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Citizenship Behavior and Learner Engagement in Collaborative Learning: Exploring Dual Mediation with Emergent Leadership and Group Cohesion

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How can we increase the level of students' engagement in collaborative learning in higher education? To answer this question, we investigated the potential factors that were known to affect teamwork engagement in workplace settings because of the compatibility between collaborative learning and teamwork in the workplace. Specifically, we examined how Emergent Leadership and Group Cohesion mediate the relationship between Organizational Citizenship Behavior (OCB) and engagement. Two hundred and thirty-four college students participated in the study. The hypothesized dual mediation model was tested using the SPSS PROCESS macro (Hayes, 2013). Overall, the proposed model was significant, and the relationship between OCB and engagement was fully mediated by Emergent Leadership and Group Cohesion. The results present the mechanism of how OCB can positively contribute to student engagement in a collaborative learning environment. By enhancing OCB in collaborative groups, therefore, it is expected that students can experience good shared leadership and cohesive groups, and eventually such students' experiences will positively affect learners' engagement levels in collaborative work. Our results provide evidence that instructors should consider how OCB can be encouraged in collaborative settings when they design, plan, and facilitate collaborative learning projects. Theoretical and practical implications of the research are also discussed.

Introduction

Working effectively with others as a group is one of the necessary skills that our college students should possess to succeed in their professional world where they will work after graduating. This is because many tasks they will perform in their careers will frequently require them to work as a group. As educators in higher educational institutions, we are responsible for teaching them not only content knowledge related to their majors, but also the skills for working collaboratively. Students have often gained such skills via collaborative learning experiences while they are in college.

Many educators and researchers in the field of higher education, therefore, have given their attention to collaborative learning (hereafter CL), meaning "an instruction method in which students at various performance levels work together in small groups toward a common goal" (Gokhale, 1995, p. 22). Learners can learn better through CL compared to individual learning (Johnson & Johnson, 1989; Lou, Abrami, & d'Apollonia, 2001), develop social interaction skills and critical thinking skills, build learning communities, and get help to understand diversity (Laal & Ghodsi, 2012; Micari & Pazos, 2019; Tlhoaele, Hofman, Winnips, & Beetsma, 2014).

Despite some empirical evidence of the effects of CL, some researchers also argued that collaborative learning design and research may often neglect some critical elements which relates to socio-emotional aspects of group forming and group dynamics in CL. For example, Kreijns, Kirschner, and Jochems (2003) pointed out that CL researchers and educators often limited the understanding of social interaction to cognitive processes like deep learning or information retention, although social interaction like member support or group well-being functions are important for successful group work. Therefore, it is important to incorporate social dimensions to gain a better understanding of CL. In light of research findings in the fields of management and human resource development (HRD) (Morse, 2010; Organ, Podsakoff, & MacKenzie, 2006; Strijbos, Martens, Jochems, & Broers, 2004), we propose that group-related constructs such as organizational citizenship behaviors, group cohesion and leadership, which are relatively neglected topics in CL, can be considered. Outside of the educational context, groups of researchers have examined the group-related factors for promoting group members' engagement in group work (e.g., Bakker & Demerouti, 2016; Bakker, Demerouti, & Euwema, 2005; Goering, Shimazu, Zhou, Wada, & Sakai, 2017; Joubert, 2014; Macgowan, 1997). Considering a CL environment as a group work setting in educational contexts, it is reasonable to regard the factors related to group processes as the ones working for engaging learners in CL. In the current research, we aim to explore the effects of organizational citizenship behaviors (OCB), group cohesion, and emergent leadership on student engagement in CL in higher education and how these constructs influence student engagement in the collaborative learning environment of higher education.

Key Constructs of the Study

Engagement

Engagement is one of the critical conditions for students to achieve learning goals successfully (Kuh, 2007). Highly engaged learners are likely to learn more, get better grades, and eventually pursue higher education (Wang & Holcombe, 2010). In spite of the importance of engagement and significant efforts to reach a consensus on its definition, there has not yet been a single and firm definition of student engagement (Groccia, 2018; O'Brien & Toms, 2008). Depending on the context of the studies, engagement has been defined in various ways. For example, Kuh (2003) defines engagement as "the time and energy students devote to educationally sound activities inside and outside of the classroom, and the policies and practices that institutions use to induce students to take part in these activities" (p. 25). Axelson and Flick (2011) refer to engagement as the concept of "how involved or interested students appear to be in their learning and how connected they are to their classes, their institutions, and each other" (p. 38), and Fletcher (2016) defines engagement as a continuous connection of a learner toward any learning activities.

In addition, some argue that engagement is a complex concept that cannot be explained with a single dimension. According to Hu and Li's (2017) categorizations, student engagement has been identified as a construct that has two, three, or even four dimensions. For example, some researchers (e.g., Finn,1989; Marks, 2000; Newmann, Wehlage, & Lamborn, 1992) have explained engagement with two dimensions, which are behavioral and emotional engagement. Others (e.g., Appleton, Christenson, & Furlong, 2008; Appleton, Christenson, Kim, & Reschly, 2006; Reschly & Christenson, 2006) have asserted four dimensions by adding cognitive and affective engagement to behavioral and emotional engagement. Similarly, some studies divide the concept of engagement into three dimensions, such as behavioral, emotional, and cognitive engagement (e.g., Fredricks, Blumenfeld, & Paris, 2004; Jimerson, Campos, & Greif, 2003; Klem & Connell, 2004).

As shown above, researchers have identified engagement in various ways and with multiple dimensions. However, the core of learner engagement, which is interpreted through those definitions and multiple dimensions, is the very term describing a *state* that a learner subjectively experiences in a specific environment or an activity. In this regard, Doherty and Doherty (2018) explain that "engagement is most frequently characterized as a variable *state*" (p. 8). Also, Schaufeli, Salanova, González-Romá, & Bakker, (2002) define engagement as "a positive, fulfilling, work-related *state* of mind" and "a more persistent and pervasive affective-cognitive *state*" (p.74).

Viewing engagement as a *state* of mind has led researchers to consider flow theory, coined by Csikszentmihalyi (1990). It is because the concept of flow refers to "a subjective state that people report when they are completely involved in something to the point of forgetting time, fatigue, and everything else but the activity itself" (Csikszentmihalyi, 2014, p.230). In the same vein, Nakamura & Csikszentmihalyi (2009) describe the concept of flow as "a state of deep absorption in an activity that is intrinsically enjoyable" (p. 195). Hence, due to the conceptual similarity, the concept of flow has often been interchangeably used with a concept of engagement (Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2014). Also, Guo, Klein, Ro, and Rossin, (2007) found that students' flow experience also affects learning outcomes, specifically, the students' perceived learning of the subject matter, perceived skill development, and student satisfaction.

Based on this comprehensive interpretation discussed above, we define engagement using one of the dimensions classified by Schaufeli et al. (2002): absorption, referring to "being fully concentrated and deeply engrossed in one's work, whereby time passes quickly, and one has difficulties with detaching oneself from work" (Schaufeli et al., 2002, p. 75). As described in the definition of absorption, it represents the core concept of engagement. Furthermore, it could be considered as the deepest level of engagement (Brockmyer et al., 2009), and so it can directly affect the learner's work performance, as does flow. Therefore, we operationally define learner engagement as a learner's absorbed *state* of mind that firmly attaches the learner to work due to the learner's full concentration and deep engrossment in the task at hand.

Organizational Citizenship Behavior

It is frequently observed that people in an organization and team help other members in various organizational settings such as the military (Gurbuz, 2009), government (Shim & Faerman, 2017), workplace (Astakhova, 2015), and education (Chen & Carey, 2009), although these helping behaviors are not part of their required tasks or roles. The voluntary helping behaviors in an organization are positively correlated with people's job satisfaction (Bateman & Organ, 1983). Organ (1988) devised the concept of this behavior and called it organizational citizenship behavior (OCB). OCB is defined as the following:

> Individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization. By discretionary, we mean that the behavior is not an enforceable requirement of the role or the job description, that is, the clearly specifiable

> terms of the person's employment contract with the organization; the behavior is rather a matter of personal choice, such that its omission is not generally understood as punishable. (Organ, 1988, p. 4).

In group collaboration in the workplace, team members' OCB plays a significant role in team performance, individual performance, work engagement, and work satisfaction (Bruque, Moyano, & Piccolo, 2016; Walz & Niehoff, 2000). Also, OCB in the team is correlated with various constructs in collaboration such as transformational leadership, team climate, and group cohesion (Podsakoff et al., 2017). However, some researchers (e.g., Al Ahad & Khan, 2020; Ariani, 2013) have found that demographic attributes like gender and age are not playing a significant role on OCB. In light of these findings in the workplace, it is reasonable to examine the effects of OCB in higher education.

Emergent Leadership

Leadership is important in learning as a group. A strong leader can inspire and stimulate group members, provide directions for the group, and facilitate group participation (Denison, Hooijberg, & Quinn, 1995). Researchers have explored how traditional leadership constructs such as transformational leadership and transactional leadership influence learning outcomes (e.g., Chang & Lee, 2013; Raes et al. 2013) and learning satisfactions (e.g., Huang, Kahai, & Jestice, 2010). In the last two decades, researchers have been exploring a new leadership phenomenon: emergent leadership. Instead of seeing how appointed leaders lead an organization or a group, which transformational leadership and transactional leadership address, emergent leadership describes how individuals emerge as leaders in group work environments, which often appear in the context of collaborative learning. Studies in the management area found that people in groups emerge as leaders in various ways. For instance, Yoo and Alavi (2004) found virtual group members initiated conversation and activities, scheduled meetings, and integrated group members' work. Recently some educational researchers sought to explore how emergent leadership works in educational environments. For example, Li et al. (2007) examined discussion groups in elementary classrooms, and they found that children shared leadership functions including turn management, argument development, planning and organization, topic control, and acknowledgment. Carte, Chidambaram, and Becker (2006) found that higher-performance virtual teams in college classes exhibited more emergent leadership behaviors. In conclusion, some empirical pieces of evidence indicated that members in learning groups emerged as leaders in different ways and emergent leadership could lead to better learning outcomes.

Group Cohesion

Group cohesion is defined as "an individual's sense of belonging to a particular group and his or her feelings of morale associated with membership in the group," (Bollen & Hoyle, 1990, p. 482). A sense of belonging and morale is directly related to an individual's motivation to achieve group goals because people are willing to connect with each other, remain united to pursue group success, and harmonize with other team members in a highly cohesive group (Carron, Brawley, & Widmeyer, 1998; Philippe, Lafreniere, Paquet, & Hauw, 2014). Group cohesion improves the group decision-making process and the productivity of the group as well (Harris & Sherblom, 2018).

In CL, group cohesion is positively associated with the quality of collaboration in groups and student satisfaction because collaborative learning can foster trust and better communication among team members (Dewiyanti, Brand-Gruwel, Jochems, & Broers, 2007; Williams, Duray, & Reddy, 2006). Bravo, Catalán, and Pina (2019) examined the consequences of group cohesion in college student collaborative learning groups and reported that group cohesion in collaborative learning enhances student satisfaction with teamwork, the quality of teamwork results, and learning. Wang and Hong (2018) similarly reported that group cohesion in the computer-supported collaborative learning environment could improve team performance.

Relationship among Key Constructs

OCB and Engagement (Absorption)

Since Organ (1988) proposed OCB, OCB studies have proliferated in the field of management (Alkahtani, 2015). The previous OCB research in management and the workplace consistently supported that OCB is positively related to various workplace outcomes. OCB is, for example, positively correlated to job satisfaction (Lu, Zhao, & While, 2019) and work performance (Podsakoff, Whiting, Posdakoff, & Blume, 2009) in the workplace. Previous studies also reported the positive relationship between work engagement and OCB (Ariani, 2013; Babcock-Roberson & Strickland, 2010). Babcock-Roberson and Strickland (2010) collected data from college students regarding their work experiences and found a significant positive correlation between OCB and work engagement. Although there are no direct research results of OCB and student engagement in learning, based on the research in the workplace, we hypothesize as follows: H1. OCB affects engagement in CL.

OCB and Emergent Leadership

Another question is: What may lead to emergent leadership in CL situations? Although little research has focused on the relationship between OCB and emergent leadership, the literature suggests that various citizenship behaviors lead to emergent leadership. For instance, some studies found that internal team environments that supported citizenship behaviors, including shared purpose, social support, and voice, were positively related to emergent leadership (Carson, Tesluk, & Marrone, 2007; Serban & Roberts, 2016). In addition, the studies found that emergent leadership and OCB were both related to personality traits such as extraversion (Kickul & Neuman, 2000; Walter, Cole, der Vegt, Rubin, & Bommer, 2012). Another antecedent of emergent leadership is group conflict. Li, Hui, Ashkanasy, and Ahlstrom (2012) found that task and relational conflict had a negative relationship with emergent leadership. Choi and Sy (2010) also found that task and relational conflict had a negative relationship with OCB. Marinova, Moon, and Kamdar (2013) examined the relationship between aspects of OCB, including conscientiousness and altruism, and emergent leadership. They found that the relationship between conscientiousness and emergent leadership was mediated by altruism. Hence, we hypothesize as follows: H2. OCB affects emergent leadership in CL.

OCB and Group Cohesion

In terms of the relationship between OCB and group cohesion, we hypothesize that OCB can be an antecedent of group cohesion. Bravo et al. (2019) examined the antecedents of group cohesion in CL: individual factors (cooperativeness and collaborative behavior) and task factors (task complexity and workload). Collaborative behaviors and cooperativeness, the individual factor antecedents of group cohesion, are similar to OCB. Collaborative behaviors and cooperativeness in their research include prosocial behavior, and OCB is a type of prosocial behavior in an organization, including commitments to other members and the organization (Borman & Motowidlo, 1997). This argument is reasonable because OCB components such as high altruistic behaviors towards other team members can promote group cohesion (Prapavessis & Carron, 1997). Therefore, we hypothesize that: H3. OCB affects group cohesion in CL.

Emergent Leadership and Group Cohesion

Group cohesion is another important factor that can lead to positive team performance. Indeed, group cohesion has been found to be positively related to emergent leadership in various contexts (Xie, Hensley, Law, & Sun, 2019; Yamaguchi & Maehr, 2004). For example, Neubert (1999) found that emergent leadership had a positive relationship in a manufacturing team context. In another study, Xie et al. (2019) investigated college student teamwork in an online class. They also found a strong correlation between emergent leadership and group cohesion. Yamaguchi and Maehr (2004) found that emergent leadership led to stronger group cohesion in elementary classrooms where students collaborated in math activities. In the teamwork literature, Yoo and Alavi (2004) found that emergent leaders often coordinate the logistics among the team members, as well as integrate team members into work teams, which, in turn, can improve group cohesion. Therefore, we hypothesize that emergent leadership is an antecedent of group cohesion in the context of higher education: H4. Emergent leadership affects group cohesion in CL situations.

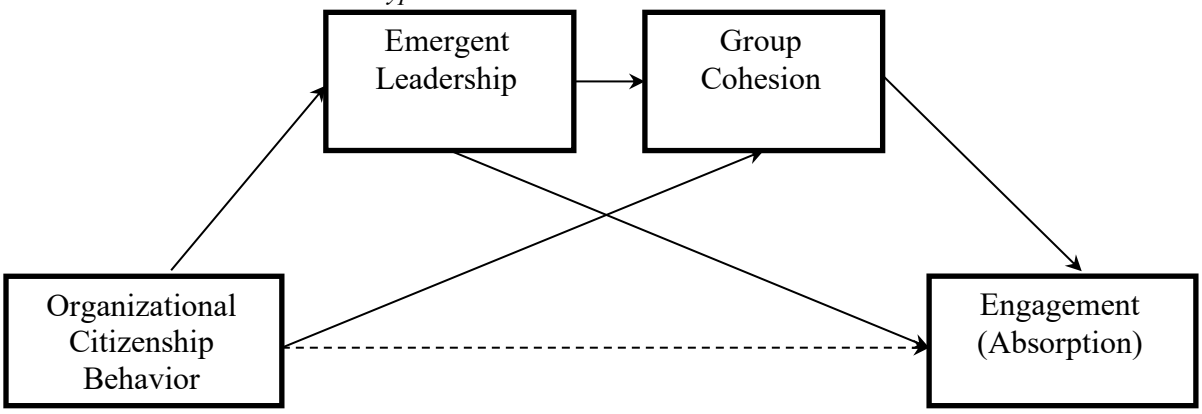
Emergent Leadership and Engagement

In a learning environment, students have to engage in learning activities in order to learn. The relationship between emergent leadership and engagement has only been explored in limited amounts of research. A few studies have focused on how emergent leadership influences communication patterns, which can be an aspect of engagement. Carte et al. (2006) investigated 22 virtual teams from three different universities located in three different states. They found that the teams with higher emergent leadership communicated more than those teams with lower emergent leadership. Xie et al. (2019) examined how emergent leadership influenced posting and reading online discussions in an online class. They found that task emergent leadership had a positive relationship with both posting and reading behaviors in an online discussion, but relational emergent leadership and posting in/reading the online discussion did not have a significant relationship. In another study, Waldman et al. (2013) examined emergent leadership and team-level engagement in MBA classes. They found that individual engagement in problem-solving tasks was related to the individuals' emergent leadership. As a result, we hypothesize that students' emergent leadership is an antecedent of engagement: H5. Emergent leadership affects engagement in CL.

Group Cohesion and Engagement

A few studies have shown that group cohesion is a construct showing a positive relationship to engagement. Costa, Passos, and Bakker (2014) argued that group cohesion is positively related to teamwork engagement. In addition, Gaspar (2016) stated that a group high in cohesion tends to be engaged and absorbed more at work because they are motivated to work together to achieve the group's desired goal. Thus, he asserts that group cohesion is positively

Figure 1
Hypothesized serial dual mediation model



related to teamwork engagement. Some researchers like Rodríguez-Sánchez, Devloo, Rico, Salanova, and Anseel (2017) also support the positive relationship between group cohesion and engagement. According to the previous research studies in the context of the corporate working environment, the teams with high group cohesion tend to perform well on tasks through increased engagement with the task at hand. Hence, we hypothesize that a similar situation can happen in higher educational settings: H6: Group cohesion affects engagement in CL environments in higher education.

Study Hypotheses and Proposed Model

Based on the hypotheses listed above (H1-H6), we propose the following model for engagement (absorption) in CL environments (Figure 1). To test the proposed serial dual mediation model shown in Figure 1, we established three specific hypotheses additionally as follows: the relationship of OCB to engagement in CL would be mediated by (a) emergent leadership, (b) group cohesion, and (c) both emergent leadership and group cohesion. Hence, the three additional hypotheses are:

H7: Emergent leadership mediates the relationship between OCB and engagement in CL.
H8: Group cohesion mediates the relationship between OCB and engagement in CL.
H9: Both emergent leadership and group cohesion mediate the relationship between OCB and engagement in CL environments.

Methods

In order to examine the hypotheses, we collected data from college students using a survey and employed the SPSS PROCESS macro (Hayes, 2013) to analyze the dual mediation model. In this section, detailed descriptions of research participants and measurement are provided.

Participants

Two hundred and thirty-four Korean college students participated in the study. The data was collected in a general mandatory course for all junior and senior students in the college. The goal of the course is that students, as good citizens of society, identify critical social issues (e.g., climate changes and economic inequality) and design solutions through collaborative group work. One hundred and eighty-four juniors (78.6%) and 50 seniors (21.4%) participated in this study. Students taking the course were from various disciplines in the university such as humanities (53 students, 22.6%), social sciences (75 students, 32.1%), science (55 students, 23.5%), information technology (32 students, 13.7%), and arts (17 students, 7.3%). Two students (0.9%) did not reveal their discipline.

In the 16-week course, students conducted a group project from week four to week 12. Before forming teams for a group project, for five weeks the students had a chance to learn the necessary collaborative learning skills including team-building skills, team communication skills, and problem-solving skills, as well as primary research skills such as topic investigation skills and literature search skills. The students formed groups of four or five people, and they worked on a group project for nine weeks. The rule of thumb to form groups was that the instructors of the classes assign students to groups by their interests in topics. Hence, most groups were formed under this principle. After completing the research, each group presented their findings and solutions to the class. The survey was distributed in class and collected on weeks eight and nine of the group project.

Table 1
Sample Items by the Key Constructs

Key Constructs	Sample Items
OCB	I help other group members who have a heavy workload. I am one of the most conscientious students in the group. I consume a lot of time complaining about trivial matters in group work. I do not abuse the rights of other group members.
Emergent Leadership	Task leadership: I took charge of what the group should do on the group project activity. Relational leadership: I made sure that everyone in my group was listening to one another.
Group Cohesion	Belonging: I feel that I belong to this group. Morale: I am happy to be part of this group.
Engagement	When I am working in the group, I forget everything else around me

Table 2
Descriptive Statistics and Values of Coefficient Alpha for Key Constructs (N=234)

Key construct	Number of Items	M	SD	Min.	Max.	Skewness	Kurtosis	Chronbach's α
OEB	18	3.997	.404	2.51	4.95	-.130	.448	.89
Emergent Leadership	9	3.867	.611	1.73	5.00	-.186	.180	.93
Group Cohesion	6	3.827	.834	1.00	5.00	-.799	.939	.95
Engagement	7	2.823	788	1.00	5.00	-.005		.88

Measurement

We measured demographic data and four constructs using the validated measurements. The original survey items for all four constructs were written in English, and we employed a rigorous survey item translation and adaptation process such as expert panel review for contextual and cultural adaptation, face validity examination, and forward and backward translation to assure semantic equivalence and comparability (Brislin, 1970; Keszei, Novak, & streiner, 2010; Lim, Morris, & McMillan, 2011; Sanson-Fisher, & Perkins, 1998). The face validity for the survey item adequacy in a higher education setting was examined by three university professors in the education and human resource development fields. The forward translation was conducted by two professors who are Korean native speakers teaching in universities in the US, and the backward translation was accomplished by two English native social scientists who are fluent in Korean.

Organizational Citizenship Behavior (OCB)

As a pilot study, Kang, Byun, Law, Seo, and Ferris (2019) adapted and validated the OCB measurement developed by Podsakoff, MacKenzie, Moorman, and Fetter (1990) for college students in the collaborative learning environment, and in this research the measurement was used. The measurement consists of 18 items.

Emergent Leadership

We measured emergent leadership by adapting the scale developed by Yamaguchi (2001). Following Stogdill's (1969) Leadership Behavior Description Questionnaire, Yamaguchi (2001) suggested two dimensions of emergent leadership: task leadership (four items) and relational leadership (five items) [see Table 1 for sample items]. Task leadership asked the participants about their leadership used in the execution of the group task. Relational leadership focused on the behaviors that build group relationships.

Group Cohesion

We measured group cohesion by adopting the scale developed by Chin, Salisbury, Pearson, and Stollak (1999). They created and validated six items to measure two dimensions of group cohesion: belonging (three items) and morale (three items) [see Table 1 for sample items].

Engagement (Absorption)

Engagement for this research was measured using the seven items for absorption developed by Schaufeli et al. (2002).

We used a 5-point Likert-type scale that ranges from 1 (strongly disagree) to 5 (strongly agree) for the measurement of all the items. Sample items are shown in Table 1. Descriptive statistics and the values for Cronbach's alphas for all the key constructs used in the final analysis are presented in Table 2.

Data Analysis

Using SPSS Statistics 25, we first conducted descriptive analyses for the four key constructs (OCB, emergent leadership, group cohesion, and engagement) in the hypothesized model. Then, we performed a series of *t*-tests and one-way analyses of variance (ANOVAs) as preliminary analyses to examine if there are any differences in the mediators (emergent leadership and group cohesion) and the outcome variable (engagement) in terms of year of study and discipline the participants were studying, respectively. Subsequently, we conducted bivariate correlation analyses to examine any significant associations among the four variables in the model. Finally, we tested the hypothesized dual mediation model of students' engagement in CL by using the SPSS PROCESS macro (Hayes, 2013) with 5,000 bootstrap samples to estimate the indirect effects of the students' OCB on engagement in CL (Preacher & Hayes, 2004).

Results

Preliminary Analysis

We conducted preliminary analyses to examine any significant differences in the key variables in terms of year of study and discipline the participants were studying. One-way analyses of variance (ANOVAs) were performed to examine the mean differences across disciplines. The analyses revealed that there were no significant differences across five different disciplines on any mediators or outcome variable (*F*s ranged from .170 to 1.855, *df* = 4/227, *ns*).

However, as presented in Table 3, significant differences emerged between junior and senior students on the mediators and the outcome variable. Specifically, the seniors were more likely to report higher levels of emergent leadership, $t(232) = -2.628$, $p < .01$, group cohesion, $t(232) = -2.248$, $p < .05$, and engagement, $t(67.305) = -2.359$, $p < .05$, compared to juniors. Even though the mean differences were statistically significant, the effect sizes were small (η^2*s* range from 0.021 to 0.030). To provide a conservative test of the hypotheses, however, we conducted a mediation analysis with the year of students as a covariate to examine the effects of independent and mediation variables on the dependent measure of engagement after controlling for the year of students.

Table 3
Means and Standard Deviations of Major Dependent Measures for Juniors (n = 184) and seniors (n = 50) Student Samples

Variables	Junior (n=184)		Senior (n=50)		
	M	*SD*	*M*	*SD*	*t* (*df*)
OCB	3.976	.383	4.074	.471	-1.528 (232)
Emergent leadership	3.813	.606	4.066	.594	-2.628 (232)**
Group cohesion	3.764	.839	4.060	.780	-2.248 (232)*
Engagement (absorption)	2.753	.737	3.083	.914	-2.359 (67.305)*

Note. The *t*-value and *df* obtained from the unequal variance t-test were reported for the engagement variable, as it did not meet the assumption of homogeneity of variance. * $p < .05$,** $p < .01$.

Table 4
Correlation Matrix for Study Variables (N = 234)

Variable	1	2	3	4
1. OCB	–			
2. Emergent leadership	.657*	–		
3. Group cohesion	.457*	.500*	–	
4. Engagement (absorption)	.370*	.525*	.553*	–

*$p < .001$

Table 5
Parameter estimates of total, direct, and indirect effects

	B	*SE*	*t*	*p*	LLCI	ULCI
Total effect						
OCB→ Engagement	.695	.119	5.859	.000	.461	.928
Direct effects						
OCB→ EL	.978	.075	13.108	.000	.831	1.125
OCB→ GC	.470	.153	3.070	.002	.168	.771
EL→ GC	.463	.102	4.528	.000	.261	.664
EL → Engagement	.449	.093	4.835	.000	.266	.632
GC → Engagement	.368	.057	6.412	.000	.255	.482
OCB→ Engagement	-.084	.136	-.620	.536	-.352	.184

	Effect	Boot SE	BootLLCI	BootULCI
Indirect effects				
Total	.779	.117	.564	11.019
Indirect 1	.439	.128	.215	.715
Indirect 2	.173	.091	.027	.381
Indirect 3	.167	.057	.062	.283

Indirect 1 OCB → Emergent Leadership (EL) → Engagement
Indirect 2 OCB → Group Cohesion (GC) → Engagement
Indirect 3 OCB → Emergent Leadership (EL) → Group Cohesion (GC) → Engagement
Note. B = path coefficient; SE= standard error; LLCI = lower limit confidence interval; ULCI = upper limit confidence interval; Boot SE= Bootstrapped standard error; BootLLCI = 95% bias-corrected bootstrapped low limit confidence interval; Boot ULCI = 95% bias-corrected bootstrapped upper limit confidence interval.

Bivariate Correlations

The bivariate correlations among the four study variables appear in Table 4. As anticipated, students' OCB in group activities was positively correlated with engagement (r = .370, p < .001), emergent leadership (r = .657, p < .001), and group cohesion (r = .457, p < .001) respectively. Emergent leadership was significantly and positively associated with group cohesion (r = .500, p < .001) and engagement (r = .525, p < .001). Lastly, group cohesion was also positively related to engagement (r = .553, p < .001) in CL.

Serial Dual Mediation Model

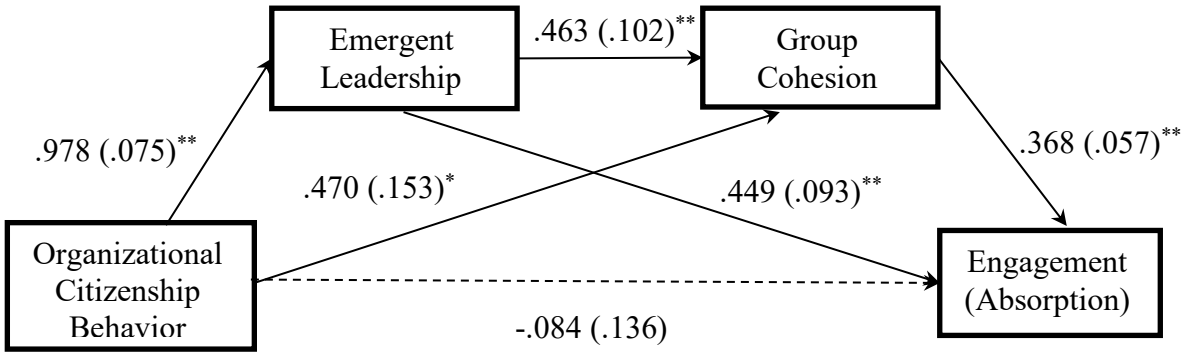
We tested the hypothesized dual mediation model of students' engagement in CL. As there was a significant difference in the engagement variable in terms of students' year of study, year of study was entered into the model as a covariate.

Overall, the hypothesized mediation model was statistically significant and explained the 39% of variance in students' engagement in CL, R^2 = .393, F(4, 229) = 37.024, p < .001. Through the serial dual mediation analysis using bootstrap estimation with 5,000 samples, we tested three mediations of OCB on teamwork engagement by (1) Emergent Leadership (OCB → Emergent Leadership→ Engagement), (2) Group Cohesion (OCB→ Group Cohesion → Engagement), and (3) both Emergent Leadership and Group Cohesion (OCB→ Emergent Leadership → Group Cohesion → Engagement).

As shown in Table 5, the results supported all three mediations, and all of the paths in the three mediational pathways were significant. First, the indirect effect of OCB on engagement through emergent leadership was statistically significant, b = .439, SE = .128, 95% CI [.215, .715], indicating that students with higher levels of OCB were more likely to show greater emergent leadership, which in turn related to higher levels of engagement in CL activities. Second, the indirect effect of OCB on engagement through group cohesion was significant, b = .173, SE = .091, 95% CI [.027, .381]. That is, students who showed more OCB in the CL setting tended to feel a greater sense of group cohesion, which in turn contributed positively to engagement. Lastly, the indirect effect of OCB on engagement through both mediators of emergent leadership and group cohesion was also significant, b = .167, SE = .057, 95% CI [.062, .283].

As shown in Figure 2, students with higher levels of OCB were more likely to demonstrate emergent leadership during the CL activities, b = .978, p < .001, which then was linked to their greater sense of group cohesion, b = .463, p < .001. In turn, students with a greater sense of group cohesion tended to be more engaged in CL

Figure 2
Serial dual mediation of OCB on engagement



* $p < .01$, ** $p < .001$

Note. Year of study was entered into this mediation model as a covariate. All presented path coefficients are unstandardized and standard errors are presented in parentheses.

activities, $b = .368$, $p < .001$. The correlation between OCB and engagement in CL was statistically significant, $r = .370$, $p < .001$, but the direct effect of OCB on engagement in the serial dual mediation model was not significant, $b = -.084$, *ns*. That is, the relationship between OCB and engagement was fully mediated by emergent leadership and group cohesion.

Discussion

The purpose of this study was to explore the relationship between OCB and student engagement in CL in higher education settings with a dual mediation model with emergent leadership and group cohesion. The research result shows that students with high OCB are engaged in learning in a collaborative learning context (H1). In other words, when students show OCB in group work, they thoroughly concentrate and are engrossed in their group work (Schaufeli et al., 2002), which can lead to successful project accomplishment and positive learning experiences for students (Nkhoma, Sriratanaviriyakul, Cong, & Lam, 2014; Van Wingerden, Derks, & Bakker, 2018).

This finding is compatible with OCB research findings in the workplace such as the positive relationships between employees' OCB in the workplace and work engagement (Ariani, 2013; Babcock-Roberson & Strickland, 2010). OCB is a recently introduced construct in the collaborative learning field, although the construct has been broadly studied in corporation settings. This transferability of previous OCB research to the field of collaborative learning provides possibilities of OCB research applicability and expansion in the field of education such as OCB with student social loafing, learning performance, and student satisfaction.

Because of its positive relationship with human performance, engagement has been studied in various contexts. In the corporation setting, for example, researchers have noticed the strong relationship between work engagement and employee performance, and so they have been looking for the factors that likely affect employees' engagement level (e.g., Bakker & Demerouti, 2016; Schaufeli, & Salanova, 2007). For the same reason, researchers in the field of education have also been finding ways or factors to increase students' engagement. Nonetheless, researchers have indeed defined the term engagement in various ways, even in the same contexts, and there has not been a strong consensus on its definition yet. In this study, we defined and measured engagement as a state of mind to be wholly concentrated on, and acutely absorbed in the group work (Schaufeli et al., 2002), which has been discussed relatively little in the context of CL despite its potentials for students' learning achievement. The previous studies typically presented engagement as behavioral participation in group work in the collaborative learning context (Blasco-Arcas, Buil, Hernández-Ortega, & Sese, 2013; Zhao, & Kuh, 2004). Considering that the dimension requires a deeper level of engagement than simple participation in group work, it is significant to approach engagement with the dimension of absorption. As the results of the current study indicated, OCB, emergent leadership, and group cohesion are all related to students' fully absorbed state of mind when they work as a group. Hence, the instructors who design CL environments should consider those factors as critical elements for helping students to be engaged in CL activities.

The dual mediational relations in this research show the mechanism of the relationship between OCB and engagement. First, the hypothesized dual

mediation model was significant overall, and each mediational path within the model was also supported. Second, students' emergent leadership and group cohesion respectively mediated the relationship between their organizational citizenship behavior (OCB) and teamwork engagement (H7 and H8). That is, students high in OCB tended to demonstrate greater emergent leadership, which then was associated with higher levels of engagement in their group project, and students with higher levels of OCB were more likely to have a greater sense of belongingness and morale in their group project, which, in turn, related to more engagement. The significant mediation results are consistent with the prior literature regarding OCB, emergent leadership, and engagement that showed positive relationships between OCB and emergent leadership (e.g., Carson et al., 2007; Serban & Roberts, 2016) and emergent leadership and engagement (e.g., Carte et al., 2006; Xie et al., 2019).

Additionally, students' perceived group cohesion also mediated the relationship between OCB and engagement. Students with higher levels of OCB were more likely to have a greater sense of belongingness and morale in their group project, which in turn related to more engagement. This research result supports previous studies such as Bravo et al.'s (2019) research showing that prosocial behaviors are antecedents of group cohesion in CL and Costa et al. (2014) and Gasper (2016) reporting a positive relationship between group cohesion and engagement. While the previous studies see a direct relationship among OCB, group cohesion, and engagement, we examined the mediational relationship among them.

Lastly, the relationship between OCB and teamwork engagement was fully mediated by emergent leadership and group cohesion (H9). Specifically, students who engaged more in OCB during the group project tended to display more emergent leadership behaviors, which were in turn linked to higher perceptions of group cohesion. Subsequently, students who felt a greater sense of group cohesion were more likely to engage in their group projects. While previous studies partially support the relationship among constructs respectively in the workplace and in cooperative learning settings (Babcock-Roberson & Strickland, 2010; Carte et al., 2006; Gaspar, 2016; Shaw, 2011; Slavin, 2015; Slavin, Hurley, & Chamberlain, 2003; Watkins et al., 2018), the current research results show the mechanism of how OCB can positively contribute to student engagement in a group project. By enhancing OCB in group work, students can experience and practice good leadership, group cohesion, and learning engagement in group work. As a result, instructors of cross disciplinary courses in higher education should consider how OCB can be encouraged in the collaborative setting when they design, plan, and facilitate collaborative learning projects. In addition, it would be worth trying to apply various instructional strategies and activities that can promote students' leadership and group cohesion. The example strategies could be to use "Energizers" which are small games designed to stimulate thinking and group interaction before starting group projects (Foster, 1989), or to use an inquiry-based learning method that is associated with authentic problems (Melgosa, 2018).

Limitations

Despite the contributions of this research, the research contains limitations. First, we collected data from a women's university, and so all participants are female students. However, the previous research reports that there are no gender differences in the relationship between OCB and work engagement (Al Ahad & Khan, 2020; Ariani, 2013). In light of the findings of the previous studies, we do not foresee that sampling from a women's university could be a significant drawback of the research. Second, there is a lack of consensus regarding the causal directions between group cohesion and OCB. Previous studies hypothesized the various relationships as well, such as GC as an antecedent of OCB (Kidwell, Mossholder, & Bennett, 1997) and GC as a moderator between OCB and group performance in the workplace (Cohen, Ben-Tura, & Vashdi, 2012). Based on research by Bravo et al. (2019) examining OCB as antecedent of group cohesion in the higher education context, we examined the relationship, and it would be our recommendation to investigate the possibility of the other direction between OCB and GC in future research.

Implications for Future Scholarship

As a future research agenda, a good contribution would be to examine antecedents of OCB in collaborative learning because OCB is an influential construct that can improve emergent leadership, group cohesion, and student engagement. In addition, it would be valuable to research other consequential constructs of OCB in collaborative learning, such as student satisfaction and student learning achievement. Considering the importance of student engagement in the cooperative learning environment, key constructs of this research would be applicable to cooperative learning. Therefore, it would be beneficial to examine OCB, GC, and EL in cooperative learning contexts in future research. We conducted this research in a general education course, and contextual expansions such as OCB's effects on engineering lab classes or online courses would be also worthy contributions.

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