11-30-2015

Learning Communities: Foundations for First-Year Students' Development of Pluralistic Outcomes

Krista M. Soria
University of Minnesota - Twin Cities, ksoria@umn.edu

Tania D. Mitchell
University of Minnesota, tmitchel@umn.edu

Learning Communities: Foundations for First-Year Students' Development of Pluralistic Outcomes

Abstract

The purpose of this study was to investigate the associations between first-year undergraduates' ($n = 1,701$) participation in learning communities and their development of leadership and multicultural competence. The sample included first-year students who were enrolled at six large, public research universities in 2012 and completed the Student Experience in the Research University (SERU) survey. The results of hierarchical regression analyses suggest students who participated in learning communities reported significantly higher development of leadership and multicultural competence controlling for demographic variables, perceptions of leadership and multicultural competence when they started college, participation in other high-impact educational practices (i.e., first-year seminars, common book reading programs, and learning communities), academic engagement, sense of belonging, faculty interactions, and perceptions of campus climate.

Introduction

As Colleges and Universities have embraced the challenge of student engagement and social justice, so the public has become more invested in how higher education promotes leadership and multicultural competence among college students. The National Task Force on Civic Learning and Democratic Engagement (2012) called on higher education institutions to do more in developing college students' capacities to work within and across differences and to build the types of democratic capabilities that are "honed through hands-on, face-to-face, active engagement in the midst of different perspectives about how to address common problems that affect the well-being of the nation and the world" (p. 3). In the last decade or so, higher education institutions have employed some effective strategies to increase students' capacities in those pluralistic outcomes; for instance, researchers investigating high-impact educational practices have discovered that students' development of leadership and multicultural competence is associated with their participation in community service (Dugan, 2006; Dugan & Komives, 2010; Einfield & Collins, 2008; Soria, Nobbe, & Fink, 2013), study abroad (Engberg, 2013), and diversity courses (Chang, 2002; Gurin, Dey, Hurtado, & Gurin, 2002; Engberg & Mayhew, 2007; Hurtado, 2005, 2007; Lopez, 2004). Yet, to date, researchers have not explored whether students' participation in one particular high-impact educational practice—namely, learning communities—can yield similar benefits for undergraduates' development of pluralistic outcomes.

This study investigates whether there are associations between first-year college students' participation in learning communities and their self-reported development of leadership and multicultural competence. Research suggests that many college students do not have adequate opportunities in college to obtain a strong understanding of their civic and social responsibilities or the abilities to work with others from diverse backgrounds (Dey, Barnhardt, Antonaros, Ott, & Holsapple, 2009; Franke, Ruiz, Sharkness, DeAngelo, & Pryor, 2009). For instance, when comparing over 24,000 college students from their first-year to their senior year, researchers observed minute changes in students' beliefs associated with leadership and diversity. From their first-year to their senior year, only 4.2% more students believed that becoming a community leader was essential or very important (an increase from 38.3% to 42.5%) (Franke et al., 2009). Furthermore, only 3.4% more students felt that helping to promote racial understanding is very important or essential (from 32.2% to 35.5%), and only 6.2% more students believed that participating in a community action program was very important or essential (from 29.8% to 36.0%) (Franke et al., 2009). These studies strongly suggest the need to examine whether higher education institutions can implement programs that foster the development of efficacious

leaders who possess the abilities to work across differences. We pursued this study to examine whether learning communities have the potential to promote students' development of these vital outcomes.

Learning Communities

As described by Cross (1998), learning communities may present ideal sites within which students can cultivate their leadership and multicultural competencies. While Cross considered learning communities as "groups of people engaged in intellectual interaction for the purpose of learning" (1998, p. 4), in this paper, we defined them as two or more academic classes linked across a common theme (Lardner, 2005). Cross (1998) suggested that learning communities offer collaborative learning spaces within which students can co-construct knowledge and meaning interdependently. Lardner (2005) characterized learning communities as a reform effort that "create[s] educational opportunities for developing the habits of mind necessary to participate effectively and collaboratively in a pluralistic and democratic society" (p. 28). Learning communities can also foster active over passive learning, emphasize cooperation instead of competition, and feature community-based versus isolated learning experiences (Cross, 1998). Shared and collaborative learning is a nearly universal aspect of learning communities, given that students are enrolled in common classes connected around a theme—and it is these types of learning environments that can increase students' openness to diversity, personal and interpersonal development, greater affinity for peers, and engagement in the academic classroom (Cabrera, Nora, Bernal, Terenzini, & Pascarella, 1998; Johnson & Johnson, 1994; Rendon, 1994; Pascarella & Terenzini, 2005; Whitt, Edison, Pascarella, Terenzini, & Nora, 2001).

By their nature, learning communities often feature small class sizes, which helps to foster the development of supportive peer groups and encourages students' involvement in the classroom (Johnson, Johnson, & Smith, 1998). The small, collaborative nature of learning communities also engenders a sense of educational citizenship in college students, particularly a sense of responsibility to help classmates meet learning outcomes (Jehangir, Williams, & Pete, 2011; Lenning & Ebbers, 1999; Tinto, 1995; Tinto, Goodsell, & Russo, 1993; Tinto, Goodsell Love, & Russo, 1994; Tinto & Russo, 1994; Tinto, Russo, & Kadel, 1994). With this enhanced sense of responsibility for others, it may not be a surprise to discover that students who participate in learning communities are also more likely to be involved in organized activities and become peer leaders in new student orientation programs (Brower, 1997; Johnson & King, 1996).

Cross (1998) linked the goals of learning communities to those of service-learning, noting that the pedagogical virtues of service-learning—diversity, community, and engagement—are resonant themes: communities help students to

construct knowledge together; diversity allows students to hear a spectrum of voices with different interpretations and ways of understanding the world; and engagement encourages students to become more active learning participants rather than spectators in the classroom (Cross, 1998). Researchers have suggested these three themes are congruent in students' experiences within learning communities. For instance, Wynn Sr., Mosholder, and Larsen (2014) proposed that learning communities that feature collaborative learning environments, problem-based learning, and peer modeling can provide cognitive scaffolding and prompt students to engage in metacognitive reflection. Similarly, Cabrera, Crissman, Bernal, Nora, Terenzini, and Pascarella (2002) found that collaborative learning environments motivated students toward personal development, including openness to diversity. These conditions can support postformal thinking—the types of cognitive abilities that enable students to understand the complexities of diverse perspectives. Learning communities may therefore encourage students' leadership development by enhancing educational citizenship and promoting purposeful engagement with community-based work (Pike, Schroeder, & Berry, 1997; Roconi, 2011; Zhao & Kuh, 2004).

As a high-impact educational practice, learning communities can also increase the likelihood that students will interact with peers from diverse backgrounds. Kuh (2008) suggested high-impact activities provide students with opportunities for increased interactions with faculty and peers about substantive matters and over an extended period of time. Indeed, students who participate in learning communities are more likely to have serious discussions with students whose political and religious beliefs, race or ethnic background, age, economic and social background, and country of origin are different from their own (Rocconi, 2011). Students who report positive interactions with diverse peers tend to have higher cultural and social awareness and perspective-taking skills (Astin, 1993; Hurtado, 2007); a greater sense of empowerment to enact social change and to be involved in civic matters (Sax, 2000); and a greater pluralistic orientation and concern for the public good (Hurtado, 2007). These are the types of conditions that can foster students' development of multicultural competence.

The purpose of this study is to investigate whether first-year students' participation in learning communities is associated with their self-reported development of leadership and multicultural competence. In this study, we used four interrelated concepts to define leadership: students' self-awareness, self-reported leadership skills, ability to work with others, and sense of responsibility for the social good. Here we define leadership in the same vein as research that has connected leadership to self-awareness, interpersonal skills, and personal social responsibility (Astin & Astin, 2000; Fincher, 2009; Komives, Owen, Longerbeam, Mainella, & Osteen, 2005; Kouzes & Posner, 2002; Rath & Conchie, 2009). Additionally, multicultural competence is defined as the

appreciation of other cultures and the ability to work with others from diverse cultural backgrounds, a definition similar to that offered by Pope and Reynolds (1997). Taken together, these two developmental areas constitute a model of leadership that supports pluralistic outcomes (Hurtado & DeAngelo, 2012; Dey et al., 2009).

Conceptual Framework

The conceptual framework for this study is built upon Astin's (1993) well-established input-environment-output model. Astin hypothesized that the background characteristics of college students (inputs) and relevant aspects of the college experience (environment) influence (outcomes). Adhering to this model, controls for inputs (i.e., sex, racial/ethnic identity, and perceptions of pre-college leadership and multicultural competence) and additional college experiences (e.g., campus climate, sense of belonging, residence, participation in first-year seminars) were included as separate blocks in the models predicting students' multicultural competence and leadership development so as to isolate their contributions from the focal independent variable—students' participation in learning communities.

Methods

We utilized student survey data derived from the Student Experience in the Research University (SERU) survey, which was distributed as a census survey to all eligible undergraduate students enrolled at six large public research institutions in spring 2012. In the survey, students were asked to report their participation in learning communities—defined in the survey as "two or more classes linked across a common theme." We included additional items in factor analysis to develop independent control variables (academic engagement, sense of belonging, frequency of faculty interactions, and campus climate) and dependent variables (leadership skills and multicultural competence). The participating institutions provided additional control variables while students provided other controls by answering items in the survey. After factor analysis, we used hierarchical multiple regression analyses to examine relationships between students' participation in learning communities and the dependent variables controlling for additional variables.

Instrument

The SERU survey is administered every year to several institutions that participate in the SERU consortium. The SERU survey sampling plan is a census scan of the undergraduate experience: at each participating institution, all undergraduates enrolled in spring 2012 who were also enrolled at the end of the prior term were included in the web-based questionnaire, with the majority of

communication occurring by electronic mail. In the survey, each student answered a set of core questions and was randomly assigned one of four modules containing items focused specifically on a research theme. Items used in this analysis were derived from a module assessing students' involvement in high-impact educational practices, including their participation in learning communities.

Participants

The SERU survey was administered to over 147,170 undergraduate students across six large public universities classified by the Carnegie Foundation as having very high research activity. The average institutional level response rate was 27% ($n = 39,736$). The data set for this study was comprised of items embedded in an academic and global engagement module of the SERU survey that was randomly assigned to between 20% and 40% of first-year non-transfer students, depending upon the institutions' preferences ($n = 1,701$). The first-year students in this study were primarily White and female. Asian students constituted the largest proportion of students of color (Table 1). The sample is relatively representative of the average demographic composition of the participating institutions, except that one institution had more males than females enrolled in spring 2012 and four of the six institutions had lower proportions of Asian students than were represented in the overall response group.

Measures

Block One: Demographic and Pre-College Leadership and Multicultural Competence Variables

Participating institutions provided sex, race, and ethnicity variables. Sex was dummy-coded with males as the referent category, and the racial and ethnic groups were dummy-coded with White students and students with unknown racial/ethnic identity as the common referent categories (Table 1). We included students' status as first-generation—the first in their families to earn a bachelor degree. In the survey, students indicated both their mother's highest level of education and their father's highest level of education, variables which were combined to the singular first-generation status variable.

Also included in this block were students' reports of their pre-college leadership and multicultural competence. Rather than using change or growth scores in regression models, Pascarella, Wolniak, and Pierson (2003) suggested the inclusion of a statistical control for the pretest measures. When a statistical control for the pretest measure is included in the analysis, the impact of the independent variables on the posttest scores is functionally the same as the impact of the same independent variables on the growth or gains made from the pretest to the posttest. Students reported their leadership abilities in four areas when they first started at their institution: ability to lead, interpersonal (social) skills,

understanding of the importance of personal social responsibility, and self-awareness and understanding. The scales for those four items ranged from 1= very poor to 6 = excellent. In addition, students' reported their multicultural competence when they started at the institution in four areas: appreciation of cultural and global diversity, ability to work with people from other cultures, comfort in working with people from different cultures, and ability to appreciate, tolerate, and understand racial and ethnic diversity. The scales for these four items ranged from 1= very poor to 6 = excellent.

Block Two: College Experience Control Variables

Students participate in a variety of first-year programs and experiences that also have important developmental outcomes (Keup & Barefoot, 2005; Soria, 2015), such as first-year seminars, common book programs, and living-learning communities. We control for the effect of participating in these types of activities to ascertain the effects of learning communities above and beyond the effects of other first-year programs. To that end, the analysis included students' participation in first-year seminars, common book programs, and living-learning communities, as well as whether they lived on campus or in fraternities or sororities. The frequency of students' participation in those programs and their residence locations are reported in Table 1.

In our analysis, we also included as control variables other aspects of students' experiences that have been positively associated with student development, including their academic engagement, faculty interactions, perception of campus climate, and sense of belonging (Soria, 2015; Soria & Troisi, 2014; Soria, Snyder, & Reinhard, 2015; Stebleton, Soria, & Cherney, 2013). Measures of academic engagement included the frequency with which students had contributed to class discussions, asked insightful questions in class, interacted with faculty in classes, and brought up ideas or concepts from different courses during class discussions. Those items were scaled 1 = never to 6 = very often, and they had good internal reliability (α = .86), as has also been demonstrated in prior research (Soria & Troisi, 2014).

Students were asked to indicate their sense of belonging on campus through two items that assessed their satisfaction with academic and social experiences, including whether they would re-enroll at the same campus. Congruent with other studies (Soria, 2012; Soria & Stebleton, 2013; Soria, Troisi, & Stebleton, 2012), these items had good internal reliability (α = .84). Students were also asked to indicate the frequency with which they had interacted with faculty outside of class—communicating with faculty by email or in person, seeking help from instructors when needed, and talking with instructors about course concepts outside of class. These items were scaled 1 = never to 6 = very

often and had good internal reliability (α = .71), a finding similar to that of other researchers (Soria & Bultmann, 2014).

Finally, students' perception of campus climate was measured through six items that asked them to indicate their agreement that students were respected on campus regardless of their race or ethnicity, religious beliefs, sexual orientation, political beliefs, gender, or economic or social class. These items were scaled 1 = strongly disagree to 6 = strongly agree and they had good reliability (α = .87) as in other studies (Soria & Bultmann, 2014).

Block Three: Participation in Learning Communities

In the survey, students were asked to indicate whether they had previously or were currently participating in a variety of high-impact educational activities, one of which was learning communities. Students were required to select either "yes, doing now or have done" or "no" in response to this item. In the sample, 25.16% of first-year students (*n* = 428) reported they were currently or had formerly participated in a learning community (Table 1). None of the six participating institutions had 100% of first-year students who participated in learning communities. One of the institutions had 36.8% of first-year students participating in learning communities while the other five institutions had between 19.9% and 26.2% of first-year students who participated.

Dependent Variables: Leadership and Multicultural Competence

Students indicated their current level of proficiency in eight different areas that were used to measure their leadership and multicultural competence. Students rated their leadership development on four survey items: current ability to lead; interpersonal (social) skills; understanding of the importance of personal social responsibility; and self-awareness and understanding. The scales for those four items ranged from 1= very poor to 6 = excellent. The items had good internal reliability (α = .74), which was congruent with Soria, Roberts, and Reinhard's (2015) study that also utilized those items to measure undergraduates' leadership development.

Students rated their multicultural competence on four survey items: s their current appreciation of cultural and global diversity, ability to work with people from other cultures, comfort in working with people from different cultures, and ability to appreciate, tolerate, and understand racial and ethnic diversity. The scales for these four items ranged from 1= very poor to 6 = excellent. The items had good internal reliability (α = .84), which was similar to that found in (Soria, 2015), which also utilized those items to measure undergraduates' multicultural competency.

Data Analysis

We used SPSS 21.0 for all data analyses. We utilized a factor analysis for the purpose of data reduction—to explain a larger set of measured variables with a smaller set of latent constructs (Henson & Roberts, 2006). To develop the dependent and independent measures used in this study, we computed a factor analysis on 24 items with oblique rotation (promax). Rather than rely upon Kaiser's eigenvalue rule (which can overestimate the number of factors), the scree plot test (which can suffer from subjectivity and variability), or Bartlett's test (which is sensitive to sample size), we used Velicer's (1976) minimum average partial (MAP) method, Ruscio and Roche's (2012) comparative data (CD) technique, Horn's (1965) parallel analysis (PA) method, and Raiche, Roipel, and Blais's (2006) optimal coordinate (OC) method to estimate the factors (Courtney, 2013; Zwick & Velicer, 1986).

Procedures for conducting the analyses followed those outlined by Courtney (2013) to analyze the data using SPSS R-Menu v2.0 (Basto & Pereira, 2012). The results suggested retaining six factors. Because of this evidence, we retained six factors that measured students' academic engagement, faculty interactions, leadership development, multicultural competence, campus climate, and sense of belonging. We computed factor scores using the regression method and saved them as standardized scores with a mean of zero and a standard deviation of one.

Table 1
Descriptive Statistics for Variables Used in Analysis

Categorical Variables Used in Analysis	n	%	Coding
Common book reading participation	513	30.16	
First-year seminar participation	776	45.62	0 = no; 1 = doing now
Living-learning community participation	180	10.58	or have done
Learning community participation	428	25.16	
Female	1,030	60.55	0 = male; 1 = female
First-Generation	467	27.45	0 = non-first-generation; 1 = first-generation
International	70	4.11	0 = White students and students without an identified race or ethnicity; 1 = yes
Hispanic	200	11.76	
American Indian or Native American	23	1.35	
Asian	511	30.04	
Black	54	3.17	
Lived in a fraternity or sorority	57	3.35	0 = lived at home or off-campus; 1 = yes
Lived on campus	1,461	85.89	

We used hierarchical regression to examine associations between students' participation in learning communities and their development of leadership and multicultural competence. We examined assumptions of multicollinearity, homoscedasticity, linearity, and independent/normal errors. The analyses suggested that multicollinearity assumptions were not violated (tolerance statistics and variance inflation factors were with acceptable ranges). In testing homoscedasticity, we observed suggested random scatter and variability in scatterplots of standardized residuals against the standardized predicted values. We found evidence of normality in histograms of standardized residuals and normal probability plots that compared the distribution of standardized residuals to a normal distribution. Our examination of matrix scatterplots suggested that the relationships between the predictor and outcome variables were relatively linear. The residual errors were also consistently independent across the models.

Results

The results of the first hierarchical regression analysis predicting students' leadership development suggested that students' pre-college demographic characteristics and self-reported leadership when they started college explained 55.4% of the variance in students' current leadership abilities (Table 2). The second block—which included students' academic engagement, faculty interactions, perceptions of campus climate for diversity, sense of belonging, participation in first-year seminars and living-learning communities, and residence on campus or in fraternities or sororities—explained 3.7% of the variance in leadership development. Finally, the third block containing students' participation in learning communities explained 0.1% of the variance in students' leadership development—a significant, although small, amount of variance ($p <$ .001) above and beyond that explained by the variables entered in the first two blocks.

The results of the analysis suggest that all of first-year students' perceptions of their pre-college leadership and multicultural competencies were significant and positively ($p <$ .001) associated with their current level of leadership skills. Examinations of the standardized coefficients suggests the singular items with the largest magnitudes included students' understanding of the importance of personal social responsibility (β = .225, $p <$ .001), interpersonal skills (β = .191, $p <$ .001), ability to lead (β = .190, $p <$ .001), and self-awareness (β = .177, $p <$ .001). Students who participated in a common book reading program were also more likely to report greater leadership development over their peers who did not participate in such a program (β = .033, $p <$ .05). Additionally, students' perceptions of campus climate, sense of belonging, and faculty interactions were positively associated with their leadership development. Finally, first-year students who participated in learning communities reported significantly

greater leadership development over their peers who did not participate in learning communities (β = .039, p < .01).

The results of the second hierarchical regression analysis predicting students' development of multicultural competence suggested that students' pre-college demographic characteristics and rating of leadership and multicultural competence when they started college explained 43.0% of the variance in students' current multicultural competence (Table 2). The second block containing items related to students' collegiate experiences explained 8.7% of the variance in students' multicultural competence. Finally, the third block containing students' participation in learning communities explained 0.5% of the variance in students' multicultural competence—again, a small, although significant, amount of variance (p < .001) above and beyond that explained by the variables entered in the first two blocks.

The results also suggest that the items reflecting students' perceptions of their leadership and multicultural competence when they arrived on campus were all significantly and positively associated with their current perceptions of multicultural competence. As might be expected, most of the items measuring students' pre-college multicultural competence had the largest magnitude in this block. Compared to their peers, Native American and American Indian students were more likely to report development in their multicultural competence (β = .154, p < .001). As in the first model, students who participated in a common book reading program reported greater development in their multicultural competence than their peers (β = .039, p < .05). Students' perception of campus climate, academic engagement, and sense of belonging were also positively and significantly associated with their development of multicultural competence. Finally, students who participated in learning communities reported a significantly higher development of multicultural competence compared to their peers who did not participate in learning communities (β = .075, p < .001).

Table 2

Hierarchical Regression Analysis Predicting Students' Leadership Development and Multicultural Competence

Predictor	Leadership Development				Multicultural Competence			
	B	β	SE	*p*	B	β	SE	*p*
(Constant)	-3.734		.113	***	-2.975		.127	***
Block One: Student Background Characteristics								
Female	.015	.007	.033		.041	.019	.037	
International	-.093	-.019	.082		.120	.023	.093	
Hispanic	.079	.025	.053		.090	.028	.060	
Native American or American Indian	-.198	-.023	.137		.525	.058	.154	**
Asian	-.056	-.026	.039		-.043	-.019	.044	
Black	.027	.005	.093		-.092	-.015	.105	
First-generation	-.039	-.017	.038		-.022	-.010	.043	
Ability to lead	.172	.190	.018	***	-.001	-.001	.020	
Self-awareness and understanding	.168	.177	.021	***	.090	-.091	.023	***
Interpersonal (social) skills	.172	.191	.018	***	.071	-.075	.020	**
Understanding the importance of personal social responsibility	.214	.225	.023	***	.083	.084	.026	**
Comfort working with people from other cultures	.068	-.075	.027	**	.221	.231	.030	***
Ability to work with people from other cultures	.059	-.063	.027	**	.202	.205	.031	**
Ability to appreciate and understand racial and ethnic diversity	.104	.110	.023	***	.081	.082	.026	***
Ability to appreciate cultural and global diversity	.146	.156	.024	***	.217	.222	.027	***
R^2			.554	***			.430	***
Block Two: College Experiences								
Lived on campus	-.002	-.001	.051		.079	.026	.058	
Lived in a fraternity or sorority	-.137	-.025	.099		.084	.014	.112	
Participated in a common book reading	.071	.033	.036	*	.568	.249	.041	**
Participated in a first-year seminar	.019	.009	.037		-.045	-.021	.036	

Participated in a living-learning community	-.033	-.010	.053		-.038	-.011	.060	
Campus climate	.034	.034	.017	*	.061	.058	.019	**
Academic engagement	.009	.009	.020		.053	.051	.023	*
Sense of belonging	.168	.168	.018	***	.052	.050	.020	*
Faculty interactions	.041	.041	.019	*	.035	.033	.021	
R^2 Change			.037	***			.087	***
Block Three: Learning Community								
Participated in a learning community	.090	.039	.038	**	.182	.075	.043	***
R^2 Change			.001	**			.005	***
R^2			.592	***			.523	***

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

Discussion and Limitations

Our work suggests that students who participate in learning communities develop significant and positive leadership and multicultural competence and that these competencies stand out from other collegiate experiences. In this, we add to the burgeoning literature on the benefits of learning communities for undergraduate students by suggesting that the products of these programmatic experiences can extend to more pluralistic outcomes as well. In our review of the literature, we identified several likely aspects of learning communities that promote students' development of these outcomes, including their collaborative learning environments, engaging structures, and the ways in which students are provided with more intensive opportunities to interact with peers who come from diverse backgrounds. Beyond confirming the positive impact of learning communities on pluralist outcomes, our results fit with previous research that associates common book programs with the development of multicultural competence (Soria, 2015).

This study contributes to the evidence in the literature that students' pre-college experiences or abilities remain important predictors of their skills and abilities in college (Komives & Johnson, 2009). These results demonstrate the need to account for students' pre-college abilities in research on the development outcomes of programs and services. At the same time, practitioners should take students' pre-college abilities into account when creating learning communities in order to individualize or scaffold learning experiences.

The results of our work also signify the importance of creating inclusive campus environments for students—when first-year college students feel engaged in the classroom, frequently interact with faculty, believe the campus climate is supportive, and feel like they belong, the effects on leadership development and multicultural competence are positive. Lardner (2005) and Jehangir et al. (2011) suggested that scrutinizing positionality and preparedness is incumbent on practitioners developing or facilitating learning communities with inclusive environments. In the same vein, Rocconi (2011) found that several developmental outcomes were indirectly associated with students' participation in learning communities because those learning communities increased students' engagement. And Cabrera et al. (2002) found that collaborative learning environments had the highest effect on critical student development outcomes like analytical skills and openness to diversity. While the present study did not explore those more complex relationships, we found evidence indicating that supportive learning environments impact college students' developmental outcomes.

Several features of learning communities might further help to explain the observed relationships. For instance, Lardner (2003) suggested that learning communities are optimally positioned as communities of practice to invite

underrepresented and diverse learners into the academy, welcome interdisciplinary perspectives, and transform curriculum and pedagogical strategies to be more inclusive of learners from multicultural backgrounds. These factors could, in turn, increase students' multicultural competence by exposing them to multiple interdisciplinary concepts, connecting them to peers from different backgrounds, and helping them to value the unique perspectives of others across society.

There are several limitations to the present study that should be noted and considered when interpreting the results. First, the actual nature of the learning communities is unknown and, given that these learning communities were held at six different universities, we can safely assume that the nature of the courses differed greatly between—and even within—the universities. Second, the particular institutional contexts—that all six universities were large, public, and research extensive—may make this study less generalizable to students attending different institutions (e.g., liberal arts universities, community colleges, etc.). Third, although this study employed procedures to control for the effects of demographics or other collegiate factors, scholars have documented the self-selection bias inherent in learning communities (Zobac, Spears, & Barker, 2014) and have developed more sophisticated analytic procedures for addressing bias than were utilized here (Nosaka & Novak, 2014). Bowman (2011) urged caution when interpreting the results of students' self-reported growth or development because students are often inaccurate in their ratings of measures such as critical thinking.

Learning communities apparently do not explain a large proportion of variance in students' pluralistic outcomes, which means that our results, while statistically significant, may not be as practically significant in terms of solutions for educators seeking to enhance college students' development of pluralistic outcomes. In other words, there may be additional programmatic factors besides learning communities that promote better student outcomes.

Amid the limited explanatory power of learning communities—and the other limitations listed above—we recommend that researchers continue to examine the many ways learning communities may contribute to students' leadership development and multicultural competence. The results of this study suggest that these relationships exist, thus paving a pathway for scholars to engage in future research to examine the particular components of leadership communities that may enhance students' development of pluralistic outcomes. The scholarly and theoretical contributions of this study therefore advance the field of research associated with learning communities. The methods and measures employed in the present study should be adapted by others seeking to advance the field.

Conclusion

The results of this study suggest that learning communities may be important in helping students to develop the critical abilities necessary to work with others from diverse backgrounds and serve as leaders in several capacities. There are several components of learning communities hypothesized to lead to students' development in those areas, including collaborative learning experiences, opportunities to work intensively with peers who have different worldviews, and increased engagement in the classroom. Scholars are encouraged to investigate the observed relationships to better ascertain the means through which learning communities may contribute to students' development of pluralistic outcomes—and to discover which particular components of learning communities can be leveraged to bolster students' development.

References

Astin, A. W. (1993). *What matters in college: Four critical years revisited.* San Francisco, CA: Jossey-Bass.

Astin, A. W., & Astin, H. S. (2000). *Leadership reconsidered: Engaging higher education in social change*. Battle Creek, MI: W. K. Kellogg Foundation.

Basto, M., & Pereira, J. M. (2012). An SPSS R-Menu for ordinal factor analysis. *Journal of Statistical Software, 46*(4), 1-29.

Bowman, N. A. (2011). Examining systematic errors in predictors of college student self-reported gains. *New Directions for Institutional Research, 150*, 7-19.

Brower, A. (1997). *End-of-year evaluation on the Bradley Learning Community.* Unpublished report. Madison, WI: University of Wisconsin-Madison.

Cabrera, A. F., Crissman, J. L., Bernal, E. M., Nora, A., Terenzini, P. T., & Pascarella, E. T. (2002). Collaborative learning: Its impact on college students' development and diversity. *Journal of College Student Development, 43*(1), 20-34.

Cabrera, A. F., Nora, A., Bernal, E. M., Terenzini, P. T., & Pascarella, E. T. (1998, November). *Collaborative learning: Preferences, gains in cognitive and affective outcomes, and openness to diversity among college students*. Paper presented at the annual meeting of the Association for the Study of Higher Education, Miami, Florida.

Chang, M. J. (2002). The impact of an undergraduate diversity course requirement on students' racial views and attitudes. *Journal of General Education, 51*, 21–42.

Courtney, M. G. R. (2013). Determining the number of factors to retain in EFA: Using the SPSS R-menu v2.0 to make more judicious estimates. *Practical Assessment, Research, & Evaluation, 18*(8), 1-14.

Cross, K. P. (1998). Why learning communities? Why now? *About Campus, 3*(3), 4-11.

Dey, E. L., Barnhardt, C. L., Antonaros, M., Ott, M. C., & Holsapple, M. A. (2009). *Civic responsibility: What is the campus climate for learning?* Washington, DC: Association of American Colleges and Universities.

Dugan, J. P. (2006). Involvement and leadership: A descriptive analysis of socially responsible leadership. *Journal of College Student Development, 47*(3), 335-343.

Dugan, J. P., & Komives, S. R. (2010). Influences on college students' capacities for socially responsible leadership. *Journal of College Student Development, 51*(5), 525-549.

Einfield, A., & Collins, D. (2008). The relationships between service-learning, social justice, multicultural competence, and civic engagement. *Journal of College Student Development, 49*(2), 95-109.

Engberg, M. E. (2013). The influence of study away experiences on global perspective-taking. *Journal of College Student Development, 54*(5), 466-480.

Engberg, M. E., & Mayhew, M. J. (2007). The influence of first-year "success" courses on student learning and democratic outcomes. *Journal of College Student Development, 48*(3), 241-258.

Fincher, J. (2009). Consciousness of self. In S. R. Komives, W. Wagner, and Associates, *Leadership for a better world: Understanding the social change model of leadership development* (pp. 299-334). San Francisco, CA: Jossey-Bass.

Franke, R., Ruiz, S., Sharkness, J., DeAngelo, L., & Pryor, J. (2009). *Findings from the 2009 administration of the College Senior Survey (CSS): National aggregates*. Los Angeles, CA: Cooperative Institutional Research Program at the Higher Education Research Institute, University of California Los Angeles.

Gurin, P., Dey, E. L., Hurtado, S., & Gurin, G. (2002). Diversity in higher education: Theory and impact on educational outcomes. *Harvard Educational Review, 72*, 330–336.

Henson, R. K., & Roberts, J. K. (2006). Use of exploratory factor analysis in published research: Common errors and some comment on improved practice. *Educational and Psychological Measurement, 66*(3), 393-416.

Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika, 30*, 179-185.

Hurtado, S. (2005). The next generation of diversity and intergroup relations research. *Journal of Social Issues, 61*, 595–610.

Hurtado, S. (2007). Linking diversity with the educational and civic missions of higher education. *The Review of Higher Education, 30*(2), 185-196.

Hurtado, S. & DeAngelo, L. (2012). Linking diversity and civic minded practices with student outcomes: New evidence from national surveys. *Liberal Education, 98*(2). Retrieved from: https://www.aacu.org/publications-research/periodicals/linking-diversity-and-civic-minded-practices-student-outcomes-new

Jehangir, R., Williams, R. D., & Pete, J. (2011). Multicultural learning communities: Vehicles for developing self-authorship in first-generation college students. *Journal of the First-Year Experience & Students in Transition, 23*(1), 53-74.

Johnson, D. W., & Johnson, R. T. (1994). *Learning together and alone: Cooperative, competitive, and individualistic learning* (4th ed.). Englewood Cliffs, NJ: Prentice-Hall.

Johnson, D., Johnson, R., & Smith, K. (1998). *Active learning: Cooperation in the college classroom* (2nd ed.). Edina, MN: Interaction Books.

Johnson, J. L., & King, S. G. (1996). *Russell Scholars Program: Education of the inaugural year.* Unpublished report. Gorham, ME: University of Southern Maine.

Komives, S. R., Owen, J. E., Longerbeam, S. D., Mainella, F. C., & Osteen, L. (2005). Developing a leadership identity: A grounded theory. *Journal of College Student Development, 49*, 593-611.

Komives, S. R., & Johnson, M. R. (2009). The role of high school experience in college student leadership development. *Educational Considerations, 37*(1), 30-39.

Kouzes, J. M., & Posner, B. Z. (2002). *The leadership challenge.* San Francisco, CA: Jossey-Bass.

Kuh, G. D. (2008). *High-impact educational practices: What they are, who has access to them, and why they matter.* Washington, DC: Association of American Colleges and Universities.

Lardner, E. (2003, Winter). Approaching diversity through learning communities. *Washington Center Occasional Paper, No. 2.* Olympia, WA: Evergreen State College, Washington Center for Improving the Quality of Undergraduate Education.

Lardner, E. (2005, Summer). The heart of education: Translating diversity into equity. *Learning Communities & Educational Reform.* Olympia, WA: The Evergreen State College, Washington Center for Improving the Quality of Undergraduate Education.

Lenning, O., & Ebbers, L. (1999). *The powerful potential of learning communities: Improving education for the future* (ASHE-ERIC Higher Education Reports, Vol. 26, No. 6). Washington, DC: George Washington University, Graduate School of Education and Human Development.

Lopez, G. E. (2004). Interethnic contact, curriculum and attitudes in the first year of college. *Journal of Social Issues, 60*, 75–94.

National Task Force on Civic Learning and Democratic Engagement. (2012). *A crucible moment: College learning and democracy's future.* Washington, DC: Association of American Colleges and Universities.

Nosaka, T., & Novak, H. (2014). Against the odds: The impact of the Key communities at Colorado State University on retention and graduation for historically underrepresented students. *Learning Communities Research and Practice, 2*(2), 1-20.

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: Vol. 2. A third decade of research.* San Francisco, CA: Jossey-Bass.

Pascarella, E., Wolniak, G., & Pierson, C. (2003). Explaining student growth in college when you don't think you are. *Journal of College Student Development, 44*(1), 122-126.

Pike, G. R., Schroeder, C. C., & Berry, T. R. (1997). Enhancing the educational impact of residential halls: The relationship between residential learning communities and first year college experiences and persistence. *Journal of College Student Development, 38,* 609-621.

Pope, R. L., & Reynolds, A. L. (1997). Student affairs core competencies: Integrating multicultural awareness, knowledge, and skills. *Journal of College Student Development, 38,* 266-277.

Raiche, G., Roipel, M., & Blais, J. G. (2006). Non-graphical solutions for the Cattell's scree test. Paper presented at the International Annual Meeting of the Psychometric Society, Montreal, Quebec.

Rath, T., & Conchie, B. (2009). *Strengths based leadership: Great leaders, teams, and why people follow*. Omaha, NE: Gallup Press.

Rendon, L. I. (1994). Validating culturally diverse students: Toward a new model of learning and student development. *Innovative Higher Education, 19*(1), 33-1.

Rocconi, L. M. (2011). The impact of learning communities on first year students' growth and development in college. *Research in Higher Education, 52*, 178-193.

Ruscio, J., & Roche, B. (2012). Determining the number of factors to retain in an exploratory factor analysis using comparison data of a known factorial structure. *Psychological Assessment, 24*(2), 282-292.

Sax, L. (2000). Citizenship development and the American college student. In T. Ehrlich (Ed.), *Civic responsibility and higher education* (pp. 3-18). Westport, CT: American Council on Education and Oryx Press.

Soria, K. M. (2012). Creating a successful transition for working-class first-year students. *The Journal of College Orientation and Transition, 20*(1), 44-55.

Soria, K. M. (2015) Common reading, learning, and growing: An examination of the benefits of common book reading programs for college students' development. *Journal of the First-Year Experience and Students in Transition, 27*(1), 29-47.

Soria, K. M., & Bultmann, M. (2014). Advising scholars from blue collar backgrounds: Supporting working-class students' success in higher education. *NACADA Journal, 34*(2), 51-62.

Soria, K. M., Nobbe, J., & Fink, A. (2013). Examining the intersections between undergraduates' engagement in community service and development of socially responsible leadership. *Journal of Leadership Education, 12*(1), 117-140.

Soria, K. M., Roberts, J., & Reinhard, A. (in press). Undergraduate students' strengths awareness and leadership development. *Journal of Student Affairs Research and Practice*.

Soria, K. M., Snyder, S., & Reinhard, A. (2015). Strengthening college students' capacity for integrative leadership by building a foundation for civic engagement and multicultural competence. *Journal of Leadership Education, 14*(1), 55-71.

Soria, K. M., & Stebleton, M. J. (2013). Social capital, academic engagement, and sense of belonging among working-class college students. *College Student Affairs Journal, 31*(2), 139-153.

Soria, K. M., & Troisi, J. N. (2014). Internationalization at home alternatives to study abroad: Implications for students' development of global, international, and intercultural competencies. *Journal of Studies in International Education, 18*(3), 260-279.

Soria, K. M., Troisi, J. N., & Stebleton, M. J. (2012). Reaching out, connecting within: Community service and sense of belonging among college students. *Higher Education in Review, 9*, 65-85.

Stebleton, M. J., Soria, K. M., & Cherney, B. (2013). The high impact of education abroad: College students' engagement in international experiences and the development of intercultural competencies. *Frontiers: The Interdisciplinary Journal of Study Abroad, 22,* 1-24.

Tinto, V. (1995). Learning communities, collaborative learning, and the pedagogy of educational citizenship. *American Association for Higher Education Bulletin, 47*, 11-13.

Tinto, V., Goodsell, A., & Russo, P. (1993). Building community among new college students. *Liberal Education, 79*, 16-21.

Tinto, V., Goodsell Love, A., & Russo, P. (1994). *Building learning communities for new college students: A summary of research findings of the Collaborative Learning Project.* Syracuse, NY: Syracuse University, School of Education.

Tinto, V., & Russo, P. (1994). Coordinated studies programs: Their effect on student involvement at a community college. *Community College Review, 22*, 16-25.

Tinto, V., Russo, P., & Kadel, S. (1994). Coordinated studies programs: Their effect on student involvement at a community college. *Community College Journal, 64*, 26-30.

Velicer, W. F. (1976). Determining the number of components from the matrix of partial correlations. *Psychometrika, 41*, 321-327.

Whitt, E. J., Edison, M. I., Pascarella, E. T., Terenzini, P. T., & Nora, A. (2001). Influences on students' openness to diversity and challenge in the second and third years of college. *Journal of Higher Education, 72*(2), 172-204.

Wynn, C. T., Sr., Mosholder, R. S., & Larsen, C. A. (2014). Measuring the effects of problem-based learning on the development of postformal thinking skills and engagement of first-year learning community students. *Learning Communities Research and Practice, 2*(2), 1-23.

Zobac, S., Spears, J., & Barker, G. (2014). Identical profiles, different paths: Addressing self-selection bias in learning community cohorts. *Learning Communities Research and Practice, 2*(1), 1-13.

Zwick, W. R., & Velicer, W. F. (1986). Comparison of five rules for determining the number of components to retain. *Psychological Bulletin, 99*(3), 432-442.