed example reads as: “When working, I sometimes have difficulties due to being disorganized.” Cronbach’s α for personality was .84.

Table 1. Descriptive Statistics and Standardized Correlation Coefficients

Variables	Mean	SD	1	2	3	4
1 Team performance ^a	4.02	.49	.79^b			
2 Shared leadership ^a	3.55	.66	.65***	.85^b		
3 Motivation	3.76	.55	.16	.17	.76	
4 Personality	3.68	.57	.10	-.19	.42**	.84

Note: Interitem correlations are presented on the diagonal.

SD = Standard Deviation

^a Level 1-variables (repeated measures) have been aggregated to Level 1 (individual).

^b For level 1-variables, interitem correlations are stated as the average Cronbachs's α over all 5 measurement times. Cronbachs's α s for the individual measurement times are .79, .84, .85, .70, .77 for team performance and .83, .84, .84, .82, .91 for shared leadership.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Motivation was assessed using adjusted questions by Price (1997) and a five-point Likert scale (1=*disagree strongly*, 5=*agree strongly*). Price's original inventory refers to a work situation and individual tasks, whereas the present study was conducted in an academic context and with reference to overall group work. Questions were therefore adapted to better suit the aim of this study: "job" was replaced by "group work" and "my" was replaced by "our". Questions as "I feel a sense of personal satisfaction when I do this *job* well." and "I feel unhappy when *my* work is not up to my usual standard." became "I feel a sense of personal satisfaction when I do this *group work* well." and "I feel unhappy when *our* work is not up to my usual standard." Cronbach's α for motivation was .76.

Analysis

The present study contained two levels of analysis: repeated measurements over time (Level 1) and between individuals (Level 2). Level 1-variables are shared leadership and team performance. Level 2-variables are personality, motivation, and the control variables age, gender, and nationality. Missing values were replaced using missing value analysis and a subsequent application of the EM method (SPSS 19).

Pre-analysis

For the pre-analysis, Level 1-variables have been aggregated to Level 2. Independent samples t-tests were carried out for age, personality, and intrinsic motivation, and a χ^2 -test for gender to inspect possible differences between students who provided data on only one or two measurements versus students who provided data on three or more measurements. Results showed that students who filled in just one or two weekly questionnaires did not differ from students who filled in three or more questionnaires. Independent samples t-tests were carried out to examine possible differences between Norwegian and non-Norwegian participants with regard to personality, motivation, shared leadership, and team performance. Norwegian participants did not differ from non-Norwegian participants on these variables.

Descriptive statistics and correlation coefficients have been calculated for team performance, shared leadership, motivation, and personality (see Table 1). Shared leadership was significantly related to team performance and motivation was significantly related to personality. Results of the Multilevel Analysis stated below confirm the general observations.

Multilevel Analyses

To inspect the temporal development of shared leadership, a mixed model with a random intercept for the predictor variable time and shared leadership as the dependent variable was run. Regarding Multilevel analysis, a mixed model for repeated measures with team performance as the dependent variable was run. A model with only shared leadership as independent variable (corresponding to Model 3 of the below stated) was used to compare different error covariance structures. The following structures were tested: diagonal, autoregressive (first order), heterogeneous autoregressive, and heterogeneous compound symmetric. The goodness-of-fit statistic Akaike's Information Criterion (AIC) was consulted

to compare the performance of the applied covariance structures. Autoregressive structure best fitted the data of this study.

Consequently, multilevel analysis was conducted using the autoregressive error covariance structure. First, an unconditional model (Model 1) without predictors was run to inspect the significance of within-group variance (random residual estimate) and between-group variance (random intercept estimate), as is suggested by Hox (2002). The different predictor variables were then added stepwise to explore their relevance in explaining variation in the dependent variable team performance.

Results

Results of the mixed model analysis of the temporal development of shared leadership can be seen in Table 2. The estimate for the predictor variable time is .07 and is significant at $p < .05$, indicating that for every one consecutive measurement the average shared leadership value increases by .07.

Table 2 Results of Mixed Model Analysis: Temporal Development of Shared Leadership

Variable	Est.	SE	df	t	F	Sig.
Time	.07	.03	31.85	2.23	4.98	.03

Note: Every unit increase in the predictor variable results in a change of the value of the dependent variable corresponding to the coefficient of the predictor estimate.

Est.= Predictor Estimate, SE= Standard Error, df= Degrees of Freedom, t= t-test value, F= ANOVA test value, Sig.= Significance

Results of the different models of the multilevel analysis can be seen in Table 3. Akaike’s Information Criterion was used to determine which Model fitted best the data (lower coefficient indicates better fit of the model). With a value of 121.23, the model that included time, shared leadership, motivation, and personality (Model 5) best fits the data. The predictor estimates for shared leadership and personality in this model appear to positively predict team performance. The estimate for shared leadership is .57 ($p < .001$), indicating that an increase in participants’ shared leadership value of 1, results in an increase of team performance equal to .57. The estimate for personality is .23 and is significant at $p < .01$: Therefore, an increase in the personality trait conscientiousness (which was measured and coded in this study as personality) results in an increase in team performance of .23. Introducing the variable shared leadership to the multilevel analysis (Model 3) leads to a decrease in total variance from .30 to .18. This is a decrease of 40% compared to the previous model. It can therefore be assumed that 40% of the total variance can be explained by shared leadership. When adding the predictor personality to the analysis (Model 5), total variance decreases from .18 to .16. This is a decrease in total variance of 11%, indicating that the Level 2 predictor personality explains 11% of the total variance. Time and motivation do not improve significantly the multilevel model and adding these variables does not explain more variance of the dependent variable (Model 2 & 4). A moderating effect of motivation (interaction) was not found (Model 6).

Table 3 Results of Multilevel Analysis: Predictors of Team Performance

Variables	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Intercept ^a	3.97***	.09	3.87***	.12	2.15***	.23	2.23***	.38	1.5**	.44	3.80*	1.71
time			.04	.03	-.01	.03	-.01	.03	-.01	.03	-.00	.03
SL					.53***	.06	.54***	.07	.57***	.03	-.06	.45
Motivation							-.03	.10	-.09	.10	-.66	.42
Personality									.23**	.08	.22**	.08
SL × motivation											.16	.11
<i>Variance</i>												
Total variance	.30		.30		.18		.18		.16		.20	
Diff. variance ^b	-		0%		40%		0%		11%		-25%	
<i>Fit index</i>												
AIC ^c	160.23		161.10		124.98		126.92		121.23		121.36	

Note: Every unit increase in the predictor variable results in a change of the value of the dependent variable corresponding to the coefficient of the predictor estimate. Est.= Predictor Estimate, SE= Standard Error, SL= Shared Leadership, AIC= Akaike's Information Criterion

^a Predicted value of the dependent variable when all predictors are set to zero. ^b Reduction in total variance compared to previous model. ^c Lower coefficient indicates better fit of data.

* $p < .05$; ** $p < .01$; *** $p < .001$

DISCUSSION

The goal of the present study was to identify various factors that influence the emergence and effectiveness of shared leadership. Results show that shared leadership increases over time and that higher levels of shared leadership are associated with higher team performance. Furthermore, the personality trait conscientiousness is positively correlated with team performance. A hypothesized effect of motivation on team performance could not be confirmed. Neither did motivation moderate the relationship between shared leadership and performance.

A main contribution of the present study was the longitudinal study design aiming to track the temporal development of shared leadership. The steady increment of shared leadership accommodates an assumption made by Ensley et al. (2006): The relative importance of vertical versus shared leadership depends upon the stage of development of the team. Whereas established teams rely on shared leadership, young teams need a more vertical leader. As teams in this study were formed at the starting point of the investigation and then matured over the course of the study, shared leadership became increasingly important and more persistent. As noted by Ensley et al. (2006), in case of complications or external changes, the degree of shared leadership drops and a vertical leader is needed again. As a result, leadership might change over the lifespan of a team in a wavelike manner.

Even though the effectiveness of shared leadership has only recently been tested empirically and the body of research is still growing, shared leadership seems to comply with the rising demand for flexibility and efficiency in organizations and the aspiration among employees to partake in decisions. Consequently, shared leadership has been introduced as the new, more suitable leadership approach (Hoch et al., 2010). However, as suggested by Fiedler's contingency model of leadership effectiveness, the best-fitting leadership style depends on the situational context (Greenberg, 2011; Vroom & Jago, 2007). According to Fiedler, a certain leadership style might be effective in some situations but not in others. In surgical teams or combat troops for instance, information has to be passed on without delay, so that action can be initiated rapidly. These teams will likely benefit from a more hierarchical structure, while the need for innovation is a minor concern. The theoretical model of shared leadership suggests that it allows a more complete usage of the available intellectual resources and fosters participation, which in turn enhances team performance (Mehra et al., 2006). This is especially true when the required intellectual resources are extensive and rapid processing is of little importance. Under these circumstances, shared leadership is more suitable.

Since the two general leadership views – shared versus vertical leadership – cannot be distinguished in a real life setting in such a clear cut manner as they can be in theory, Gronn (2002) stated that they are best described as opposing positions on a continuum. Identifying factors that predict effectiveness for one or the other extreme can help approximate the best fitting style on the continuum. The present study shows that undergraduate work teams benefit from a more shared leadership, thereby amplifying the applicability of shared leadership to the academic environment.

A drawback of shared leadership research is that most published studies have been conducted in North America and only very few have been conducted in

other parts of the world (for a German sample study see Hoch et al. 2010). Cultural differences, however, might affect the emergence, development, and effectiveness of shared leadership. As can be inferred from Hofstede's cultural dimensions theory (Hofstede & Hofstede, 2005), cultures differ in the degree to which members accept the unequal distribution of power in organizations and institutions. This difference in acceptance of disparity or "power distance" indicates that shared leadership might not be equally applicable in all cultures. It is therefore important to identify cultures that likely benefit from this leadership style. The present study adds to recent findings by replicating results regarding its effectiveness in an international population.

Besides environmental factors, there are notable individual characteristics that evoke differences in shared leadership and affect team effectiveness. One of these characteristics, as identified in the current study, is the personality trait conscientiousness: Higher levels of conscientiousness correlate with higher team performance. This finding is consistent with recent literature as conscientiousness is usually associated with cooperative behavior (LePine & Van Dyne, 2001), which enables shared leadership and therefore enhances performance.

Another crucial characteristic of a team is the motivation of their members: Poorly motivated teams are less productive than motivated teams due to social loafing (the tendency to be less productive in a group than when working individually) and free riding (intentionally benefiting from group efforts without taking share in that effort). A hypothesized positive correlation between motivation and team performance, however, was not confirmed in this study, implying that poorly motivated teams perform as well as highly motivated teams. This finding is highly counterintuitive since empirical work has shown that motivation is an important predictor of performance (Latané et al., 1979). A possible statistical explanation for the non-significant motivation effect might be that the shared leadership variable already covers most of the variance explained by motivation. A follow-up analysis produced a positive trend for motivation to correlate with team performance that was significant at $p < .10$.

As pointed out by Hoch et al. (2010), the correlation between shared leadership and team performance found in recent studies varies somewhat across studies. Hence, it has consequently been argued that future research should zoom in on negative moderator effects in the leadership-performance relationship (Avolio, Walumbwa, & Weber, 2009; Mohammed & Nadkarni, 2011; Pearce & Conger, 2003). As seen in other empirical work, motivation sometimes acts as a mediator between certain predictor variables and performance (Gagné & Deci, 2005), and sometimes as a moderator of the predictor variables (Dysvik & Kuvaas, 2011). Highly motivated teams might display the actual effect of shared leadership on team performance, whereas poor motivation might interfere with the shared leadership-performance relationship. An interference or moderation effect, however, was not significant in this study, indicating that shared leadership predicts team performance independent of the team's motivation.

In conclusion, following from the results of this study, strategic shared leadership training should not only be offered to teams in organizations and firms, as suggested by Carson et al. (2007), Ensley et al. (2006), and Hoch et al. (2010), but also to students in an academic context.

Future research

Several suggestions for future research are readily identifiable from the results of this study. First, the present study used a longitudinal study design to inspect the development of shared leadership in teams that were newly assembled and then persisted for one semester. Although the present study adds to the available knowledge about shared leadership as most studies did not focus on its development over time, future studies should examine shared leadership with an even more longitudinal research. By doing so, researchers would be able to detect possible factors involved in a change of leadership style as a result of evolving problems, changing environmental factors, or switching of team members.

Second, even though the present study extended the applicability of shared leadership to non-U.S. populations, further intercultural comparison is required to zoom in on differences between collectivistic and individualistic oriented societies. A research topic for future studies could be the possible moderator effect of culture for the relationship between shared leadership and team performance.

Third, the present study only inspected the impact of conscientiousness on team performance, but not that of other personality traits. Future research should explore the effect of different personalities on team performance and check for possible mediator effects of personality.

Limitations

This research was not without limitations. First, the sample of this study was drawn from attendees of an undergraduate organizational psychology course. On one hand, as mentioned earlier, the use of such a sample extends the applicability of shared leadership to an academic context (most studies so far have only reported positive effects of shared leadership in full-time working environments). On the other hand, the specificity of the sample reduces the generalizability of the findings.

Second, a high percentage of subjects in this study were females (80%) and individualistic cultures were more represented in the sample than collectivistic cultures (for a classification of cultures see Hofstede & Hofstede, 2005). Differences between men and women regarding leadership style and performance are usually of minor concern as pointed out by Burke and Attridge (2011) and Lally (2008). Applicability of shared leadership might, however, differ depending on the cultural context. Results can therefore not be generalized to the same extent to collectivistic and individualistic cultures.

Third, questionnaires were administered in English. Even though all participants had a good understanding of English (language of instruction within the academic setting was English), the majority was not native speakers. Differences in item comprehension due to completion of questionnaires in a foreign language might be present.

Finally, no conclusion can be drawn about the causality of effects found in this study: Shared leadership might be the cause of high performance among undergraduate students. It might also be the case that high performing teams

are simply more likely to engage in shared leadership, or that high performance just happens to co-occur with shared leadership as a result of a third, unidentified variable.

Conclusion

In conclusion, this study shed light on a new and unexplored approach of leadership. The findings of the study add to the growing body of evidence that shared leadership improves team effectiveness. They also contribute to the general understanding of the shared leadership approach by broadening its generalizability to non-U.S. countries and by specifying circumstances in which the approach might be applicable (undergraduate students in an academic context). Managers and academics should therefore take into account and invest in shared leadership by offering training to employees and students.

Acknowledgements

I would like to thank Dr. Sabine Raeder for her assistance with data analysis and revision. Robert van Doorn and an anonymous reviewer also provided useful comments and suggestions on previous versions of this article.

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