Scholarship of Teaching and Learning in Psychology

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CROSS-FERTILIZATION UPDATE

# Writing–Psychology Partnerships: The Impact of Learning Community and Major Cohorts in a First-Year College Effectiveness Trial

Natasha K. Segool, Margaret R. Tarampi, Wednesday Bushong, Alyssa C. Woike, and Jessica M. Nicklin

Department of Psychology, University of Hartford

The effectiveness of enrolling first-year college students into one of three academic writing course formats (learning community, major cohort, or control) was evaluated through a 2014–2018 writing–psychology partnership at a small private university in the northeastern United States. Based on prior literature supporting the use of rigorous learning communities for increased academic learning outcomes, belonging, and retention, we hypothesized that this effectiveness trial of both a learning community and a major cohort would have direct academic and social–emotional impacts (i.e., grade point average in writing course; perception of learning, confidence, and value of the writing course; perception of connectedness, support, and commitment to the university and major) as well as seeding impacts on students' academic trajectory (i.e., retention to graduation, major retention). We hypothesized that both the learning community ($n = 41$) and major cohort ($n = 46$) would report more positive effects than the control class ($n = 37$). Confirmatory factor analysis supported the validity of survey measures. The learning community reported greater psychology learning and confidence than the control group and exhibited a similar trend in comparison to the major cohort. The learning community reported greater connectedness than both control and major cohort groups and greater major commitment than the control group. The psychology major cohort had higher graduation rates than the learning community. While less robust than prior research, this effectiveness study suggests unique benefits of writing–psychology learning communities and is the first to compare learning community and major cohort formats of academic writing instruction.

*Keywords:* learning community, major cohorting, writing in psychology



Writing is a critical skill required for success across disciplines in higher education and in careers. In the discipline of psychology, Chenneville and Gay (2021) note that writing instruction is imperative to meet the American Psychological Association's (APA, 2013) Guidelines for the Undergraduate Psychology Major core communication competency. Goal 4 (APA, 2013) focuses on students' ability to effectively write for different purposes, develop presentation skills for a variety of purposes, and interact effectively with others. Yet, concerns about college student writing are common, with more than 25% of 4-year college graduates

Natasha K. Segool https://orcid.org/0000-0002-4256-1602

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Correspondence concerning this article should be addressed to Natasha K. Segool, Department of Psychology, University of Hartford, 200 Bloomfield Avenue, West Hartford, CT 06117, United States. Email: segool@hartford.edu

demonstrating deficiencies in written communication (e.g., Casner-Lotto & Benner, 2006). Unfortunately, in psychology programs, there is frequently no systematic plan to ensure quality in discipline-specific writing (Dunn et al., 2007).

To address this gap, the present study examines psychology students' experiences across three different instructional formats of a core academic writing course. This study offers a unique contribution to the literature by directly comparing the effects of a first-year psychology–writing learning community (LC), a psychology major-specific writing cohort, and a writing-as-usual general academic writing course (control). Previous literature on psychology–writing LCs is generally suggestive of academic and social–emotional benefits (e.g., Buch & Spaulding, 2011; Cargill & Kalikoff, 2007; Grose-Fifer & Helmer, 2020). However, LCs are relatively more resource-intensive, require greater instructional coordination, and ongoing institutional support. Given fiscal pressures in higher education, this study is distinguished by considering the impacts of major cohorting in comparison to the LC and writing-as-usual formats to understand the impact of these incremental interventions for supporting student academic and social–emotional growth. This is a critical area of cross-disciplinary research given the need for strong writers in psychology and an ever-present concern about writing skills among psychology majors.

General writing courses are often non-discipline-specific and taught in an encapsulated manner during first- or second-year courses (Fosen, 2006). Yet, evidence suggests that students often fail to recognize the importance of these skills and how to integrate them into their major coursework. Writing transfer, or the use of skills learned through general writing courses, in disciplinary contexts is poor (Bergmann & Zepernick, 2007; Driscoll, 2011). One reason for this may be that students perceive composition courses as teaching personal or expressive methods of writing, which they view as different from disciplinary writing conventions. Thus, there is a need to consider how to help students see writing instruction as an essential disciplinary-specific skill.

## Models of Writing Instruction Within Major Coursework

One model for responding to this challenge is to provide extensive writing instruction within major coursework, often creating a unique "writing in psychology" course. When extensive writing instruction and practice are provided within a general psychology course, it has been found to improve students' writing style, writing mechanics, grammar, and American Psychological Association (APA) referencing skills (Fallahi et al., 2006). Similarly, Goddard (2003) found that students who took a writing in psychology course had significant improvements in grammar, writing strategies and confidence, and APA style test scores. Johnson et al. (2011) also found that a psychology "writing and thinking" course had a positive impact both short term, with students scoring higher in thinking and writing skills, and long term, with students having higher grade point averages (GPAs) in later upper-level courses. In a one-credit scientific writing in psychology course, students had greater APA skills in comparison to controls, although there were no differences in students' overall writing scores (Luttrell et al., 2010). In sum, when psychology courses are designed specifically to enhance writing skills, they show promise. Yet, these courses are resource-intensive and require curricular redesign, which may be challenging given the fiscal crises facing higher education today.

Alternatively, more brief and targeted Writing in the Discipline (WID; Webster & Green, 2021) interventions also show promise in improving discipline-specific writing. For example, Connelly et al. (2006) utilized a brief 1-hr intervention focused on teaching students the specific writing conventions in psychology, including essay structure, how to link information, and the organization of an introduction, topic section, and conclusion. Students earned higher scores (based on rubrics evaluating organization, ordering and linking ideas, offering evidence, and writing for an audience) on exam essays than their peers and wrote more structured, longer essays (Connelly et al., 2006). Similarly, Stewart et al. (2010) found that when students participated in active learning assignments involving ten 12-min, in-class writing assignments that were graded with feedback, students showed greater long-term retention of material (higher multiple-choice exam scores) and enhanced writing skills (higher essay scores).

It is clear that there are benefits to both intensive and less-intensive WID approaches in psychology. Goldschmidt (2014) found that when students complete coursework emphasizing a WID approach,

they develop valuable templates for the writing conventions of their field, they learn to emulate what they read in their disciplinary courses, and they develop a strong sense of writing for a disciplinary audience. In designing curricula, Soysa et al. (2013) suggest a writing framework for the psychology major that scaffolds the writing process and helps students to develop their skills across introductory, intermediate, and advanced courses. Yet this framework requires a commitment to and integration of WID across many, if not all, courses in the major. Unfortunately, few disciplinary faculty feel qualified or interested in explicitly teaching writing skills (Bergmann & Zepernick, 2007). As a result, these WID interventions can be difficult to resource with full-time and part-time faculty.

## Learning Communities as a Model for Writing Instruction

One model for addressing this WID concern is to facilitate coordination between disciplinary experts that helps instructors capitalize on their content expertise in psychology or writing. LCs involve groups of students sharing similar academic goals, collaborating on coursework, or focusing on learning distinct skills (Kern & Kingsbury, 2019). Curriculum-based LCs link two or more courses serving the same group of students and sharing curricular components (Brower & Dettinger, 1998; Zrull et al., 2012). Learning communities are designed to create supportive environments where there is a shared vision about curricular goals; a sense of group identity, trust, and interdependence; a fostering of connections between disciplines; an integration of students' academic and social experiences; a space to collaborate on learning activities; and an opportunity to develop critical thinking skills as well as professional, civic, and ethical responsibility (Brower & Dettinger, 1998; West & Williams, 2017). When LCs involve writing paired with a disciplinary course, they generally reflect a writing across the curriculum philosophy, emphasizing that writing instruction and growth occur across the curriculum and are not only centered in academic writing courses (McLeod et al., 2001).

Although there is limited research evaluating its effectiveness, this model between the psychology and writing disciplines is not new. Stoddart and Loux (1992) describe a tandem teaching model between introductory psychology and English literature that incorporates writing and helps students develop an understanding of how the two disciplines are connected and essential for intellectual engagement. Informal evaluation of writing products and teaching evaluations in the tandem classes suggests that students learn more than in unlinked courses (Stoddart & Loux, 1992). Similarly, Cargill and Kalikoff (2007) found that a pairing of an upper-level composition course and abnormal psychology resulted in higher exam and final grades, lower student attrition, and more positive student relationships and engagement. Grose-Fifer and Helmer (2020) also provide a rich description of a highly linked psychology–writing LC that resulted in higher examination scores, lower D, F, or Withdrawal grade rates, greater connectedness between students and professors, more positive ratings of the impact of professors and peers on personal/social and academic development, and stronger peer connections. Furthermore, Buch and Spaulding (2011) found that in an intensive psychology LC involving a four-block schedule in Semester 1 and a two-block schedule in Semester 2, LC students had greater retention, academic progress, academic involvement, and satisfaction within their major. On the other hand, in another study, students in a three-block first-year LC including a writing course, an introductory psychology course, and another course experienced more limited benefits (Ma-Kellams & Kwon, 2022). These psychology-specific LC studies pair with general LC studies, which are generally suggestive of the academic and social–emotional benefits of LCs. We review these studies to bolster the rationale for examining social–emotional, academic, and retention effects in the present study.

### *Academic Performance and Retention*

Numerous studies have found that students who participate in LCs progress through their degree programs faster, have higher GPAs, and have better attendance (Baker & Pomerantz, 2001; Bonet & Walters, 2016; Buch & Spaulding, 2008, 2011; Kern & Kingsbury, 2019). Faculty teaching in LCs hold their students to high expectations and provide support and encouragement to help students to meet these expectations (Engstrom & Tinto, 2008). On the other hand, the U.S. Department of Education, Institute of

Education Sciences, What Works Clearinghouse (2014) has found that not all students experience benefits from LCs. A review of six randomized controlled LC trials at community colleges linking developmental precollege courses (English, reading, writing, or math) with content courses found no significant impact on academic performance, future registration, educational progress, or credits earned. Yet, other studies of LC participation at both community college (Engstrom & Tinto, 2008) and 4-year institutions (Hotchkiss et al., 2006; O'Keefe, 2013) have been linked to higher retention.

### *Belonging*

LC participation can provide students with important opportunities to connect both socially and academically with peers. As first-year students transition from high school to college, LC cohorts provide an environment that fosters friendships and supports help-seeking and academic collaboration (Brouwer et al., 2022). When students ask each other for academic help, they are more likely to become friends (Brouwer et al., 2022). LC participation also helps foster faculty–student relationships. Students who participate in LCs feel more comfortable with their instructors, which can lead to mentoring relationships that last throughout a student's college experience (Pike et al., 2011; Virtue et al., 2019). When students participate in major-specific LCs, they have a greater sense of belonging in the major (Masika & Jones, 2015) and have the opportunity to form mentoring relationships with disciplinary experts who can connect students with resources and tools that promote success (Hessenauer & Law, 2017).

## Summary of Literature

In sum, LCs provide a viable model for teaching students to make connections between college writing instruction and the importance of disciplinary writing in psychology. In resource-tight settings, LCs have lower barriers to implementation than WID models by being a relatively low-resource interventions (no added credits to the major; no need for specialized expertise in writing instruction; no additional hiring) and the potential for many positive academic and social–emotional outcomes. Yet, are the multicourse curricular links in LCs essential for reaping these benefits?

## The Present Study

The Department of Psychology at our university partnered with the Academic Writing program to pilot two approaches in comparison to writing-as-usual (our control group): (a) creating a major-specific LC pairing a 200-level Psychology of Adjustment course with Academic Writing I, which emphasized "writing for psychology," and (b) cohorting psychology majors together in a typical writing course to promote major-specific community within a nonmajor course. The major cohort intervention has not been previously studied in the literature and is less resource intensive than an LC (no need to coordinate student schedules or instruction across courses) but still offers a writing course with greater curricular emphasis on psychological themes and a cohort of peers creating greater opportunities to make academic and social connections. Our intervention groups were incremental, with the LC being a more intensive intervention than the major cohort alone. We compared these intervention groups both to each other and to a control group—that is, the standard offering of Academic Writing I populated with a diverse group of students having many different majors. The study was designed, in part, to investigate the impact of these more modest writing across the curriculum interventions given the fiscal and curricular constraints in our psychology and writing programs. These interventions involved different formats of the traditional nondisciplinary first-year writing courses to consider how each affect academic outcomes starting early in the college experience given the evidence for poor transfer (Bergmann & Zepernick, 2007; Driscoll, 2011). While our psychology majors eventually receive writing instruction in research methods coursework, this often occurs during the junior or senior year when students have already taken most of their disciplinary coursework.

We hypothesized that both the first-year LC and major cohort groups would have direct academic and social–emotional impacts as compared to the control group (i.e., GPA in writing course; perception of learning, confidence, and value of the writing course; perception of connectedness and support; and commitment to the university and major) as well as seeding impacts on students' academic trajectory (i.e., retention in major and to graduation). We did not make a priori hypotheses about differences

between the LC and the major cohort given the exploratory nature of the study.

## Method

Our university requires that students across 28 majors take two academic writing courses during their second and third semesters. The writing course emphasizes close-reading strategies, the practice of writing (narrative and analytical), and thinking about audience, arrangement, academic conventions, and the research process. The course involves a minimum of 25 pages of writing in the form of three essays and multiple journal assignments based on readings. This effectiveness research study did not tightly control pedagogical choices beyond the constraints of the course's learning objectives. The control classes were run with no differences in student makeup or learning objectives as compared to the standard offering of the course. In the major cohort, instructors had the same course objectives as the control course, but instructors were informed that their student population, rather than including students with many different majors, would include psychology majors, and they were encouraged to adapt their course to these students' interests and learning needs. While each individual instructor had the agency to design their own course, instructors used readings by Malcolm Gladwell, Carl Honore, Jonathan Kozel, Diane Ravitch, and Katherine Newman, for example, in addition to standard course textbooks to meet course objectives.

In the LC, in addition to having the same course objectives as the control and the major cohort courses, instructors worked together to develop shared assignments across both courses, providing students with greater instruction in writing for the psychology discipline. Instructors in the LC received a $200 stipend each and attended a 1-day LC training that facilitated their work together. Instructors intentionally created shared thematic content across both courses and 2–3 shared assignments that involved complementary learning objectives. For example, students completed a major film analysis paper focusing on psychological adjustment and coping. This assignment was shared across courses, and instruction and grading in the LC psychology course emphasized analysis and interpretation of adjustment and coping literature, application of the literature to understanding the film character, and critique of the film's portrayal. The LC writing course emphasized instruction and grading on the paper's argumentation, research integration, and citations, along with the writing process of drafts and the peer-editing process that occurred during instruction. Students in the writing LC also completed multiple shorter journal assignments practicing these skills based on content from their LC psychology course. Finally, through weekly or biweekly meetings throughout the semester, instructors stayed in touch about their courses' progression and integration and their students' progress and needs.

The major cohort course was offered in four sections (2015–2017), and the LC was offered in three sections (2016–2018) to psychology majors. We collected data on psychology majors in 23 sections (2014–2018) of the writing-as-usual (control) course. Between 2014 and 2018, all students enrolled in Academic Writing I (WRT), including those in the LC, major cohort, and control sections, were invited to participate in a survey during the last 2 weeks of the semester. Students completed a 63-item survey examining their perceptions about the knowledge they gained; their confidence in writing, reading, and researching; their connection to others in the writing course; the support received from the writing professor; the value of the writing course; their commitment and turnover intentions toward their major and the university; and demographic information. Additional positive consent was required for accessing student academic records later (institutional review board approved). Table 1 describes the demographic characteristics of the study sample, including the 625 students included in the confirmatory factor analysis of the survey and the subset of 124 psychology majors who completed the entire survey.

### Survey

The survey measured subjective student perception in eight subscales that were researcher-developed or adapted from published scales, using a 5-point Likert scale ranging from *strongly disagree* to *strongly agree*.

#### *Perception of Learning*

This seven-item subscale ($\alpha = .87$) assessed student perception of how well the writing course met their needs through learning how to read

**Table 1**
*Student Demographics*

| Demographic variable | Full sample (CFA) $n = 625$ | | Psychology majors $n = 124$ | |
|---|---|---|---|---|
| | *n* | % | *n* | % |
| Gender | | | | |
| Male | 239 | 38.93 | 29 | 23.39 |
| Female | 371 | 60.42 | 95 | 76.61 |
| Other | 4 | 0.65 | 0 | 0 |
| Race | | | | |
| Caucasian/White | 363 | 58.83 | 77 | 62.10 |
| African American/ Black | 116 | 18.80 | 23 | 18.55 |
| Latino/Hispanic | 72 | 11.67 | 15 | 12.10 |
| Asian American/ Pacific Islander | 23 | 3.73 | 1 | 0.81 |
| American Indian/ Alaska Native | 2 | 0.32 | 0 | 0 |
| Other race/ethnicity | 41 | 6.65 | 8 | 6.45 |
| | *M* | *SD* | *M* | *SD* |
| Age | 18.71 | 1.34 | 18.48 | 0.59 |

*Note.* CFA = confirmatory factor analysis.

and understand content, find research, critique content, and write effectively for their major. The items were developed by the researchers and loosely adapted from Wang's (2003) measure on learner satisfaction. An example item is: I learned to write papers in my major effectively in WRT.

### *Confidence in Writing, Reading, and Researching*

This four-item subscale ($\alpha = .82$) assessed how confident students felt in using the skills to read and understand content, find research, critique content, and write effectively in their major. The items were researcher-developed. An example item is: I feel confident writing papers in my major.

### *Learning and Confidence in APA PsycInfo and APA Style*

This four-item subscale ($\alpha = .76$) assessed student perception of how much they learned and how confident they felt using APA PsycInfo to find research and write in APA style. The items were researcher-developed, and an example item is: I feel confident using APA PsycInfo to find research articles.

### *Connectedness*

This six-item subscale ($\alpha = .80$) assessed student perception of the connections, community, and trust developed between students in the writing class. The items were adapted from Rovai (2002)'s Classroom Community Scale. An example item is: I felt that students cared about each other in WRT.

### *Support*

This eight-item subscale ($\alpha = .89$) assessed student perception of their writing professor's support through valuing their contributions; noticing effort and concerns; and caring about their well-being, general satisfaction, and accomplishments. The items were adapted from the eight-item Survey of Perceived Organizational Support (Eisenberger et al., 1986; Rhoades & Eisenberger, 2002). For example: My WRT professor really cares about my well-being.

### *Value of Writing Course*

This four-item subscale ($\alpha = .91$) assessed how useful students thought their writing course was for their major and the likelihood of using their learning in the future. The items were developed by the researchers and loosely adapted from Deci and Ryan's Intrinsic Motivation Inventory Value/Usefulness subscale (Center for Self-Determination Theory, 2022). For example: WRT prepared me well for future courses in my major.

### *University Commitment and Turnover Intent*

This six-item subscale ($\alpha = .89$) assessed student emotional connection to the university, desire to complete their degree at the university, and thoughts and plans to leave the university. The items were researcher-developed. For example: I have made plans to leave this university (reverse coded).

### *Major Commitment and Turnover Intent*

This eight-item subscale ($\alpha = .87$) assessed student emotional connection to their major, connection to major faculty, desire to complete their degree in their current major, and thoughts and plans to change majors. The items were

researcher-developed. An example item is: I would be happy to spend the rest of my undergraduate years in my current major.

In addition to the survey, we collected objective data on student GPA in the academic writing course, overall GPA after eight semesters, student graduation status (yes/no), and student major at graduation (psychology/nonpsychology) among students who provided positive consent for us to subsequently gather these data from student records.

## Analysis

### *Confirmatory Factor Analysis*

We conducted a Confirmatory Factor Analysis (CFA) to assess whether the survey items formed cohesive subscales according to our groupings above. We used our entire data set of all surveyed students in the writing course to fit the CFA ($n = 625$) using the *lavaan* package in R (R Core Team, 2021). The results of the CFA suggest that the model is a largely adequate fit. The root-mean-square error of approximation (RMSEA) was .067 (90% confidence interval [.065, .069]), falling within the guidelines of the field of RMSEA < .08 (see Marsh et al., 2014; Schreiber et al., 2006). The standardized root-mean-square residual (SRMR) was .062, also falling within the guideline of SRMR < .08. Our comparative fit index and Tucker–Lewis index values of .813 and .8 both fell below the general guideline of >.9 (but see Marsh et al., 2014, for arguments that these standards are too restrictive for models with a large number of factors). Despite the relatively lower comparative fit index and Tucker–Lewis index fit indices, we chose to use this fitted CFA to convert our individual item responses into composite factor values for two reasons. First, scale development was not a primary goal of this project. Second, if our factor groupings are not wholly reflective of our hypothesized constructs, this would skew our main analysis toward conservativity (i.e., one is less likely to find statistically significant differences for nonmeaningful factors). After conducting the CFA, we converted individual item responses into composite factor scores using their factor loadings. These scores are normalized (i.e., with a mean of 0 and *SD* of 1). Higher values on composite factor scores reflect more positive survey responses (e.g., positive values of >0 on Value of Writing course indicate positive perceptions of course value).

### *Subjective Survey Analysis*

The survey analysis reflects the 124 of 142 psychology majors who completed all survey items (LC, $n = 41$; cohort, $n = 46$; control, $n = 37$). Students who did not complete all items of the survey were excluded. We dummy-coded the class format variable to obtain comparisons between our intervention groups using linear regressions predicting composite factor scores from class format: psychology LC versus psychology major cohort, psychology LC versus control class, and psychology major cohort versus control class. To correct for Type I error, we implemented a Bonferroni correction; all $p$ values reported below are multiplied by eight, or the number of survey factors (equivalent to setting the statistical significance threshold to $\alpha = .05/8 = .00625$).

### *Objective Outcomes Analysis*

The objective outcome analysis reflects the 98 psychology majors who provided positive consent for tracking academic outcomes. We conducted four total regression analyses, with class format dummy-coded. The first was a logistic regression predicting whether or not the student graduated at all; the second was a logistic regression predicting whether the student graduated as a psychology major; the third was a linear regression predicting the student's grade in the writing course; and the fourth was a linear regression predicting the student's overall GPA after eight semesters (e.g., 4 years) of college.

## Results

### *Subjective Survey Outcomes*

The LC had a significant positive impact on psychology learning and confidence, with the LC scoring significantly higher than the control class ($\beta = -.49$, $t = -2.87$, $p = .039$) and marginally higher than the psychology major cohort ($\beta = -.45$, $t = -2.78$, $p = .051$). LC students also felt significantly more connected than both the psychology major cohort ($\beta = -.49$, $t = -3.33$, $p = .009$) and the control class ($\beta = -.72$, $t = -4.69$, $p < .001$). Finally, LC students were

significantly more likely to feel committed to their major and less likely to leave their major than the control class ($\beta = -.59$, $t = -3.68$, $p = .003$), though there was no difference between the LC and the major cohort ($\beta = -.11$, $t = -.69$, $p > .05$). There were no significant differences between the LC and the other groups (cohort and control) for overall learning, confidence, support, value, or general commitment and turnover ($ps > .05$). Additionally, there were no significant differences between the psychology major cohort and the control class for any factor ($ps > .05$).

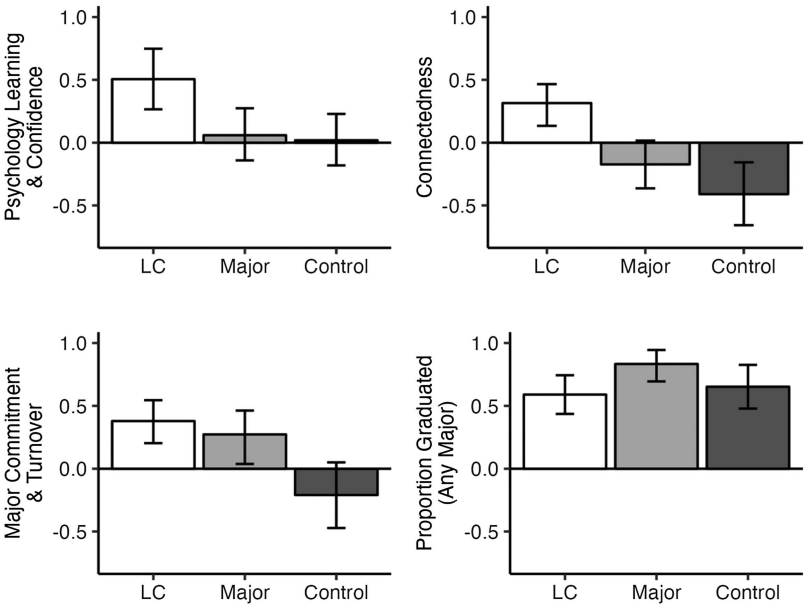
### *Objective Outcomes*

The psychology major cohort was significantly more likely to graduate (with any major) than the LC ($\beta = 1.25$, $t = 2.25$, $p = .024$). However, there were no differences between the LC and control class, or psychology major cohort and control class on graduation rates ($ps > .05$). There were no significant differences between any groups on grade in the course ($ps > .05$), overall GPA ($ps > .05$), or likelihood of graduating as a psychology major ($ps > .05$). Figure 1 illustrates significant survey and objective findings.

## Discussion

While it is easy to identify (and grumble about) weaknesses in student academic writing skills at the university level, it is far harder to identify actionable interventions for enhancing these skills. We take solace in McGovern and Hogshead's (1990) reflection on their own psychology faculty's investigation into student writing concerns. They note that learning about "the complexity of student writing problems abated our horror at our own students' terrible prose" (p. 5). Indeed, writing challenges among students can seem to be an insurmountable challenge, especially among discipline-specific faculty who are not trained in writing instruction. While the authors of the present study do not subscribe to an inoculation mentality (i.e., seeing first-year academic writing

**Figure 1**
*Reported Effectiveness of Learning Community and Major Cohort Formats*




*Note*. Comparison of learning community, major cohort, and control classes on mean psychology learning and confidence (top left), connectedness (top right), major commitment and turnover (bottom left), and graduation rates (bottom right). Factor scores (top left, top right, and bottom left panel) are normalized (i.e., negative values indicate scores lower than average). Error bars are 95% confidence intervals. LC = learning community.

courses as sufficient for addressing student academic skill weaknesses), the present study does offer important insight into the impact that different formats of one academic writing course can have on student experiences and learning. The main aim of this writing partnership was to examine resource-effective strategies that best supported student learning outcomes in the short term and had learning, social–emotional, and retention benefits in the long term. Our findings may be useful for other institutions considering a range of approaches for teaching discipline-specific writing skills to psychology majors.

Subjective student outcomes were mixed. While we hypothesized that both the LC and major cohort groups would report greater learning, confidence, and value of the writing course; greater connectedness and support; and greater commitment to the university and major, we found that the intervention had more limited impacts. Not surprisingly, the LC perceived that they had greater psychology learning and confidence than the control class. This finding was expected since the LC was paired with a disciplinary psychology course and instructors shared some writing assignments across courses. There was also a trend ($p = .051$) toward the LC reporting greater psychology learning and confidence than the major cohort, suggesting that the coordination between the writing and psychology faculty resulted in greater learning about writing conventions in psychology as opposed to the more limited intervention of placing psychology majors together in a cohort without coordination between the disciplines. These findings align with the literature on teaching writing *within* the major where gains in APA style and psychology-specific writing approaches have been found (Fallahi et al., 2006; Goddard, 2003; Luttrell et al., 2010). This suggests that disciplinary gains may not be limited to within major coursework alone, but may also be promoted through general writing courses that involve pedagogical coordination between writing and psychology (LC) disciplines.

Students in the LC reported greater connectedness than both the major cohort and the control class. These findings align with prior research in psychology LCs, which have found more positive student relationships (Cargill & Kalikoff, 2007; Grose-Fifer & Helmer, 2020) and greater connectedness between professors and students (Grose-Fifer & Helmer, 2020). Although we had expected that the major cohort would have similar impacts on connectedness, these findings are helpful in reflecting the unique strength that LCs have for connectedness. Given the importance of students feeling connected to their university for retention, these findings may have particular importance. Similarly, students in the LC felt more committed to their major than students in the control group, although no differences were identified between the LC and cohort. It may be that students who have more classes with classmates in the same major feel greater commitment to that major, regardless of how connected they feel to those classmates.

Unlike previous findings on university retention (e.g., Engstrom & Tinto, 2008), our study found that students reported no greater commitment to the university across the different writing formats. This finding, based on survey data completed at the end of the second semester of college, could suggest that this particular academic experience (general education writing course) does not buffer the many other factors influencing students' overall university commitment. Yet, these data must be seen in relation to objective findings. The psychology major cohort was more likely to be retained (in any major) and graduate than the LC, while there were no differences between the control group and either the LC or the major cohort. The graduation rate of the major cohort (83%), which was higher than the LC (59%), but no different from the control (63%), contradicted our hypothesis that social cohesiveness fostered through both intervention groups would be supportive of higher university retention. Indeed, we expected that the LC would have the strongest impact on retention.

Further, we found no differences between the three groups in course grades or likelihood of remaining a psychology major until graduation. These findings are in contrast to other studies indicating that students in LCs have better GPAs (Baker & Pomerantz, 2001; Bonet & Walters, 2016; Buch & Spaulding, 2011) and retention (Engstrom & Tinto, 2008; Hotchkiss et al., 2006; O'Keefe, 2013). While LC students reported greater commitment to their major at the end of their writing course, the intervention did not have the expected long-term impact of enhancing major-specific retention over time. By the end of the 15-week academic writing course, students in all three groups reported similar *general*

commitment and turnover intentions, so it may be that major-specific retention was clouded by general retention intentions.

Finally, LC participation did not impact academic writing performance. Students in all groups reported similar learning and confidence in their overall writing, reading, and researching skills. All groups reported a similar sense of the value of the writing course, and students did not differ in their final grades. While some studies have indicated that LC participation results in higher academic performance, this finding has been equivocal. Beachboard et al. (2011) found that once variables such as engaging in enrichment activities and higher order thinking are considered, LC participation is no longer a significant predictor of academic performance. This may suggest that there are pedagogical factors outside of LC participation that have a more powerful impact on academic performance in writing courses.

In sum, the present study suggests that there were psychology learning, relational, and major commitment benefits to participating in a psychology–writing LC for first-year students. These benefits were uniquely present among LC participants, suggesting a unique benefit of this instructional format over major cohorts and nondisciplinary writing-as-usual (control) courses. On the other hand, objective measures such as graduation rates, grades, or retention in the major (until graduation) did not differ between groups, with the exception of an unexpected finding that the psychology major cohort was more likely to graduate. Thus, it appears that the short-term subjective benefits of LC participation were greater than long-term objective benefits. We suggest that among psychology departments concerned about student writing, LCs between writing and psychology courses may be one important part of the equation in supporting student success. Our experience was that this model served as a first step in the right direction for our students and their learning outcomes.

## Limitations and Future Directions

The present study adds to the literature on LCs in general as well as the use of LCs within the discipline of psychology specifically. Yet, we recognize the limitations of an effectiveness study that has a limited sample size inherent to the disciplinary offerings at a small university. Further, while our sample generally mirrored U.S. college enrollment by race/ethnicity in 2020 (National Center for Education Statistics, 2022), our findings may not be generalizable to LCs offered in different collegiate contexts and learning cultures. Our study must be considered within its context. Generalizing the impacts of LCs across studies must be done cautiously because the definitions of what an LC involves and the actual implementation of LCs vary greatly (Pike, 2000; West & Williams, 2017). By creating a clear operational definition, different LCs may be compared with one another using the same standards (Brower & Dettinger, 1998; West & Williams, 2017). This may help to determine which aspects of LCs are most effective in impacting student academic and social–emotional outcomes. Cargill and Kalikoff (2007) urge researchers to continue refining and replicating results to determine how and why LCs are effective.

In this time of tight higher education budgets, we must look for promising pedagogical interventions that are low cost yet have the potential to make a meaningful impact on students. These interventions were cost-neutral for students and low cost for the university (no cost for major cohorts and $400 in instructor professional development for each LC pair). LCs effectively partnered experts across disciplines to work in tandem to address the feasibility and acceptability concerns of teaching writing within disciplines (Bergmann & Zepernick, 2007). In designing LCs focused on academic writing using psychology disciplinary conventions, Chenneville and Gay (2021) provide several suggestions for ways in which to incorporate writing and psychology: asking students to complete rhetorical writing assignments related to situations they may experience in an academic or professional environment, providing instruction on business communication and technical writing, and encouraging students to engage in creative writing in addition to discipline-related writing. It is important that LC instructors have the time and support to develop coordinated academic experiences across their courses. We concur with Swanson et al. (2021) who suggest that faculty should have access to professional development related to LCs and how to best implement them. When faculty members are appropriately trained and have experience teaching the LC over time, student long-term outcomes improve

(Virtue et al., 2019). Recognizing that excellence in coordinating courses with integrated pedagogy takes time and experience, institutions need to support instructors committed to these experiences through both financial and workload incentives. Our own experience found high instructor turnover in our major cohort and LC writing courses associated with the part-time nature of this program's staffing.

Finally, we suggest that further research be conducted into when in a students' academic career LCs are most effective. When comparing first-year students and senior students, Pike et al. (2011) found that seniors experienced the largest benefit from LC participation with increased student–faculty interactions, engagement in active and collaborative learning, diversity experiences, academic effort, and engagement in higher order thinking. It may be that some of our findings were impacted by the timing of the intervention in students' second semesters. More advanced students may be more focused on their major and career and may be more open to instruction focused on the ways in which disciplinary writing can be applied to their studies and future careers. This is an area that deserves more attention.

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