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Exploring Support Seeking Behaviours of First-Year Students to Predict Academic Performance

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Abstract

Academic performance during first year is critical in determining student retention rates, later undergraduate performance, and career related prospects. Previous literature has assessed importance of predictors individually. This study combined predictors to develop a model to predict academic performance of first-year students based on motivated learning strategies and on-campus resource use. An online survey was created to evaluate students' help-seeking (HS), peer learning (PL), self-efficacy (SE), perceived social support (PSS) and access to social support (SSA) and academic support (ASA) resources. Consistent with previous research, SE was the strongest predictor of academic performance. Additionally, HS, SE, ASA, and SSA combined contributed to a significant model accounting for 37% of variance in students' academic performance. The results observed low levels of resource access. These results contribute to the furthering of predictive modeling algorithms, improving access to resource use on-campus, and enhancing academic performance of first-year students during the adjustment to university life.

Keywords: Social support, academic support, self-efficacy, academic performance, peer learning, help-seeking, perceived social support.

Exploring Support Seeking Behaviours of First-Year Students to Predict Academic Performance

Today, higher education and academic performance are becoming essential to many individuals' life trajectories. However, many high school graduates entering university are not as prepared to weather the transition to their first year of undergraduate studies. A smooth university transition into first year is a factor that can impact students' academic performance (Parker et al., 2004). As adjustment related issues may impact level of performance, many supports and support seeking behaviours are important in guiding students' transition. Help-seeking, self-efficacy, peer learning are important motivated learning strategies that may be helpful in navigating this transition, therefore resulting in better academic performance.

It is important to understand the impacts of a smooth transition to university on academic performance. A successful university transition has been linked with better academic performance and higher graduation rates from university. For many students, however, this transition can be remarkably difficult. It was found in early research that grades achieved in the first semester of college or university was an important predictor of attrition rates (Pantages & Creedon, 1978; Summerskill, 1962 as cited in Pantages & Creedon, 1978). Pantages and Creedon theorized this finding to be due to Glasser's (1969) idea of failure identity which states that people develop a certain identity based on whether they are successful or unsuccessful in their early performance for a job (see Pantages & Creedon, 1978). The authors applied this concept of the failure identity to explain the importance of early academic performance of college students. If students perform poorly early on they may use this performance as an indicator of their future performance. On the contrary, if students are successful, they may use this early indication to be predictive of their future performance, and often work to meet and

exceed those expectations. Therefore, a successful beginning has established importance in predicting later academic performance.

Furthermore, students who do not easily adjust to the new living and learning styles may experience psychological distress and therefore have lowered academic performance. There are a few factors that may determine the experience of the transition. Firstly, it was suggested that the adjustment to a more independent living and learning style may impact academic performance if students are not equipped to cope properly (Thompson et al., 2021). Abrahams and colleagues (2016) found that the jump from a highly structured schooling experience of primary and secondary schools to highly independent learning was associated with poor adjustment of many students. Secondly this poor adjustment was found to lead to higher stress levels (Thompson et al., 2021) and higher anxiety (Cooke et al., 2007). Stress and anxiety levels have been found to be markedly higher in first year, especially during the first semester, possibly because this is the initial and hence most demanding part of the transition (Cooke et al., 2007). While moderate levels of anxiety have been found to be adaptive for academic performance (Al-Qaisy, 2011), students experiencing poor adjustment to the university environment may also experience impairing levels of stress and anxiety (Thompson et al., 2021). This may directly impact academic performance or sadly worse, lead to higher levels of depression and anxiety and in extreme cases even suicidality and self-harm (Kearns et al., 2015). Reduced self-esteem, minimised effort, and a lack of motivation for academic work are further effects of prolonged anxiety that students might feel, all of which can lead to lower academic performance in return (Huberty, 2008). Therefore, the experience of the transition can greatly impact students' academic performance.

Conversely, high self-esteem on the other hand can play a role in improving how this transition is weathered and its impact on students' academic performance, to predict better academic performance. Self-esteem, which is the general perception and affect (negative or positive) one feels regarding themself, was found to be positively linked to academic achievement, social functioning, and negatively linked with a wide range of psychopathology among adolescents, especially anxiety (Beck et al., 2001; Wong et al., 2012). For example, feeling positively about oneself may lead to a better adjustment to university, and therefore better academic performance. Whereas self-esteem relates to the overall feelings regarding one's self-image, self-efficacy (SE) is more relevant when it comes to academic performance as it is the task related appraisals of one's ability. Self-esteem in female undergraduate students was also found to be predicted by levels of academic SE (Joy et al., 2020).

SE, or the concept of how competent one feels in completing a task, was also positively linked with academic performance. This relationship may be due in part to the fact that it is negatively correlated with stress levels regarding tasks (Hackett et al., 1992; Zajacova et al., 2005; Dogan, 2017). Furthermore, Wong et al. (2012) found that low levels of SE in early childhood were found to predict low academic achievement. Although both high self-esteem and SE have been shown to be conducive to higher academic performance, Wong et al. (2012) also identified that they should be paired with a supportive learning environment, which may induce academic and social support resources, accommodation, and social support. Therefore, SE is an important attitude to consider as it is correlated positively with academic performance. Furthermore, since support resources and SE should be paired for best academic performance outcomes, support resources are important to investigate as well.

Universities recognize the stressors that the first-year transition brings, and therefore have an abundance of resources available, many specifically designed for first-year students (DeJonge et al., 2021). Resources such as academic advising, academic skill workshops and mental health resources are often available for students to access. Research has assessed the specific impacts of general resources such as academic advising, which has shown to be effective, yet varyingly, based on student and advisor personality traits (Young-Jones et al., 2013). The University of Toronto at Scarborough (UTSC; Toronto, Canada) implemented a writing and research workshop for incoming first-year students that was highly successful in improving student performance, received highly positive feedback from students who attended, and was also adapted by other Canadian universities to use (Guise et al., 2008). Harris and colleagues (2022) discussed that the Covid-19 pandemic along with all its challenges, also provided a spotlight to the improvement of efficacies of mental health resources and support on university campuses. Evidently, case research has shown the benefits and effectiveness of many on-campus resources in supporting students. Yet it remains unclear whether this impact is upon their academic performance or general wellbeing, and whether students are seeking out this help. There are also important factors to consider when trying to understand students' use of resources.

Researchers have identified help-seeking (HS) as a personality variable that impacts academic performance. HS is a term that is commonly used to describe the behaviour of actively seeking assistance from others (Rickwood et al., 2005). It is about interacting with other people to seek assistance in the form of comprehension, guidance, information, therapy, and general support in response to a problem or painful event. However, it was identified that there are differences in HS behaviours of students, a study by Day et al. (2013) highlighted that when students are particularly in a situation of distress, they are less likely to reach out or unable to

seek support. Evidently, HS is variable interpersonally, and within circumstances of the individual.

Students' differences in their HS behaviours and attitudes may impact resource and support retrieval and thus academic performance. A study by Stephens and colleagues (2014) evaluated an intervention specifically for first-generation incoming students. First-generation students are those whose parents did not complete at least four years at the university level. These students were shown to have significantly tougher transitions to post-secondary receiving lower grades, higher drop-out rates compared to those who had at least one parent with at least four years of university completed (continuing-generation students). The intervention assessed by Stephens and colleagues (2014) was aimed at bridging the gap between first generation and continuing-generation students. This was based on evidence that there are significant differences in backgrounds that provide continuing-generation students with higher SE and self-esteem that help them thrive. This intervention was based on research that suggested that inter-group dialogue between first-generation students that emphasized the importance of their unique backgrounds and perspectives was helpful in empowering first-generation students in the context of higher education. In increasing first-generation students' propensity to seek out college resources, this intervention was found by a randomized control trial to be effective in closing the achievement gap between the two groups of students, leading to higher grades and better academic performance. (Stephens et al., 2014). Programs like this exist at many universities, including Brescia University College (Brescia), that provide students a "bridging" experience by encouraging dialogue among incoming students, especially aimed at vulnerable student populations, such as incoming international students. This study evaluates the usage and impacts

of such programs, as a form of social support resources, along with other resources at Brescia and main campus Western on students' academic performance.

However, the life of university students does not simply revolve around academics as it is often filled with financial difficulties, other responsibilities, substance abuse and other adversities (Kearns et al., 2015). Literature has identified these factors as stigmatizing, and thus impacting students' help and support seeking behaviours. As discussed earlier, universities have many available options for effective support, yet they will have no effect if students are unaware or unwilling to access them. The life of university students is complex and adversity-prone. These experiences of hardship were also seen as risk factors for a poor adjustment to university, which again may lead to numerous psychological difficulties, disorders, and potential suicidality (Kearns et al., 2015). Yet students suffering from mental illnesses and suicidality were found to be less likely on average to seek support, as these factors carry more stigma. This results in impairment of students' academic performance and regular day-to-day functioning. It is clear that adversity, outside academics, is widespread in many students' university life and the stigmatization of this may become a barrier to HS behaviours. Although stigmatization as a barrier may be removed if students' perceptions are changed.

The perception students' hold about experiences of adversity may differentiate whether they reach out for support or not (Coppens et al., 2013). A study examining social stigmatization attitudes in European countries found an interesting difference between beliefs of mental illness and moderate help seeking behaviour. When people viewed mental illness as something dangerous and difficult to recover from and worthy of prevention, they were more likely to seek help than people who viewed it as unpredictable and blameworthy (Mojtabai, 2010). Insights into how and why stigma can impair support-seeking is especially important in helping to

improve campus resource use and promote positive support seeking behaviours in students ultimately improving their academic performance.

Aside from stigma and perceptions, HS behaviours are often experientially informed, meaning that past experiences with help-seeking might impact future HS behaviors (Kearns et al., 2015). This aspect of HS is important to keep in mind from a support provision aspect. Support resources can be hard to locate on campus or campus websites and may not be easily accessible. Students who have experienced the pains of waiting-lists for mental or physical health support may not be likely to return or feel that there is not proper provision of support that meets their needs. These experiences can negatively impact students' HS behaviours in the future, especially from professionals who may be harder to access, such as physicians, counsellors, and mental health professionals.

Therefore, many students may prefer to use resources that have other student volunteers as they may be easier to access or when the student does not require help of professional capacity. Research on help-seeking attitudes of students have placed an emphasis on peer-oriented learning and help (Laidlaw et al., 2016). Peer learning (PL) was shown to be an alternative strategy of implementing resources. People who usually did not want to seek help from professionals were more likely to access help or advice from trained peers. A peer model of support also exists at Brescia, along with many Canadian universities. While these formally structured supports are essential within an academic environment, many informal supports also play a role in impacting students' academic performance.

Aside from formal supports, such as therapy provided by a trained professional, or writing center aid from a peer mentor, the impact of informal HS is also important to consider in understanding academic performance of students' (Rickwood et al., 2015). Within this study,

informal HS refers to reaching out to family and friends regarding advice, validation, or emotional support. Informal HS will be measured as social support.

Social support is a multi-faceted concept consisting of three dimensions. Social embeddedness, supportive transactions, and subjective appraisal, or perceptions, of support together make up the broader concept of social support (Procidano, 1992). Procidano explained that social embeddedness refers to how well a person is involved and adjusted within their social network. Supportive transactions referred to how those networks and connections were used in supportive capacities, such as direct support and feedback provision. Subjective appraisal, or perceived social support (PSS), refers to perceptions of one's level of social support and network. It has been suggested that higher levels of subjective appraisal was most likely to predict buffering of stress and reducing overall stress reactivity (Cohen & Wills, 1985; Procidano, 1992; Ditzen & Heinrichs 2014).

Not only is social support a well-known buffer protecting from effects of maladaptive stress and negative affect that students deal with during their university career, but it has also been seen to enhance academic performance (Cohen et al., 1986). In the context of university, higher levels of social support were associated with better academic performance. Social skills were found to be important in maintaining and gaining social support (Kiema-Junes et al., 2020). It is evident that social interactions and interpersonal skills are functional for the purposes of Hs, potentially leading to improved performance (Rickwood et al., 2015). However, social support research indicates that simply by learning social skills (Cohen et al., 1986) and having enhanced PSS (Zimet et al., 1998) directly results in improved academic performance (Kiema-Junes et al., 2020). Furthermore, a study examining social support as a predictor of math achievement, showed that perceived teacher support was positively predictive of academic success (Wong et

al., 2018). Therefore, as higher PSS levels are evidently associated with increased academic performance of students, it is an important measure to include in a behavioural model predicting academic performance.

Many models of predicting academic performance exist, yet they are often narrowly focussed on objective measures such as grades and academic ability and fail to simultaneously include attitude and behaviours of students. Many of the earlier models in literature have focused on past grades, performances measured by standardized testing, or cognitive ability. More recent literature has examined the impacts of social support, SE, and HS individually as well. A fair amount of research has also been conducted on Pintrich and colleagues' (1991, 1994) Motivated Strategies Learning Questionnaire (MSLQ) which was designed as a measure to compare learning strategies and motivations to predict academic performance. However, it only assessed the concepts of help-seeking, peer learning and self-efficacy with validity, and did not include measures of perceived social support, or take into account students' actual support seeking behaviours such as access of academic and social support resources.

As described above, there has been a wide range of research on predictors of academic performance as it has increasingly become important to students' adjustment to and beyond university life. Yet, no model so far has combined the impacts of MSLQ attitudes and behaviours, PSS levels, and awareness and use of academic and social support resources within a single model to predict academic achievement. This study will also fill the gap in literature by exploring the impact of awareness that students have of support resources available to them regardless of use. It will also examine how certain combinations of support may potentially differ in predicting academic performance. Based on past evidence, we hypothesize that students' attitudes of help-seeking (HS) and peer learning (PL), self-efficacy (SE) levels,

perceived social support (PSS), accessing of academic support access (ASA) and social support access (SSA) will predict their academic performance. PSS, SE, and HS will have the highest impact on academic performance levels. A regression model combining all predictors will predict academic performance best compared to a model using less or selective predictors, meaning students who score highly on all predictors will have better academic performance compared to students with lower scores on all predictors.

Methods

Participants

The study consisted of 90 female identifying undergraduate students enrolled in a first-year introduction to psychology course, 1015B, at Brescia University College an affiliate of Western University in London, Ontario. The average age of participants was 19.1 (*SD* = 1.95). In total, the participants ranged from ages 17-28 years old. Although only students enrolled in the psychology course were given the opportunity to sign up, the students represented a wide range of departments on campus. Students were recruited online through Brescia's Sona Research System where they were able to indicate voluntary consent and complete the Qualtrics survey. Students earned one credit for their course upon completion of the study.

Materials

The SE, HS, and PL subscales of the MSLQ (Pintrich et al., 1991, 1994) were used. All three subsections were scored on a seven-point Likert scale ranging from 1 = not at all like me to 7 = very true of me, for a total of 15 questions, (view Appendix A). Students scored themselves on the Likert scale to best match their attitudes on each subscale.

To measure social support, Zimet et al.'s (1998) the PSS standardized questionnaire was used. This questionnaire consisted of 12 questions that were all used in the study. Similar to the

MSLQ, the PSS was also scored on a seven-point Likert scale to assess perceived social support. Students rated their feelings of social support from 1 = strongly disagree to 7 = strongly agree, (view Appendix B).

Academic performance was operationalized through the Academic Performance Scale by Togari et al. (2008) which asked about overall self-rated and subjective performance of students (Appendix C). Students rated their academic performance on a seven-point Likert scale, where 1 = strongly disagree to 7 = strongly agree.

Students' support resources available on campus were compiled and divided into social and academic supports (view Appendix D).

Procedure

A Qualtrics questionnaire was composed with the scales mentioned above. The questionnaire began with the letter of information at the beginning, at the end of which students indicated consent by progressing into the study as stated. Demographics such as year and program of study along with age were obtained. With relevant examples of supports given, participants indicated whether they: had not been aware and had not ever accessed the resource (scored as 0), were aware of the specific resource but had not accessed (scored as 1) or had accessed the resource previously (scored as 2). Students were also asked to report grades received in the psychology 1010A course at Brescia and their expected grade in psychology 1015B, along with a cumulative average from the last semester (view Appendix E). Finally, the questionnaire was concluded with a debriefing letter (view Appendix F for full Qualtrics questionnaire).

Results

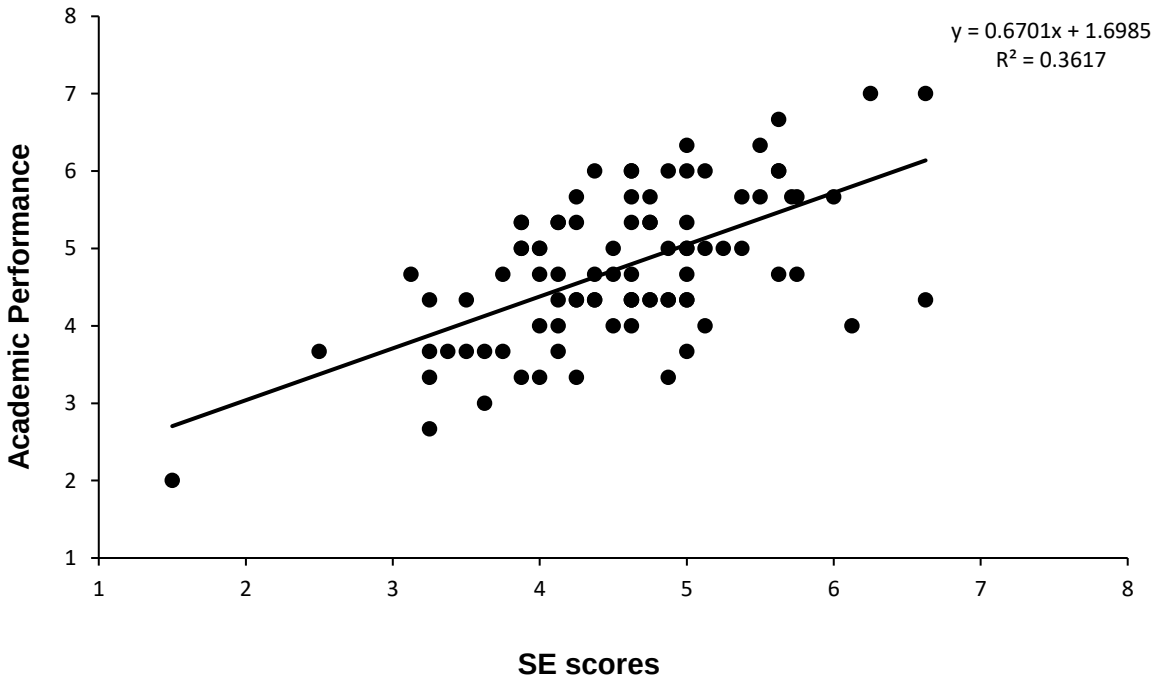
The data was scored by scales and subscales to compute an average score per participant. Averages of subscales were then used for the analyses and figures. No participant responses were excluded. A total sample size of $N = 90$, was used to conduct a correlation and multiple regression analysis.

A correlation matrix using a one-tailed test was used to identify significant correlations between the predictors. Academic performance of students was most strongly correlated with SE scores (SE) as expected, with a moderate, positive, and significant correlation, $r(90) = .60$, $p < .001$. As students' level of SE increased academic performance increased as well (view Figure 1). In support of the hypothesis involving HS in relation to academic performance, it was observed that help-seeking was also a significant, weak positive correlate of academic performance, $r(90) = .30$, $p = .002$. Therefore, it was found that as students' HS levels increased, academic performance was seen to increase (view Figure 2). There was also a positive significant but weak correlation between help-seeking and SE scores of students, $r(90) = .24$, $p = .012$. This indicated that as students' SE levels increased, their HS attitudes and behaviours also increased (view Figure 3). Contrary to the hypothesis regarding PSS, academic performance was not found to be correlated with PSS.

Interestingly, PL was observed to be correlated to many variables. It was found that students' levels of PL and HS were positively correlated with a weak, yet significant correlation, $r(90) = .26$, $p = .006$. This demonstrated that as HS levels and attitudes increased for students, PL levels increased as well (view Figure 4). PL was also positively correlated with SSA, with a weak but significant association, $r(90) = .20$, $p = .027$. As students' access of social support resources increased, learning strategies involving peers also increased (view Figure 5).

Figure 1

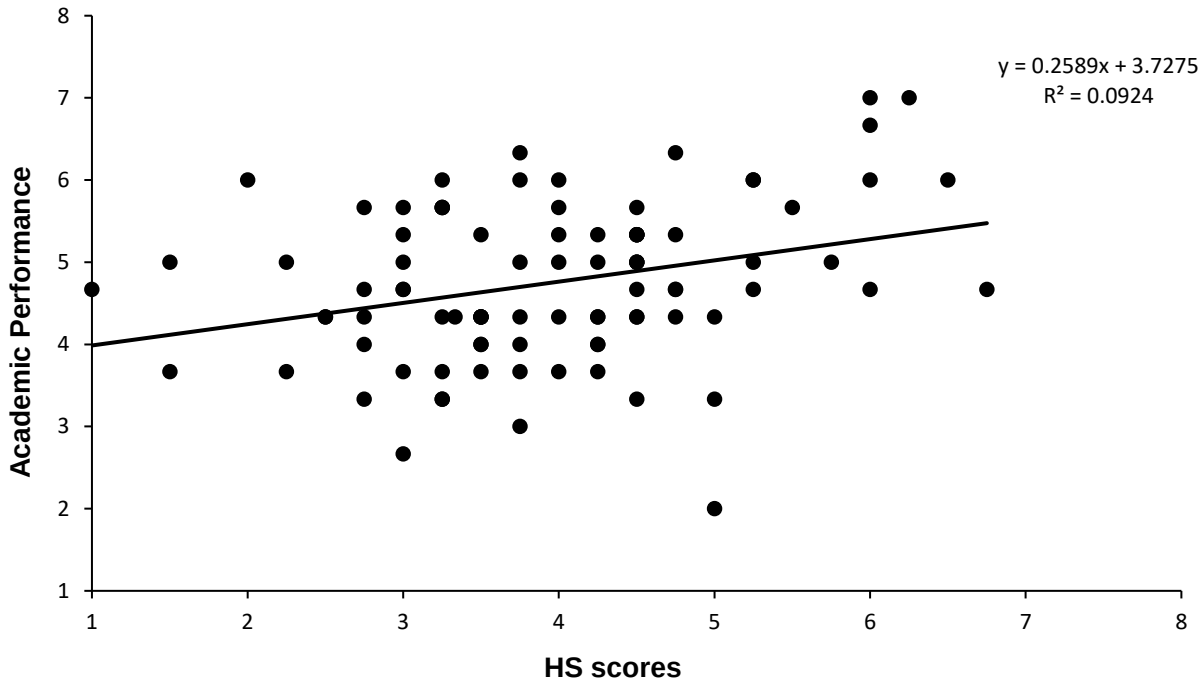
Correlation Between Academic Performance and Self-Efficacy (SE) Mean Scores



Note. This figure demonstrates the relationship of academic performance and SE scores that participants reported. Each marker represents one participant's scores for both variables. Both SE and academic performance were scored on a seven-point Likert scale and the association is shown in the above figure.

Figure 2

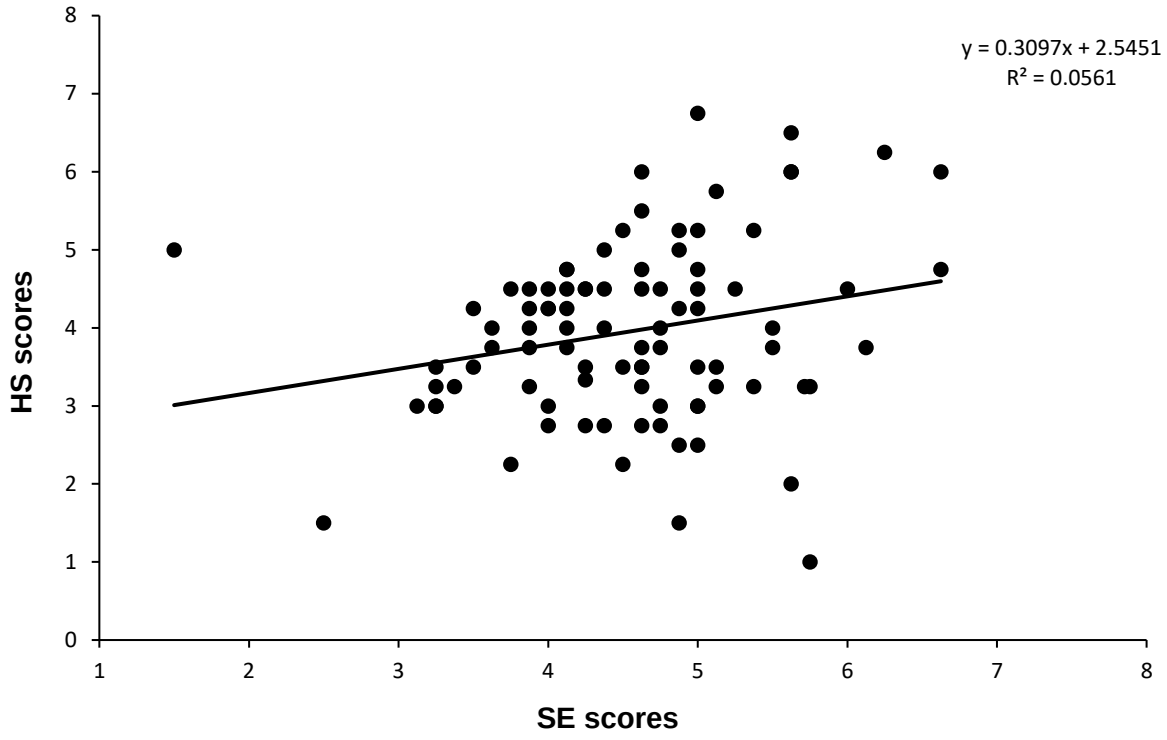
Correlation between Mean Scores of Help-Seeking (HS) and Academic Performance



Note. This figure displays the relationship between academic performance and help-seeking mean scores as reported. Each marker represents one student's average scores for both help-seeking and academic performance.

Figure 3

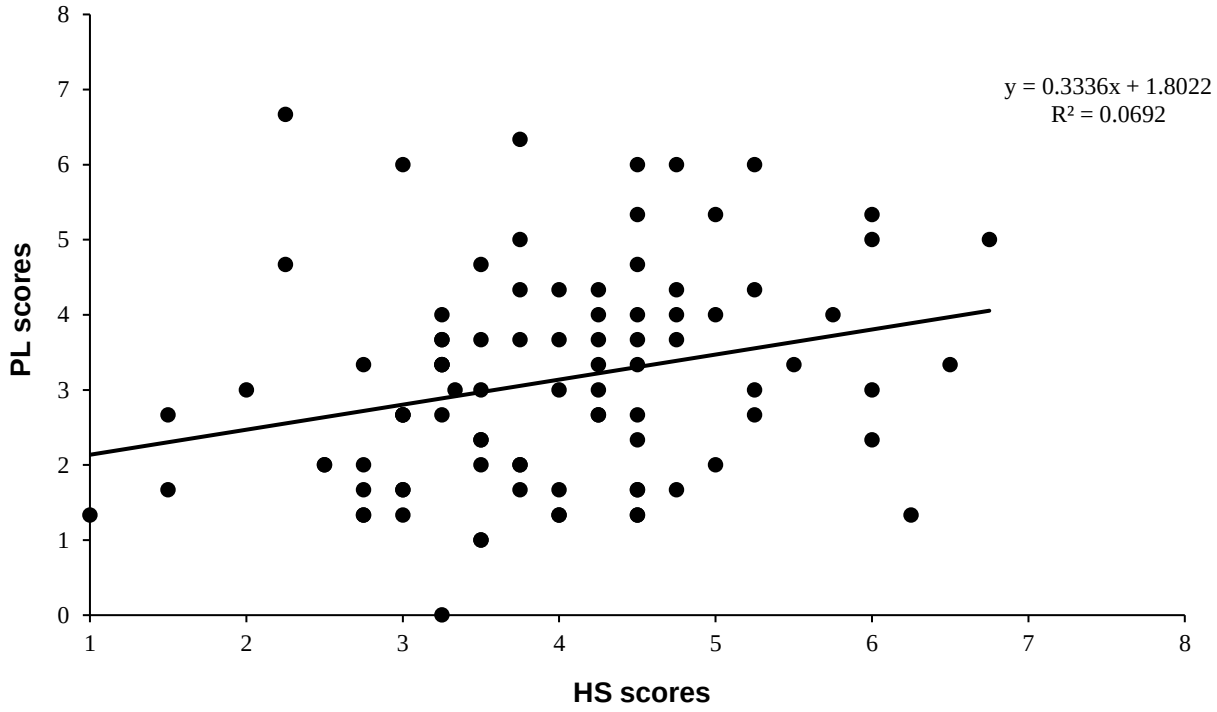
Correlation Between Help-Seeking (HS) and Self-Efficacy (SE) Mean Scores



Note. This figure displays the relationship between SE and help-seeking scores as self-reported by participants on a seven-point Likert scale from the MSLQ subsections.

Figure 4

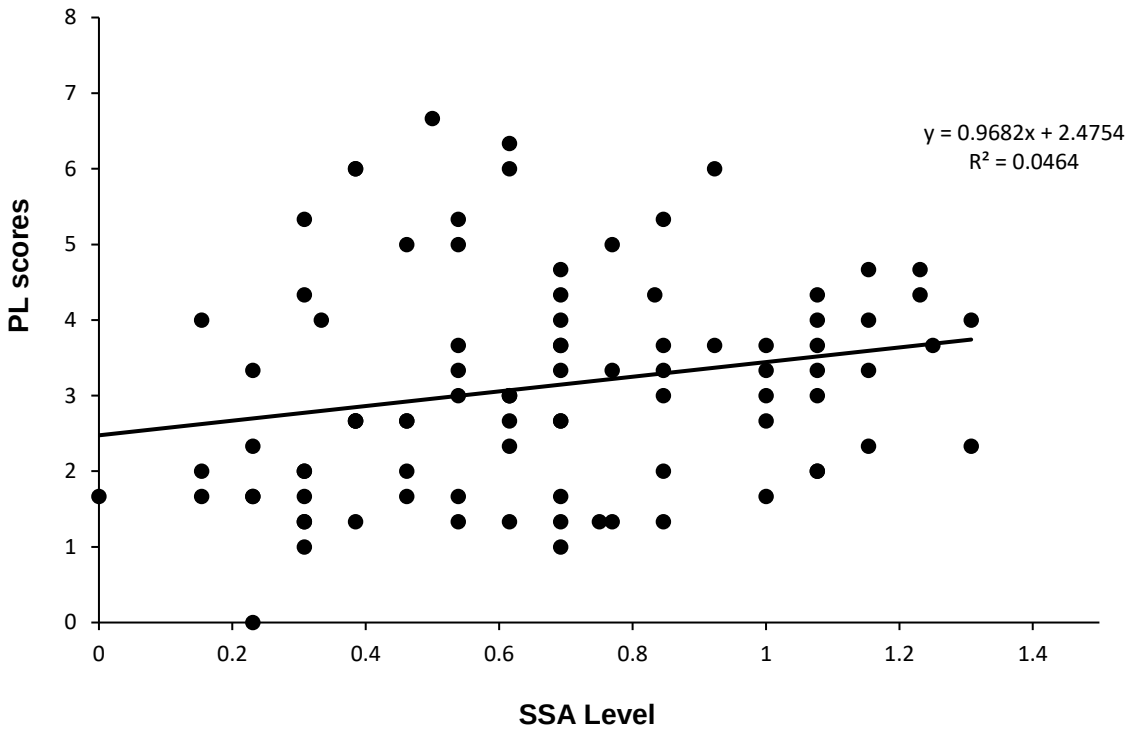
Correlation Between Help-Seeking (HS) and Peer learning (PL) Mean Scores



Note. This figure displays the relationship between help seeking (HS) and peer learning (PL) scores that were reported on a seven-point Likert Scale from the MSLQ subsections.

Figure 5

Correlation Between Social Support Access (SSA) and Peer learning (PL) Mean Scores



Note. This figure demonstrates the relationship between Social Support Access (SSA) levels and reported peer learning (PL) scores. SSA was coded from the awareness levels of resources, 0 = unaware and have not accessed, 1 = aware but have not accessed, and 2 = aware and accessed. These scores were collected for each resource per participant and then averaged to compute a single average for SSA.

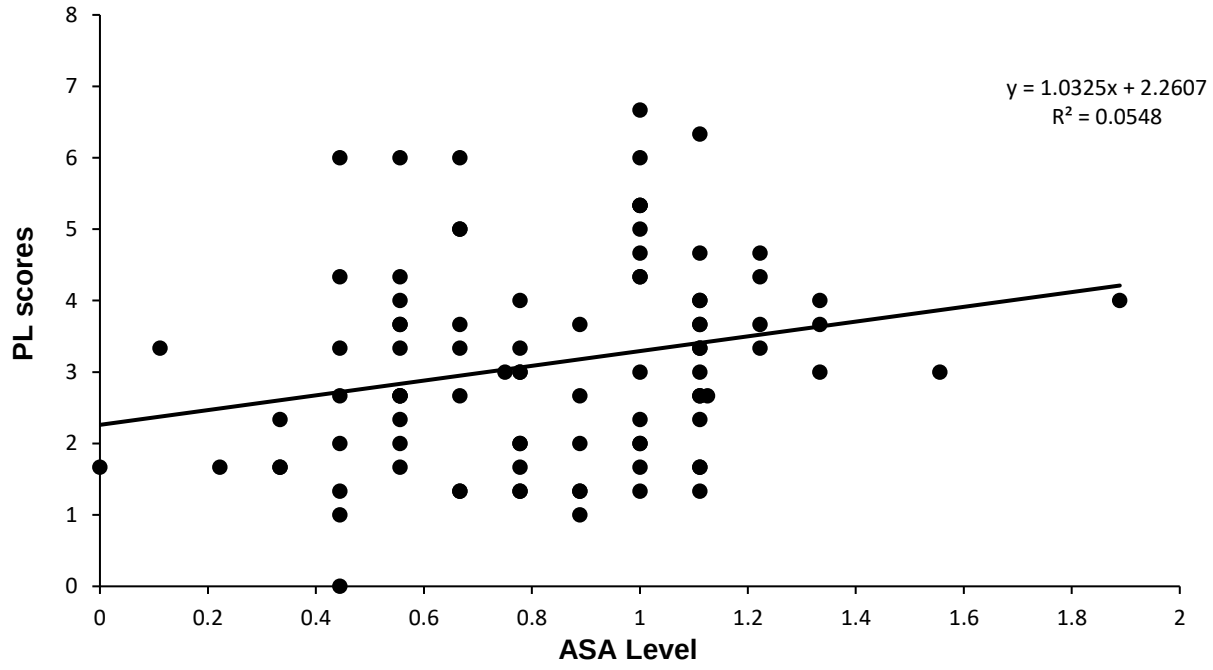
Likewise, PL and ASA were also weakly correlated with a significant positive relationship, r(90) = .22, p = .017. Therefore, students with higher ASA were also seen to have higher PL scores (view Figure 6).

Furthermore, aside from academic performance, HS correlated with students' level of PSS. Students' HS and PSS levels were correlated with a weak positive, yet significant correlation, $r(89) = .31$, $p = .002$ (view Figure 7). These results observe that PSS scores of students are associated with their HS attitudes and behaviours.

Whereas HS and students' SSA did not have a significant correlation, it is important to note that the p-value approached significance, $r(90) = .17$, $p = .052$. Interestingly, HS scores did not impact levels of SSA at a statistically significant level. In general, SSA levels were low and only at the awareness level ($M = 1$, $SD = 0.39$). Similarly, HS and ASA scores did not hold a significant correlation either, meaning that attitudes and behaviours regarding HS did not significantly impact levels of ASA. On average, first year students' ASA levels were low as well, not reaching beyond the awareness level ($M = 1$, $SD = 0.36$). However, it was noteworthy that both SSA and ASA are moderate positive and significant correlates to each other, $r(90) = .57$, $p < .001$. As students' levels of SSA increased, ASA levels were also seen to increase within the sample (view Figure 8). Therefore, a multiple regression model was created using these correlates as predictors.

Figure 6

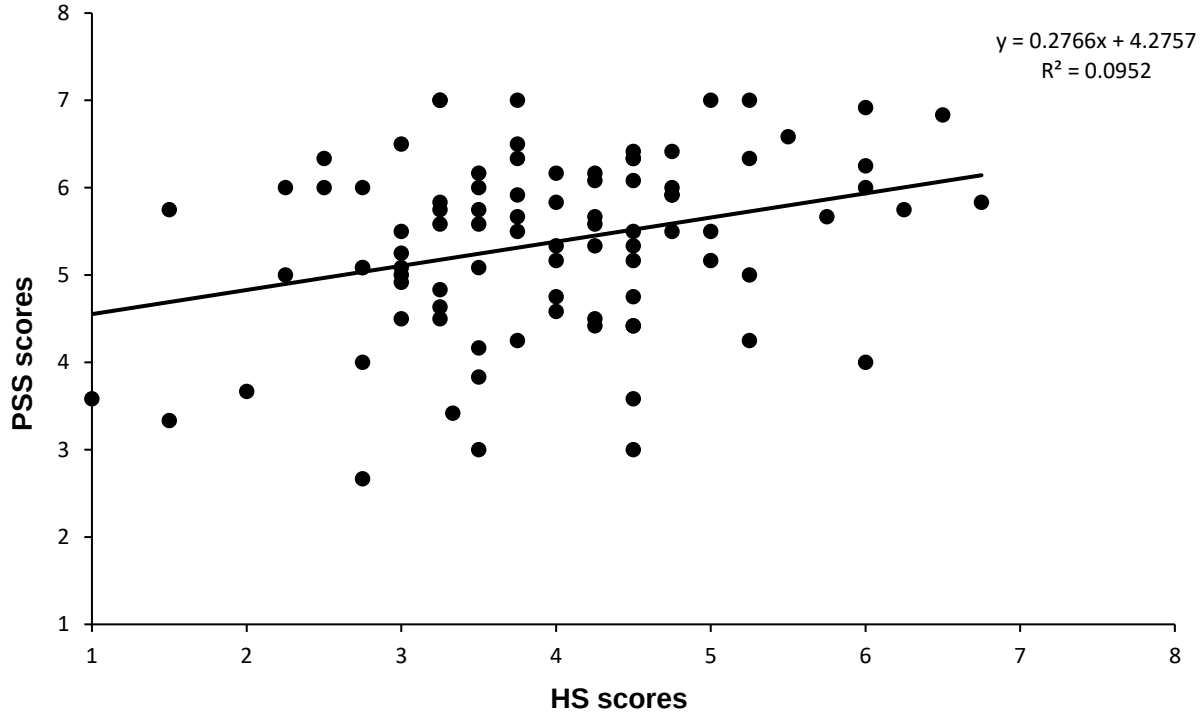
Correlation between Mean Scores of Peer Learning (PL) and Academic Support Access (ASA) Levels



Note. This figure displays the relationship between PL and ASA levels. ASA levels were coded similarly to SSA levels (view note for Figure 4).

Figure 7

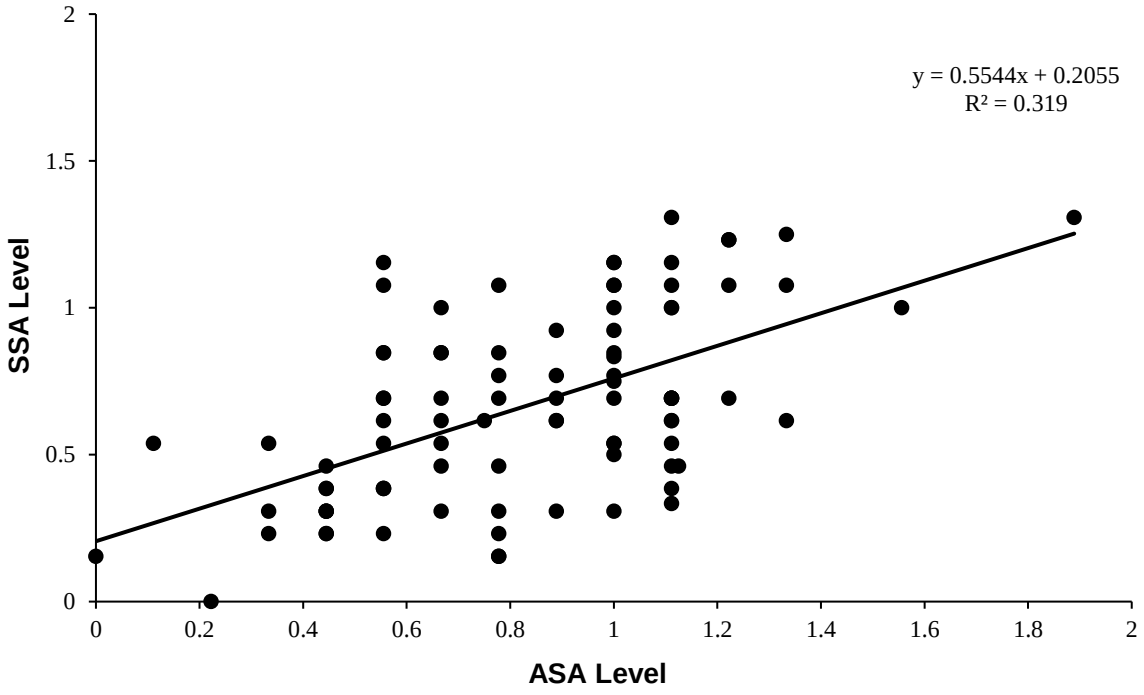
Correlation between Mean Scores of Help-seeking (HS) and Perceived Social Support (PSS) Scores



Note. Each marker represents the scores for mean HS and mean PSS score for each student.

Figure 8

Correlation between Mean Scores of Social Support Access (SSA) levels and Academic Support Access (ASA) Levels



Note. Each marker represents one participant's score for both SSA and ASA levels. View note for Figure 4 to see how SSA and ASA are coded.

Multiple regression analyses were then conducted testing the predictors to create the best model of academic performance with the least noise. In relation to the hypothesis, all predictors combined did not result in the best model. However, a model combining scores for SE, HS, SSA and ASA to predict academic performance was found to be significant, and accounted for 37% of variance, $R^2 = .37$, $F(4, 85) = 13.92$, $p < .001$ (view Table 1).

Although SE was the only significant predictor individually, all other predictors were important to achieve the best model for predicting academic performance of students (View Table 2). Therefore, approximately 37% of academic performance of students can be predicted with this equation: Academic Performance' = 0.65 (SE) + 0.14 (HS) + 0.28 (SSA) - 0.26 (ASA) + 1.29.

According to the regression analysis results, the most important factors predicting academic performance of first year students were SE scores, level of social supports being accessed, level of academic support being accessed, and finally, HS attitudes and levels, respectively. Similar to the correlation results, SE was also the best predictor of academic performance in the regression model, $\beta = .58$, $p < .001$.

Table 1

Model Fit Measures

				Overall Model Test			
Model	**R**	**Adjusted R^2**	**AIC**	**F**	**df1**	**df2**	**p**
1	0.629	0.367	214	13.992	4	85	<.001

Note. After examining the impact of all the predictors on academic performance, it was found that SE, HS, SSA, ASA were found to create the strongest model as shown above with the lowest AIC and highest Adjusted R^2 values.

Table 2

Regression Model Coefficients to Predict Academic Performance

Predictor	Model 1				
	B *(unstandardized)*	*β* *(standardized)*	*SE*	*t*	*p*
Intercept	1.288		0.502	2.568	.012
Self-Efficacy (SE)	0.647	.581	0.100	6.499	<.001
Help-seeking (HS)	0.137	.161	0.075	1.819	.072
Social Support Access (SSA)	0.275	.091	0.318	0.867	.388
Academic Support Access (ASA)	-0.255	-.086	0.311	-0.819	.415

Note. The order of the predictors (top down) reflects the weight of predictors from strongest predictor to least strong within the model, based on standardized *β*.

Discussion

The objective of this study was to develop an empirically based model to predict students' academic performance, using predictors of motivated learning attitudes, perceived social support, and resource use on campus. In relation to the hypothesis, students' HS and SE levels were positively associated with academic performance, whereas PL, PSS, ASA, and SSA did not directly correlate to academic performance of students. In relation to the second hypothesis, SE and HS were able to predict academic performance but not PSS. In relation to the third hypothesis, although all predictors combined for a student was not the best model to predict academic performance, an overall model, including SE, ASA, SSA and HS was found to predict around 37% of variance in students' academic performance. Therefore, a large percentage of students' academic performance was accounted for by their levels of SE, ASA, SSA, HS. These results are important as they provide non-ability-based predictors of academic performance that are controllable by students. This study also found that the average level of access for first year students is at the awareness level, most students are aware of general support resources, but they are not accessing them.

HS was observed to be an important correlate to academic performance, social support, and resource use. This study also observed that students with higher HS also had higher scores of PSS as well. Because this relationship was correlational, no directional or causal connections can be drawn, however we speculate that the results may mean that students with higher levels of PSS might be more comfortable to reach out for help more than students with lower levels of PSS. This can also mean that students who have higher levels of HS may experience higher PSS as a result of reaching out. This is important as HS was also a significant positive correlate to students' academic performance. Students who have higher levels of HS had better academic

performance than students with lower levels of HS. Therefore, this study found students' levels of HS to be important to take into consideration when understanding the impacts on their academic performance. These findings add to the research on HS and academic performance of first year university students.

Whereas HS did not significantly impact students' levels of ASA or SSA, ASA and SSA were both predictors within the model of academic performance. Yet it was noteworthy that HS and SSA had a p-value approaching significance. This could potentially mean that there was a correlation that may need to be further tested. If HS is found to have a significant correlation with SSA, it is important as it might mean that HS levels of students can be targeted to increase supportive resource access and ultimately reach students who benefit from HS in increasing their academic performance.

Consistent with previous research, academic performance was most strongly correlated with SE, compared to all other covariates used in this study (Hackett et al., 1992; Zajacova et al., 2005; Dogan, 2017; Wong et al., 2012). A surprising correlation was the relationship of SE and HS. SE increased as HS scores increased for students. This was interesting as previous literature has found that SE and HS can have an inverse relationship (Williams & Takaku, 2011). However previous research has also found that not all HS is equal. SE and HS had a positive correlation, when HS was adaptive in nature (Ng, 2014). Therefore, this could mean that students who are higher in SE are likelier to be higher in adaptive HS as well, which is an important distinction from non-adaptive HS. That is, students' levels of SE may encourage them to seek out supports because they believe resource access to be important in achieving a high level of academic performance. On the other hand, it is possible that resource access may have an impact on increasing levels of SE. Either way, this correlation needs to be further studied to understand the

directionality of the correlation. Understanding the directionality will help to target the important factors that may increase SE, as it is the strongest predictor of first year students' academic performance. Although this study measured academic SE of students, future studies can assess SE in different domains to investigate what best helps students. SE regarding students' adjustment to university and developing connection of belonging and increased PSS can be compared with academic SE.

Additionally, an important correlation between PL and students' levels of HS, SSA, and ASA was observed. PL included behaviours such as explaining course materials to friends for revision purposes, working, and having discussions with other students. As these behaviours increased, HS, and overall support access increased. This is interesting as it may potentially differentiate between students who access social and academic resources. Students who prefer to learn by discussing and working with other students are likelier and had higher levels of access to resources and HS. These results can be taken into consideration by educators and the helping systems at universities to create and advertise resources as peer-based teaching and learning and create more options for this aspect of learning.

When students' reported grades were used as an outcome measure for the model of academic performance, the model produced very noisy data which created difficulties in generating an accurate regression model. In contrast, when academic performance was measured using Togari et al.'s (2008) Academic Performance Scale, a more accurate description of students' general levels of performance was shown and was correlated with many predictors in the model. Grades, on the other hand, were not correlated with any other measure. This could have been due to inaccurate reporting by students. For example, due to demand characteristics students could have reported higher grades than achieved. Yet, grades and academic performance

were also not correlated. This may reflect that grades alone may be a poor indicator of academic performance. Thus, other measures such as asking if students understand the material, or whether they feel that they can learn material and properly prepare for tests may be a more sensitive and accurate measure. The methods of assessing, such as written exams compared to application assignments may also differ in grading and therefore may not reflect true academic performance of students. As there are many more factors that may influence learning and performance, a simple grade may not be fair to judge students' full academic potential. Many researchers support this idea and argue that grades may even reduce quality and interest of learning (Kohn, 2011). Schwab et al. (2018) argue that less focus should be on provision of grades and more on providing students with actionable feedback that encourages students to become self-propelled in achieving their academic potentials. This has many implications, and therefore more research is needed to determine whether numerical grades really are necessary in the assessment of students' academic performance. As many professors may have different methods of grading students, perhaps other methods can be researched and incorporated into first-year programs. Overall, students' grades were not correlated to any other measure, yet their reported academic performance was and that is a noteworthy distinction.

Overall, majority of resources were rarely accessed by first year students. Out of all listed social supports, orientation-week attendance was on average the most accessed social support resource. This is an event held at Brescia and Western University, hosted in the first week welcoming students to university (a common resource in many universities). Students are appointed upper-year peer mentors to help guide and navigate the processes of adjusting to university. This event had a strong attendance and is often marketed as a main steppingstone to beginning one's post-secondary experience. The timing of the event is optimal as it occurs before

students begin to seriously delve into their rigorous academic responsibilities starting their first year. The marketing and timing of the event likely impacted the level of student access. This is important to understand as this can potentially inform universities to generate higher levels of access for other resources. The same patterns followed for the most accessed academic resource.

Academic advising was the most accessed resource within the academic support resources. Academic advising, as discussed in previous research, was shown to have an impact on academic performance (Young-Jones et al., 2013). As academic advising is very entrenched within the student experience and often necessary when making important decisions, it is understandable that it was the most accessed academic resource. Academic advising provides help to logistical questions, often regarding students' course selections and program requirements. These characteristics, we speculate, may also increase likelihood of students accessing this resource compared to other academic supports. Understanding that academic advising is almost at a primary care level for student academic performance, academic advisors should also encourage and connect students to other resources that may benefit students beyond the advising appointments.

The high access of orientation-week and academic supports also create a pattern in students resource accessibility. Students were more willing to access resources at a time that had reduced academic responsibilities, were more general in nature, and provided students with logistical help. This is important to understand in promoting other helpful support resources that may potentially benefit students' academic performance. However, more research is needed to fully understand the barriers to access for first year students. More understanding can be gained through implementing a first-year student wide survey, promoting both groups of support

resources and asking students about potential barriers to access and how to remove or create more equitable access of resources.

There are many implications of this study. Understanding student resource accessing behaviours on campus can allow for proper methods of investing in student wellbeing. This can be done by increasing and creating more equitable access to support resources as a key factor in improving both the academic experience and performance of students. This study adds to the understanding of behavioural predictors of academic performance that are not rooted in skill or mental ability. It promotes the idea that academic performance is controllable by students' behaviours and cognitions, such as HS attitudes and behaviours and levels of SE. Furthermore, understanding the role of HS and SE can help to remove barriers and improve the overall academic experience of first-generation students or other vulnerable populations of students as well. Additionally, this study provided data that can be used to strengthen predictive modeling algorithms that have been shown to need more data to provide better results. A study by Aman et al. (2019) successfully created a predictive model algorithm, predicting students grades through machine learning to 83% accuracy using only academic, socio-economic, and demographic features. The results of our study can be directly implemented into research such as this one, which can benefit from including behavioural features to increase accuracy of the predictive model.

There were some limitations to the current study that should be noted as well. Students resource use only gauged levels of on-campus resource use that many first-year students might not be familiar with accessing. Even though the data was collected a month into the second semester, allowing students the fall term to understand and familiarize themselves with resources, it may be helpful to repeat this study with upper year students who have more

experience with on-campus learning. Students may also be accessing resources off campus and that may have impacts on their academic performance that we were not able to assess. Moreover, although we used awareness and access of resources to measure levels of resource use, we were unable to evaluate the differences between access and awareness on academic performance due to very low access to resources as most reported to be unaware of campus resources. Another limitation is that, while this study focussed on understanding motivated learning strategies, attitudes, and resource use, it did not determine underlying barriers to access.

This study paves the way for many future research questions to be explored. Future studies should aim to further understand barriers that students are facing in accessing resources. Another concept that needs to be further studied is whether grades are a good method of assessing students' academic performance. Furthermore, studying the relationship between HS and SE is also advised to better understand how to improve students' levels of SE, as it was the strongest predictor of academic performance. Future research should also assess this relationship in co-ed learning settings, as this study only assessed it within a female identifying student sample. Lastly, another future direction is evaluating impacts of student cognitions regarding support resources. For instance, do positive student evaluations of resource use impact students' academic performance differently compared to students having negative evaluations of on-campus resources and resource use.

Where previous literature has found many benefits of PSS, HS, SE, PL, and resource use individually in supporting students' academic performance, this study confirms and adds to the literature that combining learning attitudes and support seeking behaviour greatly impacts first year students' academic performance who are especially at risk of adversity, due to adjustment difficulties, higher stress and anxiety levels, and lower overall wellbeing. These predictors also

show that non-ability based behavioural strategies are important to consider in predicting academic performance of students and finding ways to improve it. This study has many implications that may result in a better understanding of students' attitudes and behaviours when it comes to understanding contributors to their academic performance.

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Appendix D

Campus Support Resources

Breakdown of resources included in the questionnaire:

	Brescia	**Western**

Academic	• The Writing Centre
	• Beryl Ivey Library Resources
	  ○ Beryl Ivey Library Ask Chat
	  ○ Book a Librarian
	• Academic Advising
	• Clever Researcher Blog
		• Western Learning Development and Success
		• Western Accessible Education and Support
		• Peer Assisted Learning (PAL) Centre - Western University
		• Math help center (in-person and virtual)

Social	• Baines Peer Support Spaces • Career Peers • Devant Career Education • Togetherall • Counseling and/or Case management • Thriving at Brescia • O-week participation • Office of the Ombudsperson • Professional Mentors • Student Life Centre Resource Toolbox • Sophia Women • Spirituali-tea • Student Connector Program • Wellness Peers	• Any club involvement at Brescia/Western

Level of resource use is scored as:
0 = unaware of resource & not accessed before
1 = aware of resource & not accessed before
2 = aware or resource & have accessed before

Appendix E

Grades

Instructions: Please give a percentage for the following questions. Read the questions carefully as some are asking for an expected average, and some are actual grades. Answer as honestly and realistically as you can. All answers (like the rest of the questionnaire) remain anonymous.

Q33. What was your final grade in psychology 1010A, in percentage? (Leave blank if you have not completed this course)

Q34. What is your *expected* final grade in psychology 1015A? (Please give a percentage)

Q35. What was your *actual* cumulative average for the fall semester?

Q36. Based on your current academic performance, what is your overall *expected* average for this year?