FEATURED ARTICLE

An Experimental Study of the Impact of Co-Curricular First-Year Experience Programming

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The paper uses an experimental approach to investigate whether co-curricular first-year experience programming can have a positive impact on student success-related attitudes, skills, and behaviors for first-year university students. We argue that co-curricular first-year experience training in first-year seminars is comparable to stand-alone first-year seminars. Using an experimental study design, we found that students who receive a co-curricular first year feel they are more successful in understanding the course material, academic performance, managing time, working in groups, and relating to their professors, compared to their counterparts in the control group. Interestingly, we also found that these students achieved a higher level of academic performance during the semester when learning transitioned from in-person to online learning. These results suggest that co-curricular training not only helps students develop attitudes, skills, and behaviors associated with student success but also helps students to work more effectively in online learning environments.

Keywords: First-Year Students, Co-Curricular Training, First-Year Transition

The literature on first-year experience programming mostly focuses on the traditional stand-alone first-year student seminar. The first-year student seminar has been shown to be successful in improving student academic performance (Hyers & Joslin, 1998; Jamelske, 2009), retention (Hyers & Joslin, 1998; Jamelske, 2009; Naylor et al., 2018), and satisfaction (Hendel, 2007). However, to our knowledge, there is no research that has investigated the impact and effectiveness of delivering a hybrid first-year student success course in a co-curricular manner connected to an existing academic course.

Co-Curricular refers to programs, activities, and learned experiences within academic courses that are modeled around the academic curriculum (Glossary of Education Reform, 2013). Co-curricular training has been shown to be effective when the material being learned through the training is directly related to the academic course (Walker, 2000). Past research has found that integrating writing instruction into engineering courses improves the quality of writing in those engineering students (Walker, 2000). However, it is unclear how effective and impactful co-curricular training is when it is not directly related to an academic course (i.e., first-year experience training). Indeed, it is arguable that the perceived lack of cohesion between the co-curricular and academic elements could lead to confusion, dissatisfaction, and lower student performance. We argue that co-curricular first-year experience programming in first-year academic courses can positively impact students by helping the first-year students become aware of the attitudes, skills, and behaviors required to perform to the expected standard within academia. Having these said attitudes, skills, and behaviors equips students with the skills and competencies needed to succeed as post-secondary students.

We use an experimental research design where students in one section of a first-year Introduction to Business Management class at a Canadian university received co-curricular first-year experience programming while students in another section did not. Students in the experimental section received training on time management, effective reading and remembering, note-taking, preparing for tests, career counseling, academic advice from a member of the faculty, and reiteration of the services available to students on campus. We found that compared to their control section counterparts, students that received the co-curricular first-year programming, on average, adopted attitudes, skills, and behaviors associated with more student success and higher academic performance.

This paper makes two contributions. First, this paper provides evidence for the effectiveness and impact of co-curricular first-year experience programming. This is important because it demonstrates that first-year experience programming can be successfully delivered in formats different from the traditional stand-alone first-year seminar. A co-curricular approach provides an effective and impactful first-year

programming delivery alternative for institutions where running a stand-alone first-year seminar is not possible. Second, we contribute to the growing body of research evidence that demonstrates how first-year experience programming improves the likelihood of post-secondary student success. The remainder of the paper is organized as follows. The next section reviews the relevant literature. Section 3 is concerned with the experimental design. The results are discussed in Section 4. Section 5 concludes.

Theoretical Background

The most common type of first-year seminar is the student success course (Mamrick, 2005). It is important to understand the type of first-year seminars that exist within academia. Barefoot (1992) identified five types of these first-year seminars: First, the academic seminar, where students learn academic skills such as critical thinking and effective writing. Second, the academic seminar on different topics, where students learn various academic skills that differ from section to section. Third, the discipline-linked or pre-professional seminar that prepares students with skills relevant to future professions and disciplines. Fourth, the basic study skills seminar, which is offered to students who are not prepared academically for tertiary education. Finally, the fifth identified is the student success course or extended orientation seminar, where first-year students learn about campus resources, time management, academic and career planning, and learning strategies. As this is the most common, we focused our study on this type of seminar.

There is a large literature that suggests that first-year student success courses have a positive impact on students transitioning from secondary to tertiary education. This literature shows that first-year experience programming is associated with higher academic performance (Hyers & Joslin, 1998; Jamelske, 2009; Vaughan et al., 2014), retention (Hyers & Joslin, 1998); Jamelske, 2009; Miller et al., 2007; Naylor et al., 2018), graduation rates (Schnell et al., 2003) and satisfaction (Hendel, 2007). Student success courses help students to successfully transition to tertiary education by developing relevant academic skills, providing orientation to campus, and helping students transition to life on campus (Mamrick, 2005).

However, to our knowledge, there is little to no research that evaluates the effectiveness of delivering student success programming as a co-curricular element that is part of an existing academic first-year course. This is likely because student success courses are typically seen as stand-alone courses, and thus understanding the impact of co-curricular student success courses is not considered. There are several reasons that the co-curricular delivery of first-year student success curriculum could be effective. First, co-curricular learning has been found to improve intellectual engagement, self-efficacy, satisfaction, and feelings of support

from the institution (Kilpatrick & Wilburn, 2010; Lourens, 2014; Pasque & Murphy, 2005; Stirling & Kerr, 2015). Second, co-curricular learning also helps students better understand people from different backgrounds and develop relationships with their peers (Keen & Hall, 2009).

Third, co-curricular learning provides students the opportunity to use the first-year experience skills they are acquiring in their academic work because the use of these skills is integrated into the academic course (Walker, 2000). First-year experience co-curricular learning also allows students to receive relevant feedback on how their performance in an academic course is impacted by the first-year experience learning (Zimbardi et al., 2017). This allows students to experience how the student success-related behaviors and attitudes they are learning in a co-curricular manner can impact their academic performance. Studies show that feedback use is associated with higher academic performance (Haught et al., 1998; Zimbardi et al., 2017).

Thus, first-year co-curricular learning is likely to help develop attitudes, skills, and behaviors associated with student success because it will help first-year students socialize and engage effectively with other students and the university. The attitudes, skills, and behaviors developed through first-year co-curricular learning are also likely to be reinforced and more deeply held by students as students apply these skills and knowledge in an academic course and can experience how the acquired skills and knowledge impact their academic performance and student experience. Therefore,

Hypothesis 1: *Co-curricular first-year student success programming will have a positive impact on attitudes, skills, and behaviors associated with student success.*

Research has found that the attitudes, skills, and behaviors of first-year students can impact academic performance. Academic self-efficacy, preparedness, student organization, and study skills are positively associated with first-year student academic performance (Hepworth et al., 2018; Krumrei-Mancuso et al., 2013; van der Zanden et al., 2018). Where high levels of stress, procrastination, and avoidance are negatively associated with academic performance (Jackson et al., 2003; Kim & Seo, 2015; Pritchard & Wilson, 2003). We argue that co-curricular first-year experience learning has a positive impact on attitudes, skills, and behaviors related to student success. Therefore, we expect that attitudes, skills, and behaviors that have been developed by co-curricular first-year experience programming will be positively related to the academic performance of first-year students. Therefore,

Hypothesis 2*: Co-curricular first-year student success programming will have a positive impact on students' academic performance.*

The COVID-19 pandemic resulted in the closure of university campuses in March 2020, during the second semester of our study. This caused a whole new level of transition. Students needed to learn not only to transition as first-year students but also to transition into virtual learning. In addition, stay-at-home orders and other restrictions on movement resulted in people distancing themselves socially and physically from others. This resulted in the removal of time structures and norms that students had during the time classes in person. Time structures are characteristics of time that can be verified externally and can be described in objective terms by others (Aeon & Aguinis, 2017; Barley, 1998). Examples of time structures for students are class schedules, assignment timelines, and formal examination timetables. Time structures affect students by placing limitations on how they can use their time, for example, by requiring students to consider their class schedule as they organize their time (Aeon & Aguinis, 2017; Barley, 1998). Time norms are socially agreed, intangible patterns of time-related behaviors that are expected (Aeon & Aguinis, 2017; Ancona et al., 2001; Bergmann, 1992). They affect individual behaviors through social pressures, for example, intangible time norms making it socially unacceptable for students to arrive late for class.

Previous studies found that students will spend more time on leisure-related activities and less time on activities associated with student success when time structures and norms are removed (Meier et al., 2016; Panek, 2014; Reinecke & Hofmann, 2016). However, students who have received first-year experience training are more likely to spend more time on activities related to student success and less time on leisure activities when compared to students with no first-year experience training when learning transitioned to online learning. This is because of the attitudes, skills, and behaviors the students learn from the first-year experience training, such as time management training, effective reading, and note-taking strategies. This suggests that students who receive co-curricular first-year experience training will have higher academic achievement compared to students that did not receive the training. Therefore,

Hypothesis 3: *The difference in academic performance between the control group and the group that received co-curricular first-year experience training was greater for online learning when compared to in-person learning.*

Experimental Design

The longitudinal experimental design was conducted over two semesters, the Fall 2019 and Winter 2020 semesters, at a mid-sized university in Canada. The treatment was for first-year students receiving co-curricular first-year experience training as

part of an introductory business management course. During each semester, students in one section of the course received the treatment, while students in the control group did not receive the treatment. A different cohort of students participated in the course each semester as the course ran for one semester. Table 1 provides the number of observations from each semester.

Table 1.
Sampling Statistic

Groups	Experimental Observations		Control Observations	
	Fall 2019	Winter 2020	Fall 2019	Winter 2020
Students	41	82	43	73

The treatment was co-curricular first-year experience training for students in the experimental sections. Each week of the semester, each section of the course received a 75-minute lecture and a 75-minute seminar. Students in the experimental section primarily received first-year experience training during the 75-minute seminar. However, this was often integrated and practiced with activities in the lecture. For example, students in the experimental section were taught different note-taking strategies during the seminar and were required to practice these during lectures. Students in the control group only received lecture-related instruction during their 75-minute seminar. Students in the experimental sections received first-year experience training in the following areas: campus orientation, time management, note-taking, effective reading, test-taking strategies, academic writing, presentation, working in groups, and career planning.

Students in all sections were asked to fill out a survey at two time points within the semester, the first being within the first week of classes, and the last being at the end of the semester, making the experimental design also longitudinal in nature. To get an understanding of the students and their individual differences, the survey we constructed was adapted based on previous surveys used with university students across North America. These questionnaires were used to assess student engagement at the university and the student's satisfaction with their university experience. Specifically, these questions were adapted from the National Survey on Student Engagement (NSSE) and the Canadian University Survey Consortium (CUSC) surveys. The categories on which measurements were based are as follows: motivation, transition, commitment, expectation, time management, and university belonging (See appendix A for all labeled items). This survey was implemented at the beginning and at the end of the semester. In the end survey, post-measures related to faculty and staff relationships and group work were given to assess the relationships and

collaborations. Each individual item was assessed within each category to explore what definitions of the category were impacted by the treatment.

Academic performance of students was measured using the grades students received from their mid-term examination, final examination, and final course grade for the course. Students in both the experimental and control groups received identical multiple-choice examinations for the midterm and final examination. The final course grade included grades from the midterm, final exam, grades awarded for in-class exercises, and grades awarded for reflective essays.

In addition, while the Fall 2019 semester had all instruction from lectures and co-curricular activities delivered in person, learning during the last four weeks of the Winter 2020 semester transitioned to online delivery due to measures imposed to reduce the spread of the COVID-19 pandemic. This provided a natural experiment where the impact of co-curricular first-year experience training on student attitudes and behavior can be assessed when there has been a significant change in the learning environment from in-person learning to online learning.

We analyzed the data as follows. First, an analysis of variance was conducted to compare the mean difference between the pre-measure and the post-measure of each item between the experimental and control groups in each semester. Second, an analysis of variance was conducted in each semester to assess the mean difference in academic grades between the experimental and control groups.[1] Lastly, an analysis of variance was conducted between the experimental group and control group to faculty and staff relationships, as well as peer group work. [2]

Analysis and Results

Beginning with the Fall 2019 semester (see Table 2), mean differences were assessed.[3] Students in the experiment felt they would find less success when meeting academic demands, being involved in campus activities, and having a lower level of belonging to the university in comparison to the control group. On the other hand, students in the experiment group found more success in understanding the course material and with time management in comparison to the control group.

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1 P-value assessed at < .10 due to sample size and novelty of measures.

2 A multi-level model was conducted as a secondary analysis to confirm the results of the initial analysis. The findings support the current analysis and are available upon request.

3 Mean differences were measured for pre and post-measures to control for individual differences between the control and experimental conditions.

Table 2.
Assessment of Experimental Design in Fall 2019

Items		Experiment		Control		F	Sig
		M. Dif	SD	M. Dif	SD		
Motivation	M1	.244	1.46	.488	1.22	.403	.527
	M2	.561	1.52	.209	1.36	1.635	.205
	M3	.829	1.38	.581	1.28	1.218	.273
	M4	.366	1.16	.535	1.24	.366	.547
	M5	.366	1.37	.372	1.29	.056	.814
	M6	.439	1.32	.047	1.73	1.230	.271
	M7	.342	1.98	.326	2.06	.011	.916
	M8	.317	1.23	.256	1.11	.261	.611
	M9	.683	1.75	.209	1.71	1.569	.214
	M10	.537	1.51	.395	1.58	.147	.702
	M11	.244	2.00	-.116	1.64	.821	.368
	M12	.171	1.63	.442	1.55	.581	.448
Transition	T1	.000	1.07	.432	1.02	3.618	.061
	T2	-.537	1.25	-.535	1.08	.000	.995
	T3	.171	0.74	-.136	0.93	2.816	.097
	T4	.195	1.12	.000	1.28	.557	.458
	T5	-.268	1.18	.068	1.37	1.457	.231
	T6	-.976	1.37	-.273	1.53	4.953	.029
	T7	.171	0.95	.205	1.19	.021	.886
	T8	-.098	1.24	.227	1.38	1.297	.258
	T9	-.781	1.31	-.682	1.16	.135	.714
Commitment	C1	-.195	0.93	-.386	0.81	1.025	.314
	C2	-.024	1.39	-.114	1.26	.096	.757
	C3	-.098	1.22	-.364	1.04	1.179	.281
	C4	-.439	1.16	.047	0.97	4.316	.041
	C5	-.293	1.36	-.159	1.22	.227	.635
	C6	-.098	1.14	-.318	0.96	1.111	.295
Time Management	TM1	-.073	1.52	-.296	1.23	.551	.460
	TM2	.024	1.39	-.523	1.23	3.715	.057
	TM3	.195	1.21	-.205	1.34	2.075	.153
	TM4	.195	1.38	-.114	1.22	1.192	.278
	TM5	-.049	1.07	-.045	0.83	.000	.987

	TM6	.122	1.38	.432	1.34	1.104	.296
Expectations	E1	-.634	1.39	-.568	1.09	.060	.808
	E2	-.244	1.22	-.296	1.11	.042	.839
	E3	-.537	1.19	-.395	0.98	.356	.552
	E4	-.854	1.24	-.841	0.96	.003	.958
	E5	-.293	1.33	-.614	1.15	1.430	.235
	E6	-.707	1.12	-.419	1.12	1.393	.241
	E7	-.756	1.36	-.614	1.26	.252	.617
	E8	-.634	1.46	-.614	1.37	.004	.947
University Belongingness							
Affiliation		-.043	0.45	-.038	0.73	.001	.972
Support		-.095	0.79	-.278	0.49	1.572	.214
Faculty and Staff		-.282	0.68	-.081	0.95	1.017	.317

Students in the experiment also felt their work was made easier by their group members sharing their ideas and opinions with them and that their professors treated them as individuals and not just a number in comparison to the control group feeling this was not the case for them. (see Table 3).

Table 3.
Assessment of Experimental Design in Fall 2019 Post Measures.

Items		Experiment		Control		F	Sig
		Mean	SD	Mean	SD		
Group work	GW1	3.78	1.11	3.39	1.22	2.412	.124
	GW2	3.54	1.08	3.68	1.25	.327	.569
	GW3	3.61	0.83	3.45	1.13	.513	.476
	GW4	3.71	0.93	3.30	0.98	3.950	.050
	GW5	3.56	1.07	3.57	1.23	.001	.977
	GW6	3.44	0.92	3.36	0.94	.139	.711
Professor Relationship	PR1	3.85	0.79	3.64	0.72	1.758	.188
	PR2	3.66	0.86	3.50	0.73	.848	.360
	PR3	4.17	0.63	3.89	0.78	3.373	.070
	PR4	4.29	0.68	4.07	0.76	2.051	.156
	PR5	3.98	0.72	3.98	0.79	.000	.992
	PR6	3.66	0.88	3.73	0.90	.126	.723

Teaching Assistant		4.12	1.05	4.11	0.97	.001	.970

Table 4 results for the mean differences from the Winter 2020 semester. These results show that students in the experiment felt more motivated by a desire to meet their family's expectations in comparison to the control group. Students in the control group felt they would find less success when meeting academic demands in comparison to the experimental group. Students in the control group felt they did not manage their time well in comparison to the experimental group. Students in the experimental group felt that their academic writing was of lower quality than expected after completing this semester in comparison to the control group. In the post-measure section, students in the experimental group felt more in agreement with having a positive affiliation with faculty and staff in comparison to the control group.

Table 4.
Assessment of Experimental Design in Winter 2020

Items		Experiment		Control		F	Sig
		M. Dif	SD	M. Dif	SD		
Motivation	M1	.183	1.15	-.082	1.34	1.762	.186
	M2	.305	1.23	.151	1.34	.556	.457
	M3	.561	1.36	.219	1.44	2.311	.131
	M4	.195	1.24	.096	1.04	.286	.593
	M5	.232	1.22	.178	1.41	.065	.800
	M6	-.024	1.43	.055	1.18	.139	.709
	M7	.585	1.30	.014	1.35	7.235	.008
	M8	.037	1.32	.206	1.13	.724	.396
	M9	.207	1.29	.288	1.61	.118	.731
	M10	.148	1.39	.055	1.32	.182	.671
	M11	.012	1.12	.014	1.18	.000	.994
	M12	.195	1.36	.123	1.27	.114	.736
Transition	T1	-.293	0.79	-.329	0.97	.065	.800
	T2	-.232	1.08	-.438	1.13	1.352	.247
	T3	-.171	0.89	-.343	0.96	1.340	.249
	T4	-.207	1.13	-.082	1.05	.506	.478
	T5	-.085	1.04	-.343	1.24	1.964	.163
	T6	-.463	1.19	-.233	1.24	1.393	.240
	T7	.073	0.87	.151	1.09	.242	.624

	T8	.256	1.05	.027	1.20	1.597	.208
	T9	-.134	1.25	-.753	1.38	8.548	.004
Commitment	C1	-.244	0.83	-.343	1.07	.417	.519
	C2	-.159	0.78	-.041	.092	.742	.360
	C3	-.171	0.91	-.027	0.94	.923	.338
	C4	.037	0.84	-.027	0.85	.222	.638
	C5	.012	0.94	.014	1.21	.000	.993
	C6	-.061	0.71	-.123	1.04	.193	.661
Time Management	TM1	.000	0.94	-.096	1.14	.327	.568
	TM2	.024	0.90	-.247	1.13	2.754	.099
	TM3	.195	0.97	.055	1.13	.690	.408
	TM4	-.134	1.03	-.014	1.05	.521	.471
	TM5	-.110	0.69	-.110	0.97	.000	.999
	TM6	.012	1.09	.082	1.27	.136	.713
Expectations	E1	-.439	1.16	-.616	1.11	.942	.333
	E2	-.134	1.17	-.343	1.20	1.187	.278
	E3	-.537	1.12	-.389	1.21	.619	.433
	E4	-.713	0.89	-.329	1.07	5.874	.017
	E5	-.293	1.19	-.315	1.39	.012	.914
	E6	-.568	1.00	-.534	1.09	.040	.842
	E7	-.902	1.25	-.887	1.29	.005	.942
	E8	-.622	1.35	-.458	1.40	.543	.462
University Belongingness							
Affiliation		-.018	0.42	-.075	0.57	.503	.479
Support		-.053	0.36	-.152	0.54	1.802	.181
Faculty and Staff		.170	0.67	-.267	0.71	15.440	.000

In the post-measure section, students in the experimental group expressed more agreement with having a positive affiliation with faculty and staff in comparison to the control group.

Table 5.
Assessment of Experimental Design in Winter 2020 Post measures

Items		Experiment		Control		F	Sig
		Mean	SD	Mean	SD		
Group work	GW1	3.38	1.11	3.54	1.23	.746	.389
	GW2	3.54	1.17	3.54	1.27	.000	.984
	GW3	3.55	0.99	3.58	1.17	.040	.843
	GW4	3.53	0.96	3.29	0.98	2.725	.101
	GW5	3.54	1.02	3.49	1.26	.067	.796
	GW6	3.53	1.02	3.46	1.06	.234	.629
Professor Relationship	PR1	3.85	0.70	3.87	0.80	.017	.895
	PR2	3.55	0.83	3.60	0.78	.134	.715
	PR3	3.81	0.81	3.81	0.75	.000	.996
	PR4	4.03	0.76	4.02	0.76	.007	.932
	PR5	3.71	0.80	3.92	0.76	3.074	.081
	PR6	3.65	0.92	3.70	0.80	.149	.700
Teaching Assistant		3.97	1.18	4.07	1.07	.379	.539

Table 6 and Table 7 present results comparing the mean difference in academic grades between the experimental and control groups. A multivariate analysis of variance was conducted for these measures to assess if there were any impacts within the variables. For the Fall 2019 semester, there were no significant differences in grades at midterm, final exam, and overall final grades between the experimental and control groups. For the Winter 2020 semester, the experimental group did significantly better in the midterm, final exam, and overall final grades in comparison to the control group.

Table 6.
Overall grade comparisons in the Fall 2019 semester.

Activities	Experimental group		Control group		F	η_p^2
	M	SD	M	SD		
Midterm	59.12	15.93	62.10	14.96	2.287	.009

Final Exam	61.00	14.15	63.31	13.97	1.657	.007
Final Grade	71.88	12.11	72.15	12.12	.029	.000

Note. Non-significant finding.
Multivariate test: F (3,243) = 1.832, p = .142, η_p^2 = .022

Table 7.
Overall grade comparisons during the Winter 2020 semester.

Activities	Experimental group		Control group		F	η_p^2
	M	SD	M	SD		
Midterm	64.17	15.66	55.33	21.11	14.159***	.053
Final Exam	72.62	16.57	62.78	22.15	15.852***	.059
Final Grade	75.47	13.37	66.60	19.40	17.743***	.066

Note. ***p < .001
Multivariate test: F (3,249) = 6.583, p < .001, η_p^2 = .073

Discussion and Conclusion

We found evidence to support all three hypotheses. To begin with, we found that during both the fall and winter semesters, co-curricular first-year experience training had a positive impact on student attitudes, skills, and behaviors from the time one to the time two data collection at the end of both semesters. In the fall semester, students in the experiment felt they would find more success understanding the course material, academic performance, managing their time, working in groups, and relating to their professors, compared to their counterparts in the control group. This is consistent with previous research that has found first-year seminars to have a positive impact on first-year students (Keen 7 Hall, 2009; Kilpatrick & Wilburn, 2010; Lourens, 2014; Pasque & Murphy, 2005; Stirling & Kerr, 2015). Our findings thus provide evidence that delivering first-year experience training in a co-curricular manner may have similar benefits to those achieved through a separately run first-year seminar.

However, we also found students in the experimental group felt they would be less successful in meeting academic demands in the fall semester, becoming involved in campus activities, feeling like they belong to the university, and academic writing. These results are two-fold. Firstly, this may suggest possible limitations for co-curricular first-year experience training. But it may also suggest that students involved in the experimental group were more aware of potential areas of growth within their own academic abilities. Following up with these students with recourses to focus their attention will only strengthen those limitations as they transcend into the rest of their degree. A stand-alone first-year seminar is likely to

have the ability to create a more engaging and rigorous experience that will more fully develop students' emotional attachment to the university and a wider range of skill sets needed to succeed at university.

While there is no significant difference in grades between the experiment and control groups in the fall semester, we found that grades for students in the experiment group were significantly higher than for students in the control group in the winter semester. We found no evidence for hypothesis 2 in the fall semester. The results for the fall could be due to it being the students' very first semester at a university and learning to adjust. This suggests academic performance in the fall semester is primarily driven by the individual characteristics students bring with them at the beginning of university. The winter semester results provide strong evidence for hypothesis 2.

An alternative explanation for the significant grade difference in the winter semester is that the change from in-person to online learning caused by the COVID-19 pandemic allowed students who had received co-curricular first-year experience training to perform better academically compared to the control group. Students in the experimental section were better able to learn in an environment where time structures and norms associated with in-person learning had been removed because of the training they had received. This explanation would be consistent with our third hypothesis.

There are limitations to this study. First, there are several individual characteristics that could also explain first-year students' attitudes, skills, and behaviors. These characteristics were not controlled for in our analysis. Including such variables in future studies could help provide more insights into how individual characteristics formed pre-university shape and influence students' university experience. Second, to further assess the effectiveness of co-curricular first-year experience training, it would have been ideal to directly compare it to stand-alone first-year seminars. This is an area future studies should focus on.

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Appendix A:

Motivation Items:						
Question: How important were each of the following possible reasons in your decision to go to university?						
Label	Item					
M1	To satisfy my intellectual curiosity					
M2	To get a broad education					
M3	I am more likely to get a job with a degree					
M4	The satisfaction of doing challenging academic work					
M5	To apply what I will learn to make a positive difference in society or my community					
M6	I didn't have anything better to do					
M7	To meet my family's expectations					
M8	Learning new things is exciting					
M9	Most of my friends are going					
M10	To meet new people					
M11	The chance to participate in varsity sports					
M12	To explore whether university is right for me					
Note. Individual items were assessed.						
Transition Items:						
Question: How much success do you think you will have in the following areas during your first year of studies?						
Label	Item					
T1	Meeting academic demands					
T2	Getting academic advice					
T3	Understanding the course material					
T4	Managing your time					
T5	Making friends					

T6	Becoming involved in campus activities
T7	Finding your way around campus
T8	Using the library
T9	Finding career information

Note. Individual items were assessed.

Commitment Items:

Question: Please indicate your level of agreement or disagreement with the following statements

Label	Item					
C1	I am willing to put a lot of effort into being successful at the university.					
C2	I can deal with stress.					
C3	I have good study habits.					
C4	I feel as if I belong at this University.					
C5	I have the financial resources to complete my program.					
C6	I plan to come back to this university next year.					

Note. Individual items were assessed.

Time Management Items:

Question: Please indicate your level of agreement or disagreement with the following statements regarding time management.

Label	Item					
TM1	I feel I manage my time well.					
TM2	I plan my daily activities					
TM3	I do my most difficult work at the time of day I have the most energy.					
TM4	I find that I am overwhelmed by my daily routine.					
TM5	Even if I do not like something, I still complete it on time.					
TM6	I am not organized in my tasks.					

Note. Individual items were assessed.

Expectation Items:

Question: This question measures your expectations for your experience at Saint Mary's University. How much do you expect these areas to be relevant to your university experience?

Label	Item					
E1	Contact with professors in the classroom					
E2	Contact with your professors outside of the classroom					
E3	Class participation					
E4	Writing in your academic work					

E5	Doing coursework in groups
E6	Intellectual stimulation
E7	Making friends
E8	Getting involved in campus social activities

Note. Individual items were assessed.

University Belonging Scale:

Question: Please indicate your level of agreement with each of the following statements regarding your university experience.

Subscale		Semester	Group	Pre α	Post α
Faculty and Staff		Fall	Experiment	.809	.901
			Control	.706	.853
		Winter	Experiment	.674	.748
Items			Control	.726	.673
I feel that a faculty member has valued my contributions in class.					
I feel connected to a faculty/staff member at my university.					
I believe that a faculty/staff member at my university cares about me					
I feel that a faculty/staff member has appreciated me.					
Subscale		Semester	Group	Pre α	Post α
Support		Fall	Experiment	.844	.776
			Control	.793	.837
		Winter	Experiment	.798	.834
Items			Control	.842	.836
My university environment provides me an opportunity to grow.					
I believe there are supportive resources available to me on campus.					
My university provides opportunities to have diverse experiences.					
I am satisfied with the academic opportunities at my university					
The university I attend values individual differences.					
My university provides opportunities to engage in meaningful activities.					
I believe I have enough academic support to get me through college.					
My cultural customs are accepted at my university.					
Subscale		Semester	Group	Pre α	Post α
Affiliation		Fall	Experiment	.863	.901
			Control	.890	.903
		Winter	Experiment	.827	.810
Items			Control	.879	.844

I have university-branded material that others can see (pens, notebooks, bumper sticker, etc.).
I tend to associate myself with my school.
I would be proud to support my university in any way I can in the future.
One of the things I like to tell people is about my college.
I have found it easy to establish relationships at my university.
I feel “at home” on campus.
I attend university sporting events to support my university.
I feel similar to other people in my classes.
I feel a sense of pride when I meet someone from my university off-campus.
I am proud to be a student at my university.
I take pride in wearing my university’s colors.
I feel like I belong to my university when I represent my school off-campus.