Achievement Goals and Team Leadership in Online Small Group Learning

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Abstract: Group learning is a common used learning approach in online education. However, there are limited studies addressing how to support online groups from the perspectives of motivation and team leadership. This study attempts to understand how achievement goals and leadership styles could influence collaboration experience and individual performance. The results showed that learners who adopted mastery goals tended to engage in group learning through promoting member relationships and group cohesion whereas leaders who adopted performance goals tended to concentrate on helping group complete tasks. High level of relationship-orientated leadership made performance-approach goal orientation a significant predictor of collaboration experience and reduced the negative effect of performance-avoidance goals on final grade. This study finally provides insights to online group activity design.

Introduction

Small group learning is a commonly used instructional approach in online education. There are a few challenges that have been discerned such as the reduction of social and contextual cues, trust issue among team members, feeling of isolation, and technical uncertainty (DeRosa, Hantula, Kock, & D'Arcy, 2004). From a team leadership perspective, research has found that virtual team leadership is necessary for quality team performance, however at the same time how leaders or leadership functions in virtual teams is still under exploration (Avolio, Walumbwa, & Weber, 2009; Hertel, Geister, & Konradt, 2005). What makes the challenges even more critical is that leadership in online classrooms are sometimes not explicitly specified by the instructor. In this scenario, leadership roles are little structured and group process is weakly scaffold by the instructor. Informal leadership will gradually emerge in effective online groups, whereas some other groups might stay leaderless towards the end of the group life. The goal of the current study is to understand how emergent leadership in formal online educational settings affect group healthiness as well as individual academic achievement.

Motivation in individual and group learning

In academic settings, students' achievement motivation is strongly associated with how they engage in learning activities and further academic performance. Goal orientations refer to the reason why students study. The classic model differentiates three goal orientations: mastery, performance-approach (PAP), and performance-avoidance (PAV) goal orientation (Middleton & Midgley, 1997). Mastery goals represent students' main focus on understanding subject content and developing competence, whereas performance goals reflect the focus on demonstrating competence and how ability will be judged relative to others. The main difference between PAP and PAV goals is striving to outperform others versus striving to avoid doing poorly than others. Research has found a volume of benefits of adopting mastery goals for its positive influence on learning interest, persistence, psychological well-being, and so forth (e.g., Linnenbrink-Garcia & Pintrich, 2000). Particularly, students adopting mastery goals are more likely prefer group collaboration than those who adopt performance goals (Elliot et al., 2016). On the other hand, PAP goals are associated with lower performance, superficial learning strategy use, and fear of failure. Online education has shown its advantages in reducing social comparison among learners which is promising in terms of encouraging mastery goal adoption.

Leadership as engagement in group learning

In earlier literature studying leadership in face-to-face teams, there is a classic dichotomous model viewing leadership as functional acts: task-oriented and relationship-oriented leadership (e.g., Stogdill, 1969). In non-academic settings, a typical task-oriented leader (T-leadership) focuses on completing tasks and tends to be more directive, autocratic, and critical, whereas relationship-oriented leader (R-leadership) tends to be considerate, permissive, democratic, and person-oriented. Research has shown the contingency effect of the two leadership style on team effectiveness. Generally, T-leadership style would be more effective in extreme team situations (e.g., members are not very close or very close to each other), whereas R-leadership styles are more effective than T-leadership when member relationship is intermediate (Strube & Garcia, 1981). This model has

also been applied in a computer-mediated communication environment (e.g., Yamaguchi, Bos, & Olson, 2002; Xie, Sun, & Lu, 2015; Xie, Hensley, Law, & Sun, 2017). Particularly, in online groups without formal leaders, multiple group members can act like both task- and relationship- oriented leaders. At the same time, group members may not actively engaged in leadership roles. Therefore, under the perspective of leadership as shared leadership roles among group members, this study attempts to understand how leadership as an active investigation in group learning could affect collaboration experience and individual learning outcomes.

Research Questions

Synthesizing theories and empirical findings, this study attempts to study the following research questions:

1. Can goal orientations predict leadership styles, group cohesion, and individual learning outcome?
2. Does leadership moderate the effect of goal orientations on group cohesion and individual learning outcome?

Methodology

Context and participants

The study was conducted in an undergraduate-level online course at a large public university in the Midwest United States during spring and summer 2013. The seven-week-long course covered the topics of learning strategies such as note taking, reading, studying, presentation skills, and resilience in order to help students improve college course achievement. There are in total 171 students from 32 groups and six sessions of the course participated. Most of them were professional and continuing education students. Through group discussion, students shared ideas and received feedback from groupmates for creating individual learning portfolios. Online discussion posts and portfolios were both graded based on the quality and the quantity.

Measures and data collection

Achievement goals were measured by the achievement goals questionnaire (Elliot & Church, 1997). *Leadership styles* were measured by two scales of which each measuring a specific form of leadership, adapted from Stogdill's (1969) Leadership Behavior Descriptor Questionnaire. R-leadership scale measured the degree to which students perceived themselves as facilitating positive interactions among group members, whereas T-leadership scale measured the degree to which students perceived themselves as helping the group attain goals. The *group cohesion* scale (Chin, et al., 1999) measured a sense of belonging to and having connectedness throughout the group. All items focused on the specific context of the course and were measured on a seven-point scale. Achievement goals were measured at the beginning of each class, whereas other variables were collected at the end. All scales exhibited acceptable levels of internal consistency (Hair, Black, Babin, Anderson, & Tatham, 2006). See Table 1 for details of variables.

Table 1. Variables and descriptives

Variable	Sample Item / Formula	Mean	SD	α
Mastery goals (6 items)	I want to learn as much as possible from this class.	4.87	1.31	.86
PAP goals (6 items)	It is important for me to do better than the other students.	4.47	1.52	.86
PAV goals (6 items)	I just want to avoid doing poorly in this class.	4.37	1.31	.76
T-leadership (5 items)	I gave directions about how to do the online discussions and portfolio assignments.	4.00	1.49	.87
R-leadership (4 items)	I suggested how we could all work together.	3.97	1.41	.88
T-leadership level	Score >=4.5 was coded as 1, otherwise 0 using regression tree to determine the threshold (Breiman, Friedman, Olshen, & Stone, 1984).	.66	.47	na
R-leadership level	Score >=3.6 was coded as 1, otherwise 0 using regression tree to determine the threshold.	.39	.49	na
Group cohesion	I feel I belong to my group	4.46	1.38	.90
Grade (transformed)	5-ln(-FinalGradePercent+102.1365)	2.89	.80	na
Group mastery goal level	Average scores of mastery goals among group members	4.51	.65	na
Group PAP level	Average scores of performance goals among group members	4.50	.54	na
Group PAV goal level	Average scores of performance-avoidance goals among group members	4.37	.64	na
Group T-leadership level	Average scores of T-leadership among group members	4.14	.79	na
Group T-leadership	Average scores of R-leadership among group members	4.07	.74	na

leadership level				
Group cohesion	Average scores of perceived group cohesion among group members	4.51	.65	na
Group heterogeneity of mastery goals	Standard deviation of mastery goals in each group	.48	.20	na
Group heterogeneity of APA goals	Standard deviation of performance-approach goals in each group	.61	.18	na
Group heterogeneity of PAV goals	Standard deviation of performance-avoidance goals in each group	.48	.14	na

Results and discussion

Predicting individual-level outcomes

First, can goal orientations predict leadership styles? Two multiple linear regression models (Model 1.1 and 1.2 in Table 2) were built with the two leadership styles as the dependent variable of each. Results showed that PAP goals played the strongest predictor role of T-leadership (t=4.86, df=111, p<.001); mastery goal orientation significantly predicted R-leadership (t=3.52, df=111, p=.001). PAV goal orientation negatively predicted both leadership styles with weaker effect size on R-leadership (Coef. = -.18, t= -1.87, df = 110, p = .06, 95% CI = [-.36, .01]) compared to T-leadership (Coef. = -.21, t = -2.16, df = 111, p = .03, 95% CI= [-.40, -.02]). The results were consistent with the previous research results on the matching effect of goal orientations and leadership styles (Xie & Huang, 2014).

Second, can goal orientations predict individual collaboration experience? We use individual perceived group cohesion as the measure of collaboration experience. Multiple linear regression analysis (Model 2.1) suggested that only mastery goal positively predicted perceived group cohesion (t=5.13, df=167.p<.001).

Does leadership play moderation role in the effect of goal orientations on collaboration experience? Multiple linear regression analysis (Model 2.2) showed that PAP goals failed to significantly predict collaboration experience, however, its interaction term with R-leadership level was a significant predictor, controlling the effect of mastery goal (t=5.33, df=167.p<.001). In other words, only higher level of R-leadership would make PAP goal a significant predictor of collaboration experience.

Regarding individual performance which was measured by final grade of the course, Model 3.1 suggested that mastery goals positively and PAV goals negatively predicted final grade. Both PAP goals and group cohesion has no significant impact on individual performance. Beyond these general relationship between goal orientations and learning performance, does leadership plays moderation role in the effect of goal orientations on grade? Among the three goal orientations, mastery goals and PAV goals were the two significant predictors of the final grade. Model 3.2 showed that T-leadership level significantly reduced the negative effect of PAV goals on final grade (t=2.96, df=167.p=.003), although the main effect of PAV goals was still negative, controlling the effect of mastery goal. In other words, only higher level of R-leadership would make PAP goal orientation a significant predictor of collaboration experience.

In sum, we found consistent findings of the close relationship between mastery goals, R-leadership style, and group cohesion as well the tight relationship between PAP goals, T-leadership style, and final grade. R-leadership helped strong PAP goal to affect collaboration experience, whereas T-leadership played slightly reduced the negative effect of PAV goal on learning performance. However, in this course, collaboration experience was found to neither hinder nor facilitate individual performance. This gives a heads-up for instructional design, advocating for integrating group learning to the path to individual growth rather than a stand-alone class activities.

Table 2. Summary of models

	Dependent variable	Model omnibus test	R^2	Independent variables
Model 1.1	T-leadership	F(3,167)=11.95, p<.001	.17	Mastery goal, PAP goal, PAV goal
Model 1.2	R-leadership	F(3,167)=9.63, p<.001	.20	Mastery goal, PAP, PAV goal
Model 2.1	Group cohesion	F(3,167)=14.99, p<.001	.21	Mastery goal, PAP goal, PAV goal
Model 2.2	Group cohesion	F(3,168)=40.51, p<.001	.33	Mastery goal, R-leadership level * PAP goal
Model 3.1	Final grade	F(3,167)=11.37, p<.001	.17	Mastery goal, PAP goal, PAV goal
Model 3.2	Final grade	F(3,167)=14.72, p<.001	.21	Mastery goal, T-leadership level * PAV goal

Predicting group-level outcomes

Although the sample size at group level is small, the model was statistically significant with the omnibus test at the alpha = .05 level (N=32, F=2.65, df=7, 24, p=.035). There was 43% of variance in group cohesion explained. The correlation between group-level T-leadership and R-leadership was too strong to avoid multi-collinearity problem. The final model therefore only contained R-leadership and other predictors according to theoretically closer relationship between R-leadership and group cohesion. Not surprisingly, the average level of group cohesion was best predicted by group-level R-leadership (t=3.25, p=.003, 95% CI=[.1825815, .8175336]). Interestingly, heterogeneity of PAV goals negatively predicts group cohesion (t=-2.02, p=.054, 95% CI=[-3.408462, .0327989]). In other words, members sensed the group belongingness more strongly when they had similar level (high, medium, or low) of PAV goals. There was no other patterns found about goal orientations and average group cohesion. On the other hand, none of the group-level variables significantly predicted either group level T- or R- leadership.

Significance and limitations

By examining leadership in small online group, the role of group learning experience on learning outcomes was tested. Regarding the limitations, group-level analysis was conducted with small sample from specific context, which restricts the generalizability. Future investigation would use multivariate linear models considering group-level and individual-level variables at the same time.

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