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Academic-Support Environment Impacts Learner Affect in Higher Education

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Abstract

Unlike university classrooms, academic support services provide students opportunities for enactive mastery of a skill with immediate feedback in a low-risk learning environment. Given that this environment likely alters affective states, this study tracked support-seekers' perception (n=107) of their anxiety and confidence before and after repeated 1 hour academic skill development sessions (n=384). Results showed that academic-support environment had a robust, immediate, and long-lasting effect on decreasing anxiety and increasing confidence. Positive outcomes such as reduced anxiety and increased confidence during an academic skill development session were associated with increased academic performance. There was a high rate of participants (98%) persisting into the next year of their program. Together this study demonstrates that the academic-support environment can provide intervention in the form of enhancing affective states in situations of high anxiety and low confidence to potentially affect academic outcomes and retention rates.

***Keywords**:* Confidence; anxiety; enactive mastery; academic skill development; student affairs; academic support-seeker.

Introduction

Universities are working hard to enhance the student experience with the aim of promoting student engagement, achievement, and retention. Learning opportunities, both in and out of the classroom, can influence the student experience (Astin, 1984; Roberts & Styron, 2010; Sanford, 1962). Most colleges and universities offer out-of-class learning experiences through academic support services intended to promote retention (Fong et al., 2021; Pascarella & Terenzini, 2005). To that end, institutions provide skill development and learning opportunities through the most relevant academic department, or, increasingly, through student development services or student affairs. Academic support professionals anecdotally report their work in developing academic skills, providing feedback, encouraging, and challenging students has a positive impact on a student's affect related to a learning experience (i.e., learner affect). These professionals can build ongoing, committed relationships with students by creating emotionally supportive environments (e.g., creating a sense of belonging, see Cownie, 2019), which may improve academic outcomes. Although research suggests that affect plays a role during the learning process (Pekrun, 2014), few studies have investigated students' affective states as they occur in higher educational settings (Pekrun & Linnenbrink-Garcia, 2012). Furthermore, given that many North American higher education institutions provide academic support services, research into the area of student affect in the academic support settings is absent. The present study investigated how the academic-support environment can affect a learner's confidence and anxiety (i.e., learner affect). For the purpose of this study, anxiety can be viewed as fear, excessive worry, or other negative emotional and physical responses about the future that can be brought on by various causes (Arribathi et al., 2021). Here, the source of the anxiety is the act of learning. Additionally, learner confidence can be seen in the students' belief in their ability to positively respond to the academic rigors of studying at the university level (Sander & Sanders, 2006) and can be viewed as a separate and more specific term, which, in educational settings may be a predictor of academic performance (Vrugt et al., 1997).

Self-efficacy theory has had considerable influence on education by establishing the importance of beliefs in learning and performance. The most important of these beliefs is perceived self-efficacy related to controlling anxiety and developing confidence in one's ability to perform tasks (Bandura, 1988, 1997). Unlike traditional psychological constructs, self-efficacy beliefs are hypothesized to vary depending on the domain of functioning and circumstances surrounding the occurrence of behavior. For example, decades of research supports the relationship between self-efficacy, apprehension, and performance with respect to student writing. Such findings have led to the term "writing anxiety" (Grundy, 1985). In general, students with high writing self-efficacy write better and are less anxious about writing than those with low writing self-efficacy (e.g., McCarthy et al., 1985; Pajares & Valiante, 1999). Similar to writing anxiety, the broad consensus is that "math anxiety" is linked to poorer math performance (Ashcraft, 2002; Ma & Xu, 2004). Research on skill-specific learning anxieties (e.g., writing, math) has shown that trait anxiety (e.g., the level of anxiety shown in a nonspecific stressful situation) is a poor predictor of learning outcomes. For example, statistics anxiety, rather than trait anxiety, was the strongest direct predictor of academic performance in adults (Macher et al., 2012). These results are consistent with other research that has found a strong relationship between learning anxiety and variables such as confidence and motivation (Ashcraft, 2002).

Learner Affect in the Classroom

Inside the university classroom, instructors may seek to control, manage, limit, or redirect outward expressions of emotions (Dirkx, 2001). The emotional rapport between faculty and students is varied and situation-dependent (Pekrun, 2019; Putwain et al., 2013); however, building a strong, emotionally supportive relationship with students is important in supporting student success. Research suggests that the student–faculty relationship can facilitate student confidence in their ability to succeed in a given academic situation (Vogt et al., 2007) and reduce student anxiety related to difficult courses (Micari & Pazos, 2012). Students who perceive their faculty members as being approachable, respectful, and available for frequent interactions outside the classroom are more likely to report being confident in their academic skills. Demonstrating genuine interest in helping students learn, as well as a simple interest in the students on a personal level, also affects student success (Cox et al., 2010). Due to faculty demands, the level of student exposure to faculty, particularly in large lecture courses, may not reach a minimum threshold level to have a psychosocial influence on student learning.

Learner Affect in the Academic-Support Environment

Many students are reluctant to ask for help from university instructors (Karabenick, 2003). Finding ways to provide learning support is an essential role of universities because these students face multiple obstacles on their academic journeys (Fong et al., 2021). Unlike university instructors, learning professionals outside of the classroom have the capacity in a one-on-one academic skill development session to acknowledge the student's emotions as an important part of learning (Ekornes, 2021) and establish an emotional rapport. Researchers have found that rapport sets the stage for achieving learning outcomes (Brookfield, 1990; Wilson et al., 2010).

Students can establish trust-based learning relationships with academic support professionals through collaboration. Trusting relationships can be developed by seeking student input on unclear topics. This trust is important to the foundation of collaborative learning and the development of an emotional rapport. In academic skill development sessions, students can practice skills and receive professional feedback in a low-stakes, emotionally supportive environment that is not tied to academic performance measures such as grades. The best way to learn a skill or improve performance is by practice and through these mastery experiences (i.e., giving students the feeling of achievement through taking on a new challenge and succeeding) students learn that they can acquire new skills. Comments and immediate feedback can result in greater learning and positive self-perception compared to feedback received in conjunction with grades (Shields, 2015). The academic-support environment provides corrective strategies (e.g., restating, re-teaching prerequisite skills), instructive feedback when struggling learners could benefit from extra information, praise when struggling learners had legitimately earned this form of verbal persuasion, and functional attribution statements along with effort and ability feedback. There is considerable evidence showing that these types of feedback raise self-efficacy (meta-analysis, Black & William, 1998; Schunk & Gunn, 1986).

Learning environments that facilitate positive emotions may contribute to the use of flexible, creative learning strategies, which increases confidence in one's ability (see Sander & Sanders, 2006). Feeling safe in a learning environment can help students take the risks needed to engage in higher levels of learning. A student studying in a post-secondary setting that offers academic support services may be more likely to take on academic challenges because they are aware of this safety net (Brookfield, 1990). Low risk environments, such as those provided by academic support services, may contribute to a more calm and thoughtful approach to tasks (Bandura & Jourden, 1991) and likely can alter confidence and anxiety.

Current Study

The present study explored affect in undergraduate students who voluntarily sought academic support. Researchers tracked participant perception of their anxiety and confidence before and after an academic support session. When possible, researchers measured the variables on subsequent sessions.

Research questions

1. Can a learner's perception of their anxiety and confidence (i.e., learner affect) be influenced during a 1 hour academic skill-development session?
2. If beneficial effects on learner affect occur within a 1 hour academic skill-development session, do these benefits carry over to subsequent sessions for those students seeking multiple session?
3. Is there a relationship between learner affect with later academic outcomes (i.e., course grade, GPA, retention)?
4. Are there common factors predicting an academic support-seeker's initial affect?

Method

Participants, Academic-Support Environment, and Student Learning Coordinators

The study was conducted in the Academic Skills Center at a Canadian university. Participants were recruited from students seeking academic support from one or both Student Learning Coordinators (SLC) specializing in math/science (SLC-M) or writing/academic skills (SLC-W). SLC duties include: one-on-one coaching of students; providing immediate feedback; rewarding progress through verbal affirmations; and establishing specific goals. SLCs have graduate degrees relevant to their professions along with significant teaching experience at the university level. Once the issues are defined and the goals of the session are identified, the student engages in active skill development (e.g., learning how to reference, paraphrasing, take notes, solve math equations, preform statistics, etc.…). SLCs work directly with students to encourage academic success by developing, implementing, and monitoring individualized academic learning plans based around the unique needs of each student.

Anxiety and Confidence Measures

The study employed a two-item visual analogue scale (VAS)--two horizontal lines, 100 mm in length, anchored by extreme limit word descriptors--"Not Anxious at All" (0mm) and "Extremely Anxious" (100mm) with a reverse interpretation for the confidence "Not Confident at All" (0mm) and "Extremely Confident" (100mm). VASs have been employed and validated in the assessment of a wide variety of health-related constructs including anxiety and confidence (Facco et al., 2013).

Procedure

Data was collected across two 12-week semesters. If a student agreed to participate, they signed a consent form. The institution's Research Ethics Board (REB approval #101125) approved all methods.

At the beginning of the first 1 hour appointment, participants were given a sheet of paper containing the two-item VAS and were asked to rate their anxiousness and confidence by drawing a vertical line across each of the two horizontal lines. After the 1 hour session was completed, the process was repeated with a different colored ink on the same two-item VAS. After SLCs recorded responses by measuring the marks from left to right in millimeters. This procedure was repeated if a student returned for subsequent 1 hour sessions.

Participants provided information about involvement with other university services (see Table 2) and information about academic outcomes (i.e., course grades, GPAs, enrollment status, and retention) were provided by the Registrar's Office. The home institution uses pure numbers to calculate GPA. Students earn grades out of 100 in each of their courses and the mean is then calculated based on the total number of courses taken.

Results

Participant Characteristics and Support Details

From Table 1, most participants were between 18-25 (93%), female (83%) and in year two (36%) or three (35%) of their studies. Given the disproportionate number of female participants, we performed preliminary analysis separating the genders. The same results were achieved within both data sets; thus, the data were combined.

Table 1

Participant Characteristics

Characteristic	Participants (n = 107)
Age (years)	
18-25	99
26-35	5
36-50	3
50+	0
Male	18
Female	89
Bachelor Program	
Arts-General	20
Arts-Honors	48
Science-Honors	8
Science-Nursing	7
Business Administration	7
Fine Arts	3
Physical and Health Education	9
Miscellaneous	5
Year of Study	
1	11
2	39
3	37
4	18
4+	2

Although there was an equal distribution of participants seeking support from the two SLC roles (Table 2), there were more math support-seekers requiring repeated sessions. Table 2 also displays the number of students who utilized other support services.

Table 2

Number of Participants Utilizing Academic and Other Support Services

Academic Skill-Development Sessions	SLC-W	SLC-M
Total Participants	57	50
Support in Both Semesters	7	8
Supported by Both SLCs	18	
Participants with Repeated Sessions	28	48
Total Number of Sessions	115	269
Supported by Other Student Development & Services Depts		
Student Transitioning Services (STS)	21	
Student Accessibility Services (SAS)	33	
Student Counseling Services (SCS)	34	
Living in Residence	35	

Note: Student Learning Coordinators for Writing & Academic Skills (SLC-W) and Math & Science (SLC-M). STS include support related to: first generation, crown ward and mature, transfer. SAS include support related to: adaptive technology, alternative format reading materials, and distraction reduced work/testing area. SCS include support related to: individual/group counseling. Living in residence includes: transitions to social life.

Learner Affect Within and Between 1 hour Academic Skill Development Sessions

From Table 3, there were 76 participants with repeated sessions and mean VAS show a trend of decreasing anxiety and increasing confidence across repeated sessions.

Table 3

Means (±SD) for VAS Across Repeated Sessions

Number of Sessions	(n)	Anxiety (Mean±SD)		Confidence (Mean±SD)	
		Start	End	Start	End
1	107	58(27)	36(22)	38(21)	62(17)
2	76	53(23)	33(20)	48(20)	69(170
3	51	48(23)	28(19)	50(20)	70(17)
4	38	48(21)	28(20)	52(18)	71(17)
5	30	46(25)	31(21)	55(21)	69(18)
6	21	47(26)	28(20)	55(22)	72(17)
7	20	43(27)	29(24)	64(21)	77(16)
8	14	48(25)	29(26)	52(20)	71(20)
9	10	39(29)	29(20)	60(26)	71(17)
10	6	32(16)	18(15)	65(24)	82(16)
11	6	26(14)	14(15)	64(17)	87(19)
12	4	17(12)	9(7)	70(19)	88(20)
13	1	60(-)	41(-)	45(-)	81(-)
14	1	65(-)	15(-)	61(-)	70(-)

A change score was developed from the VAS measurements [anxiety change = start minus end; and confidence change = end minus start]. The frequency distribution of change scores in Table 4 shows that most students perceived affective gains between 1 to 10 points for both anxiety reduction (34.4%, n=132) and confidence boost (31.3%, n=120). There were no participants who perceived increased anxiety and very few who perceived decreased confidence (0.7%, n=3) within a 1 hour session. Unchanged anxiety (4.2%, n=16) and confidence (3.9%, n=15) scores were also relatively infrequent.

Table 4

Frequency Distribution of Learner Affect Change Scores

Change Score	Anxiety (n)	Confidence (n)
-10 – -1	0	3
0	16	15
1 – 10	132	120
11 – 20	95	104
21 – 30	57	60
31 – 40	42	37
41 – 50	17	17
51 – 60	5	3
61 – 70	12	16
71 – 80	5	6
81 – 90	1	2
91 –100	2	1

Note: See text for change score calculations. Negative change score = affect losses (i.e., increased anxiety, decreased confidence). Zero change score = unchanged affect. Positive change score = affect gains (i.e., decreased anxiety, increased confidence) (N=384).

For single session participants, an Affect (Anxiety vs Confidence) X Within Session (Start vs End of 1 hour) repeated measures ANOVA was conducted on raw VAS scores (mm). The ANOVAs revealed a significant interaction [Single, $F(1,30)=59.50$, $p<0.001.02$, $\eta^2 = 0.67$]. All post hocs used multiple t-tests with Bonferroni corrections. There was no difference between affect at the session start; however, by the end of the initial 1 hour session, affect differed due to the significant decrease in anxiety and increase in confidence (see Figure 1, left panel).

For multiple session participants a similar ANOVA was performed on first session VAS scores and yielded a significant interaction [$F(1,75)=147.30$, $p<0.001.02$, $\eta^2 = 0.66$]. Unlike those participants that requested a single session, multiple session participants had increased anxiety compared to confidence at the session start; however, the pattern reversed by the end of the initial session such that similar results were observed as the single session participants (see Figure 1, middle panel). To assess the last session, an Affect (Anxiety vs Confidence) X Within Session (Start vs End of 1 hour) repeated measures ANCOVA that included the number of sessions as a covariate was performed. The Affect by Within Session interaction was significant, [$F(1,74)=53.31$, $p<0.001$, $\eta^2 = 0.42$]. Additionally, the covariate shared an interaction with the Within Session factor [$F(1,74)=7.35$, $p=0.008$, $\eta^2 = 0.09$]. To evaluate the interaction terms, a separate ANOVA was done with no covariate (SPSS Knowledgebase, 2001) which again yielded a significant interaction [$F(1,75)=126.7.34$, $p<0.001$, $\eta^2 = 0.627$]. Like the participants that terminated after a single session (Figure 1, right panel), there was no difference between affect at the session start; however, at session end, affect differed given to the significant decrease in anxiety and increase in confidence (see Figure 1, left panel).

To assess potential dissociations between the single and multiple sessions, four independent t-tests with Bonferroni corrections were performed on the anxiety and confidence VAS scores at the start and end of the first session. The multiple session participants had increased anxiety at both time points compared to single session participants [$t(105)=3.18$, $p<0.001$, $d=0.68$; $t(105)=2.868$, $p<0.011$, $d=0.51$]. There were differences between the groups in confidence.

In summary, these results showed that there was a dissociation on the first session between those students requesting a single session and those requesting multiple sessions such that anxiety was greatly inflated for those wanting more sessions after the initial session. However, by their last session, the multiple session group had a similar pattern in their affect scores as those terminating after a single session.

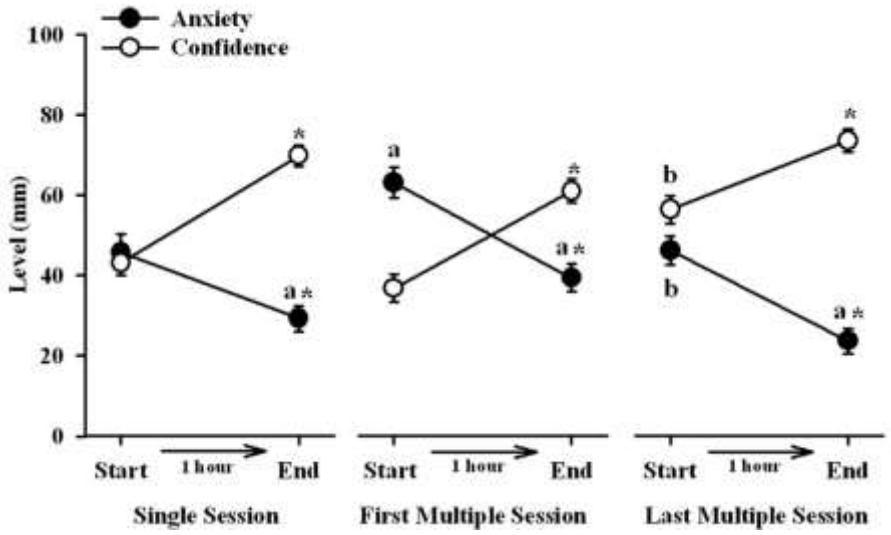
To assess carryover effects across multiple sessions, paired t-tests with Bonferroni corrections were performed separately for the two affects comparing the VAS scores at the last session start with both time points of the first session (i.e., start and end). Both Anxiety [$t(75) = -6.12$, $p<0.001$, $d=0.70$] and Confidence [$t(75) = -6.64$, $p<0.001$, $d=0.76$] were significantly decreased and increased, respectively at the last session start compared to the first session start. There were no significant differences

between the first session end and last session start. Together, these findings suggest that between sessions there was a carryover effect.

To assess the magnitude of the change in affect within a session, two ANOVAs were performed on the change scores (i.e., Table 4). For the first session, a 2 Group (Single vs. Multiple sessions) X 2 Affect (Anxiety vs Confidence) ANOVA and for multiple session participants a 2 Between Session (First vs Last) X 2 Affect (Anxiety vs Confidence) ANOVA revealed no significant results, suggesting that the magnitude of affect change within a session did not vary.

Figure 1

Comparisons of Learner Affect Within and Between Sessions



Note: Within all 1 hour sessions, anxiety decreased, and confidence increased (*p<0.001) creating a significant difference in affect at the end of all sessions ([a]p<0.001). Unlike the single session (left panel), participants requesting multiple sessions had increased anxiety compared to confidence at the start of the first session (middle panel, [a]p<0.001). Finally, multiple sessions showed that affective beneficial gains could be carried over from the start of the first (middle panel) to the start of the last (right panel) session ([b]p<0.001) with no significant differences between the end of the first and the start of the last session.

Relationship Between Learner Affect with Academic Outcomes

End of semester GPA and the final grade in the specific course for which SLC support was sought were very similar in cases wherein the student was allowed to proceed with enrollment to the following year; however, for those students who were required to withdraw, the attained grade in the course for which the student sought support was vastly increased compared to their GPA (Table 5). All students who could proceed did enroll in the following semester (i.e., 100% retention rates).

Table 5

Descriptive Statistics for Academic and Retention Outcomes by Enrollment Status

Enrollment Status	n	GPA Mean(SD)	Course Grade Mean(SD)	Retention
Proceed	99	73.5(6.9)	74.7(9.8)	100%
Proceed with Conditions	6	63.0(6.7)	63.6(7.1)	100%
Withdraw	2	50.9(1.8)	74.5(21.19)	

Note: Enrollment status at end of academic year during which this study was conducted. GPA = grade point average (range 0-100%) at end of the semester during which support was sought. Course Grade = specific course grade (range 0-100%) for which support was sought. Retention = re-enrollment in following academic year.

Pearson correlations (see Table 6) were performed between learner affect (i.e., anxiety and confidence VAS scores at start and end of sessions) and academic performance (i.e., GPA and course grade). Higher GPAs were associated with lower anxiety and higher confidence at the end of the first session. While the same associations between specific course grade and affect existed, these were significant at the beginning and end of the last session.

Table 6

Correlations Between Learner Affect and Academic Performance

Affect	Session		GPA	Course Grade
Anxiety	First	Start	-.11	-.17
		End	**-.23***	-.18
	Last	Start	.09	**-.24***
		End	.10	**-.23***
Confidence	First	Start	.17	.06
		End	**.27***	.09
	Last	Start	.05	**.23***
		End	.03	**.25***

Note: GPA = grade point average. Course Grade = specific course grade for which support was sought. *p<0.05 for Pearson (r) correlations. First session N=107; Last Session N=76.

Factors Predicting Affect Prior to Seeking Academic Support

To investigate possible factors that influence a student's initial affective state, a stepwise regression analysis was performed to predict anxiety and confidence levels prior to any academic support (i.e., start of first session) from student characteristics (see Table 1), support type (i.e., SLC-M, SLC-W), and involvement with other student services (see Table 2). The best models (see Table 7) predicted 21% and 23% of the variance in initial anxiety and confidence levels, respectively. Both models included year of study, support type, and gender; with an additional factor in each model: anxiety included SCS [$F(4,102)=6.90$, $p<.001$] and confidence included program type [$F(4,102)=7.38$, $p<.001$]. In general, increased anxiety and decreased confidence could be predicted by females, in earlier years of study, seeking math support. Increased anxiety was also associated with students who had sought counseling support and decreased confidence was associated with students enrolled in an honors program (see Table 7).

Table 7

Factors Predicting an Academic Support-Seeker's Initial Affect

Outcome	Predictors (coding)	B	SE(B)	β	*p*
Anxiety	Year of study	-5.83	2.47	-.21	.020
	Support Type (SLC-W=0, SLC-M=1)	15.90	4.73	.30	.001
R^2=.21	Gender (0=males, 1=females)	14.79	2.62	.21	.020
	SCS (0=uninvolved, 1=involved)	12.82	5.07	.23	.013
Confidence	Year of study	5.91	1.95	.26	.003
	Support Type (SLC-W=0, SLC-M=1)	-10.40	3.69	-.25	.006
R^2=.23	Gender (0=males, 1=females)	-12.42	4.92	-.22	.013
	Program Type (0=general, 1=honors)	-8.41	3.68	-.20	.024

Note: Stepwise regression models for predicting student's anxiety and confidence levels prior to any academic support (i.e., start of first academic skill-development session) from student characteristics (Table 1) and utilization of student development services (Table 2). Student Learning Coordinators for Writing & Academic Skills (SLC-W) and/or Math & Science (SLC-M), SCS = Student Counseling Services.

Discussion

On the initial 1 hour academic skill development session, we showed that students perceived increased confidence and decreased anxiety levels by the end of the session. Students requesting multiple sessions had increased anxiety during the initial session compared to students that did not request additional support. Upon the last requested session, anxiety was reduced and confidence was increased compared to initial sessions suggesting that the affective gains could be carried over to subsequent sessions. Beneficial effects were associated with better academic outcomes. Finally, there were three common factors predicting the initial affect of the support seeker: year of study, type of support sought, and gender. Together, the results suggest that the academic-support environment had a robust, immediate, and long-lasting effect on learner affect by facilitating confidence and decreasing anxiety thereby producing positive academic outcomes.

Academic-Support Environment Influenced Learner Affect and Academic Outcomes

It is important to acknowledge that the student may be anxious, upset (Tennant, 1997), or in turmoil when seeking learning support, particularly on the initial visit. Almost all students (93%) perceived affective gains during their first 1 hour academic skill development session (see Table 4) indicating that the academic-support environment could facilitate learner affect immediately. This result most likely was achieved through providing reassurance about a student's learning capabilities, which alleviated negative emotions accumulated prior to seeking learning support.

The sustained impact on confidence and anxiety may reflect a dedication to providing a non-threatening learning environment. The SLCs of this study follow the Appreciative Advising Model (Bloom et al., 2008), which encourages the development of a natural rapport between the student and the professional. Accordingly, an academic skill development session began with developing a rapport with a first-time student and re-establishing an existing rapport with a recurring student. Beyond the first appointment, repeated sessions began with a few university-related questions like, "how has school been going for you since our last meeting?" or potentially more individualized questions that would acknowledge an existing rapport such as, "how did that presentation go?" These questions focused the student's attention and provided the SLCs a chance to notice pressing issues. During the session, humor, humility, and, when appropriate, self-deprecation is used to create a non-threatening environment during the enactive mastery of skills. The SLCs also use enthusiastic tones to provide a platform to alter physiological sensation by reattributing arousal into a positive emotion that can boost a student's confidence in their skills (Bandura, 1977).

While confidence is a measure of belief in one's own abilities, the interrelated construct of self-efficacy refers to a person's belief in one's capabilities to learn or perform specific tasks. Although confidence and self-efficacy are interrelated, a defining aspect of self-efficacy, which distinguishes it from the more general construct of confidence, is its domain-specific nature (see Shoemaker, 2010). In self-efficacy theory, confidence is not only having the capability to do something but in being prepared to do it as well. Self-efficacy theory (Bandura, 1997) argues that confidence about being able to perform a specific action comes from four sources: mastery experiences; altering physiological sensations; persuasive communication; and vicarious experiences. Academic support services are likely to be important sources of developing a student's self-efficacy by providing (1) opportunities to practice skills, (2) positive feedback on successful performance, and (3) environments to lower students' anxiety. These powerful sources combine to provide students authentic evidence that they can carry out tasks in the academic setting. The changes to confidence and anxiety within a specific domain (i.e., developing an academic skill related to a course) suggest a potential impact on self-efficacy.

Higher academic performance (i.e., course grade, GPA, retention) was associated with decreased anxiety and increased confidence only after students had received a single or multiple skill development session(s). There are functional relations between self-efficacy and academic performance among undergraduate students (Kostagiolas et al., 2019). Given that students who sought multiple appointments presented with increased levels of anxiety when compared with those who terminated after one session, it becomes clear that anxiety was a key factor for students who returned. In this context, it may be that anxiety is an adaptive response (see Morris, 2019) to the stressor of learning. During their session(s), students may perceive self-efficacy and true mastery of learning as possible in the learning environment where it had previously been seen as impossible. By completing tasks, the individual will reduce anxiety levels when performing a similar task in the future as they have been successful before.

In terms of retention, 98% of the academic support seeking students persisted into their next year of study. Almost 30 years ago, Tinto (1993) reported that attrition rates were approximately 25% in four-year colleges and universities. For the most recent Canadian cohorts the 6-year graduation rates from four-year undergraduate programs was 73% (Usher, 2021). Our

retention rate was considerably higher than general retention rates reported in literature. Furthermore, this study's host institution had an 88% retention rate the year this study was conducted.

Affect Prior to Seeking Academic Support

Affective experiences have been found to be important in understanding learners' help-seeking behavior. Most previous research in this area has focused on characterizing learners in primary schools. The present study extends the literature by providing insight into characteristics of academic support-seekers at the university level.

In this study, it was found that less experience in the university environment predicted increased anxiety and decreased confidence levels in the support-seeker. Previous research has shown that in the first year of university, students experience an emotional response to transition stemming from the need to adapt to new styles of teaching and learning in an unfamiliar environment, which can result in reduced confidence (Christie et al., 2008). Female support-seekers tended to have similar initial affect as new students. Gender differences are consistently found in the learning of a variety of skills (Atherton, 2015; Li & Kirkup, 2007). Finally, decreased confidence and increased anxiety were associated with students seeking math/science support. Math has been suggested to have a unique set of challenges related to increased anxiety and decreased confidence among learners when compared to learners of non-math based subjects (Erikson & Heit, 2015).

Limitations

During the 1 hour session, participants were able to see their initial response on the VAS tool, which may have biased their end-of-session measurement. This could, in part, explain the lack of variation in the change scores within a session in any of the analyses. Participants may have felt a sense of cognitive dissonance and as such wanted to rate the session as more successful than it truly was to reduce this dissonance and help them to feel as though the time and effort spent in the session was worthwhile. While we acknowledge this limitation, when combined with the procedural structure that did not allow for participants to see their past scores, our finding that the benefits of sessions do carry into subsequent sessions provides some balance to the potential biasing that may have occurred.

Conclusions

Academic support has become an important aspect of higher education, as student cohorts continue to diversify, and universities need to support student success and the institution's reputation. Often, the very learners who need help the most will seek it the least. Little is known about what influences students' decisions to seek academic support and what could be changed to make services more accessible and engaging. In a recent study (Bornschlegl & Caltabiano, 2022) found that the promotion of services needs to be improved and stigma about seeking academic support should be addressed. For example, to normalize accessing academic support, student success centers can be particularly effective when they are perceived as a service that everyone uses - not just those who are struggling academically. Providing the opportunity to participate in support in various ways (e.g., online, face-to-face, peer learning, individual learning) contribute to the overall positive perception of academic support services. Using proactive strategies (Varney, 2013) to promote academic support services to *at-risk* students may be an easy, cost-effective measure to increase student persistence, especially given that students have expectations that universities will provide services to help them succeed.

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