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An Online Goal-setting Program to Improve the Success of College Students

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Executive Summary

This report represents the conclusion of Phase II of a HEQCO-funded research project. This student success intervention was previously found to improve academic outcomes in a university environment, and this multiphase project serves as the first implementation in a new setting — a Canadian community college.

In Phase I, we developed and refined the relevant content, delivery platform, operational model and institutional supports necessary to execute this project at Mohawk College. The value of the year of planning and design cannot to be understated for other institutions hoping to succeed in implementing similar interventions.

This report begins by providing an overview of the current project, including background, guiding research questions and the scope of the project. It then details the two key components for Phase II of our study, including our randomized control trial and analysis of administrative data. The final two sections of this report offer distilled conversation of the discussion of our findings, implications for institutional policy and practice, as well as directions for future research.

Over 1000 students participated in this project during the summer of 2018 when they arrived at Mohawk College to complete their placement tests. Half of the students were randomized into the control condition, while the other half completed the revised PASS Program. What we uncovered is that the revised PASS Program, as operationalized, does not serve to support student academic success; however, the data does point to when, how and for whom, this intervention may prove beneficial. We offer a discussion around implementation decisions that may impact the effectiveness of a goal-setting program, discuss similar interventions that have been successful at similar points in the student life cycle, and highlight directions for future research in this area. We plan to continue to explore the wealth of data our year of implementation garnered in order to understand what psychoeducational impacts the revised PASS Program had on Mohawk College students and begin to understand how this goal-setting program may be further refined to better support college students' academic needs.

Introduction

Research shows that first-year students, especially those who are typically at risk, can benefit greatly from wise social psychology interventions, such as learning and implementing goal-setting strategies (Walton & Wilson, 2018). Patrick Gaudreau, a co-lead on this project, created an online goal-setting (OGS), planning and coping program, the PASS Program, which promotes the academic success of students. What makes this OGS program unique is both its contents and its structure. The PASS Program is grounded in research on goal setting and centres on three evidence-based principles drawn from motivation sciences: goal setting improves academic performance; implementation of planning improves academic performance; coping with

stress improves academic performance.[1] The three modules in the PASS Program include instructional videos and reflective exercises designed to increase retention rates by engaging students in goal-setting, planning and coping strategies that have been shown to decrease the common decline in grades experienced by students transitioning to postsecondary education.

The PASS Program was designed for university students; consequently, the material needed to be customized for a college population. Customization of the PASS Program focused on making the program relevant to the college student demographic (e.g., using less complex language, using terminology relevant to Mohawk College, making the purpose of the PASS Program explicit) and controlling goal complexity (e.g., supporting students in setting realistically challenging goals by embedding reflective prompts, normalizing academic performance changes that may occur in the transition to postsecondary education). As a part of the Access and Retention Consortium II (ARC II), our role was to customize, pilot and evaluate the efficacy of implementing the PASS Program intervention at Mohawk College. During Phase I, the developmental phase, we adapted the PASS Program materials and delivery to make them relevant to the Mohawk College context.

This intervention was previously tested with anglophone and francophone students at the University of Ottawa, but had never been tested in a community college. As we moved into Phase II, we worked to evaluate the use of this innovative intervention in a new context: a Canadian community college.

College students make up about half of the postsecondary student population in Ontario, and there is a significant gap in the research literature about college student success. This project begins to fill that gap and provides new insights for researchers, practitioners and policymakers alike.

Background

The overarching goal of this project is to adapt, evaluate, and implement a psychoeducational program called the Promotion of Academic Success of Students (PASS) Program. The English version of the PASS Program was developed and evaluated by Patrick Gaudreau. In 2015, it was translated into French and evaluated as part of HEQCO's Access and Retention Consortium (ARC I) (Gaudreau, 2018). The PASS Program was created to be widely applicable across different postsecondary education contexts. Until this project however, the PASS Program had only been used and tested with university students.

Interventions like the PASS Program need to be tailored to the needs, demands and constraints of each individual institution in which they are to be delivered. Without appropriate customization, programs run the risk of being unappealing and inefficient. More importantly, it would be unethical to assume that the PASS Program will yield the same beneficial educational effects across all institutions. Phase I of "Piloting an Online Goal-setting Program to Improve the Success of College Students" provided us with the opportunity

1 A detailed overview of the literature supporting each of these three principles can be found in Gaudreau (2018).

to begin to adapt the PASS Program in order to create more relevant content (e.g., using language and terminology accessible to Mohawk students), delivery models (e.g., hosting the program on Mohawk's online Learning Management System), and operation methods (e.g., integrating implementation of *PASS* within Mohawk's suite of post-admission testing). Phase I also allowed us the time to initiate the process of receiving Research Ethics Board approval at Mohawk College.

Social psychological interventions are not magic pills — they only work when they are properly adapted to create a positive synergy with the values of the host institution. Without appropriate customization, programs run the risk of being unappealing and inefficient. More importantly, it would be unethical to assume that the PASS Program will yield the same beneficial educational effects across all institutions. Phase I of this project allowed us to complete this developmental work with the PASS Program.[2] Phase II, the focus of this report, allowed us to begin user-testing of the revised PASS Program via a randomized control trial at Mohawk College.

Previous Studies

The PASS Program was previously tested with samples of university students, offering initial evidence for the potential efficacy of this OGS program (Gaudreau, 2018; Gaudreau, 2010-2014; Thompson & Gaudreau, 2015). For instance, Thompson and Gaudreau (2015) found that students who learned how to effectively cope with academic stress were more likely to increase the amount of time they spent studying, made more progress towards their academic goals, and experienced fewer negative emotions (e.g., stress, anxiety, hopelessness). Preliminary analyses from three additional studies involving both anglophone and francophone university students indicate that the PASS Program is associated with a small but non-negligible effect on Grade Point Average (GPA) for these first year students (Cohen's d = 0.20 to 0.30) (Gaudreau, 2010-2014).

Additionally, the PASS Program was tested with a sample of university students in a previous study funded by HEQCO. As detailed in a previously published HEQCO report (Gaudreau, 2018), a sample of 239 first-year undergraduate students (79.1% female; mean age = 18.85), ranging from 16 to 45 years of age (M = 19.44, SD = 4.95), was randomized into the PASS Program and two control conditions. First, results of the process evaluation survey indicated that the PASS Program was perceived as more useful and satisfying than the control groups. Second, a small but significant educational effect of the PASS program was found, thus replicating the effect size that was observed in previous studies performed with anglophone university students (Gaudreau, 2010–2014). More precisely, participants randomized in the PASS condition performed significantly better during the first semester than participants in the first control condition (Cohen's d = 0.30, p < <.05) and marginally better than participants in the second control condition (Cohen's d = 0.24, p < .10).

2 Throughout Phase I of this project, the original PASS Program went through various revisions before reaching the final form, now titled *Pursuit: Mohawk's Active Academic Goal-setting Program*. For consistency throughout the remainder of this report, we will refer to the various iterations of the revised program as the online goal-setting (OGS) program.

These findings provided support for the efficacy of the program. Finally, results of a multi-group piecewise growth model showed that the significant decrease in grades from pre-university to the first semester was marginally weaker ($p < .10$) for students in the PASS condition (slope = -1.08, $p < .01$) compared to the control condition (slope = -1.47, $p < .01$). Overall, this finding indicates that the PASS Program can attenuate the "academic shock" commonly experienced by students during their first year at university.

While the impacts uncovered so far are small, the PASS Program has been shown to offer some beneficial effects to university students' academic success overall.

Research Questions and Approach

Given its previous success with university students, we hypothesized that the PASS Program, when altered to suit the Mohawk context, would have a positive academic impact on college students. For Phase II of our project, we focused on our two overarching research questions:

- To what degree can the PASS Program intervention be effective when delivered at a Canadian community college?
- How do at-risk students respond to this intervention?

To address these questions, we engaged in two distinct efforts to understand the effects of the OGS program intervention. Specifically, we:

1. Completed a randomized control trial with ~1000 students from Mohawk's incoming cohort randomly selected to complete either the intervention or the control condition. This included a baseline questionnaire and two followup surveys that collected data required to create a demographic and psychoeducational profile for each participant.
2. Analyzed Mohawk College administrative data and student records for the control group versus student records for the intervention group, including:
    a. Fall 2018 GPA
    b. Fall 2018 to Winter 2019 retention rates

We discuss these two efforts and their resulting findings below. We first discuss the randomized control trial methods and then discuss the results of the administrative data analyses.

Randomized Control Trial: Design and Methods

In order to test the efficacy of the OGS program within Mohawk's context, we designed a randomized control trial with approximately 1000 participants recruited from Mohawk College students entering the first year of a full-time two- or three-year program. Randomized trials can be classified on a continuum ranging from explanatory trials to pragmatic trails (Tosh, Soares-Weiser, & Adams, 2011; Thorpe, et al., 2009). Explanatory trials examine whether an intervention works under ideal conditions, whereas pragmatic trials examine whether an intervention works under usual conditions. A theory-driven and ethically responsible approach requires following incremental steps in testing the educational effects of social psychology interventions. Since this was the first time the OGS program was being tested within a Canadian college, we conducted an exploratory trial to measure the impacts in a controlled way. This allowed us to track academic trajectories for two comparable groups, and make inferences about the impacts of our intervention.

The PASS Program was designed in a way that allows for flexible delivery methods. Depending on the needs of the institution, students can complete the program alone at their leisure, or in a more formal setting (e.g., as part of course curriculum). After a strengths, weaknesses, opportunities and threats (SWOT) analysis completed during Phase I, it was determined that implementation within Mohawk College's Testing Centre provided the best environment for our initial pilot of the OGS program. Completing implementation of Phase II in the Testing Centre meant that we had full control of implementation conditions as well as an activity that reached a large portion of the incoming Mohawk College student cohort — Assessment for Success.

At Mohawk College, approximately 70% of incoming students complete initial placement testing — what we call Assessment for Success (AfS) — to determine course placement for their first year in particular college courses (e.g., communication and math). Our Testing Centre is designed specifically to support student success in testing. A room separate from the rest of the college with minimal distractions allows for ideal controlled conditions for any student completing testing. The testing room itself includes individual workstations for each student as well as invigilators to support and meet accommodations needs. These ideal testing conditions allow students to complete all AfS testing in one session that takes two to three hours. Adding the OGS program to the suite of AfS testing added one additional hour of testing for student participants.

Ensuring a smooth implementation within the Testing Centre included careful coordination of many moving parts, including Testing Centre procedures, as well as participant sampling and registration.

Procedures

To familiarize Testing Centre staff with the OGS program materials, a staff meeting was held with all members of the Testing Centre staff to brief them on the program and address any questions around implementation. Furthermore, an operations manual was created that provided step-by-step instructions for any process required for implementation, including how to recruit participants, check for program completion, provide incentive and answer commonly asked questions about the OGS program.

Select members of the Testing Centre staff were invited to complete a trial of the OGS program in order to review the content for any errors, and provide feedback on the program as a whole. The staff trial allowed the research team to benefit from the wealth of knowledge the Testing Centre staff possess regarding the incoming Mohawk College student population when making final adjustments to the program and plans for implementation. Questions and concerns that arose from the Testing Centre staff trials were noted, and additions to the FAQ section of the operations manual were developed to support implementation in the Testing Centre.

Furthermore, staff trials allowed members of the Testing Centre staff to familiarize themselves with the OGS program prior to implementation of the pilot with incoming Mohawk College students. The operations manual, including the FAQs that resulted from the Testing Centre staff trial, helped ensure staff were confident in their understanding of procedures for implementing the OGS program and were able to answer student questions during implementation. We believe that this confidence and enthusiasm for the OGS program demonstrated by the Testing Centre staff contributed greatly to the success in student participation during Phase II implementation.

Sampling Methods

Prior to implementation, Patrick Gaudreau completed a power analysis in order to determine the minimum number of participants required to find statistically significant results. The first analysis determined that 800 participants (400 control and 400 intervention) would be sufficient. A second analysis run by Dr. Gaudreau found that a sample of 1000 participants (500 control and 500 intervention) would be beneficial for completing data analysis that examined various participant attributes. This larger number became our goal.

To reduce demands on staff in the Testing Centre, students were enrolled in the OGS program prior to their AfS testing appointment. Furthermore, having students registered in the OGS program prior to their AfS testing appointment made the program seem like a part of regular Mohawk College testing procedures.

Working with members of the student success team involved in registration, enrolment was tracked each week to ensure that all students who were eligible to participate in the study were enrolled in the eLearn course prior to their AfS testing appointment. Weekly tracking was necessary as Mohawk has rolling enrolment, and some students schedule their AfS testing within days of registering at Mohawk.

Furthermore, eLearn has a randomization feature built into the program, which allows students to be randomized at the time of registration. Enrolling large groups of students at the same time (depending on their date of registration), with half of each group of students being added into each condition, allowed for true randomization to occur.

The sample pool for our pilot was Mohawk College students entering the first semester of a full-time two-year or three-year program who were scheduled to complete their AfS testing during the time of implementation (June-August 2018). Any student who scheduled their AfS testing during this timeframe, if eligible, was offered the program at the time of their testing. Consent was collected at the time of recruitment as a part of the online program hosted on eLearn. Should a student decline consent, the eLearn program would not allow the student to progress beyond the consent page. Furthermore, a password was added to the OGS program that prevented progression beyond the student information page, which appeared immediately after the student consent form. Only invigilators in the testing centre were provided with this password. This ensured that students were only able to complete the course after consent was gathered and within the controlled condition of the testing centre.

The chart below details participant completion rates:

Intervention	484	94% completion rate
Completed 10 of 10	453	
Control	523	99.8% completion rate
Completed 6 of 6	522	
Baseline/Total Participants	**1035**	**104% of our desired number**

Meeting the goal of 1000 participants allowed us the room to exclude participant data deemed invalid (e.g., students who left responses below a particular threshold).

Program Contents

The primary goal for revising the original PASS Program intervention and control group content during Phase I of this project was to make the program contents applicable to the college student demographic, and to Mohawk College students specifically, prior to implementation. Reframing the content of the PASS Program with the college students in mind was guided by the following four key objectives: using more familiar language, using terminology relevant to Mohawk College, explicitly stating the purpose of the intervention, and reducing the length of the time it took to complete the program.

Activities for the control condition needed to be similar enough to the intervention that participants completing their AfS testing in Mohawk's Testing Centre at the same time and randomized into different conditions would not observe differences between these two conditions; however, the control condition

also needed to remain neutral enough that it did not impact results. A publically available "Welcome to Mohawk" video was added to the control contents in order to mimic the pattern of informative video followed by module activity established within the intervention contents. Additionally, Mohawk students randomized into the control condition were provided the "Top 10 Tips for College Success" document (Appendix 1) as a resource. The "Top 10 Tips for College Success" document is distributed to all incoming first-semester students at orientation and advising events at Mohawk College, and was also provided to students randomized into the intervention group. The document was revised to remove any redundancy or duplication between it and the intervention content (for instance, content relating to goal setting or managing one's academic performance has been replaced with other success tips regarding student wellness).

Below is an outline of the five components included in the revised intervention content materials, as well as the five components for control materials that were used for Phase II of our study:

Intervention Content	Control Content
Baseline Questionnaire *Module #1: Goal Setting* · Instructional video · Reflective exercises (survey) ○ Optional module: Revise first goal *Module #2: Goal Planning* · Instructional video · Reflective exercises (survey) ○ Optional module: Revise second goal *Module #3: Goal Coping* · Reflective exercises (survey) *Module #4: Study Skills Information* · "Top 10 Tips for College Success" (PDF poster)	*Baseline Questionnaire* *Module #1: Welcome* · General "Welcome to Mohawk" video *Module #2: Goal Setting* · Set Goal #1 (survey) *Module #3: Goal Setting* · Set Goal #2 (survey) *Module #4: Study Skills Information* · "Top 10 Tips for College Success" (PDF poster)

The research team used an iterative review process to complete the content revisions outlined above in order to have the content ready for inclusion in our program platform prior to implementation.

All program contents were uploaded to Mohawk's online Learning Management System (LMS), known to students as eLearn. Having all program contents, videos and survey exercises on one interface allowed for a streamlined user experience. Using Mohawk's LMS as the host also meant that the testing centre staff were familiar with the operating system and were more easily able to help students navigating the OGS program or control contents during their AfS testing. Given that students were completing between two and four

hours of testing during their AfS session, ease of use and support from invigilators were key factors that contributed to the success of implementation and high participant completion rates.

Followup Surveys

In addition to the modules completed during AfS testing, participants were asked to complete a followup survey at the end of the fall 2018 semester and a second followup survey at midterm of the winter 2019 semester. These followup surveys enabled us to evaluate whether the students who participated in the experimental group — those who completed the OGS program intervention — are doing significantly better than students who had been randomized into the control group on a series of self-reported indicators of academic success and academic satisfaction.

As part of the process of evaluating the OGS program, the research team decided to also integrate additional open-ended response questions at the end of the followup surveys where student feedback and testimonials could be collected. The intention was for the research team to not only collect anecdotal, qualitative evidence on students' experience participating in the intervention, but to use these narratives in future iterations of the project to help contextualize, from a student perspective, both the purpose and importance of the intervention for participants.

The followup surveys were originally meant to be delivered through eLearn via the OGS program course shell in order to keep delivery uniform, and so that students had easy access to reviewing the goals they had set for themselves. However, after engaging in conversations with members of Centre for Teaching and Learning and Mohawk's Institutional Research and Corporate Reporting departments, it was determined that Blue Explorance, Mohawk's institutional surveying tool, would be a more user-friendly and efficient platform for implementing these much simpler surveys.

Using Blue Explorance meant that students were notified of each survey via their Mohawk email address. Within the original invitation email, students were provided detailed instructions on how to see the goals they had set within the eLearn modules. This created a two-step process for students. Reminder emails for each survey were sent to those participants who had yet to complete the survey both one week and one day prior to the close of each survey.

Additionally, at the release of the first followup survey, an announcement was posted within the OGS program eLearn course detailing instructions for how to complete the survey. This announcement included instructions on how to see the goals they had set within the eLearn course, as well as instructions on how to access the followup survey link within their Mohawk email account. In order to increase participant response, a $3 OneCard credit was offered as incentive for completion of the first followup survey.

A total of 87 participants consented to, completed and submitted the first followup survey. This was an 8.9% success rate from the 975 participants still registered as students at Mohawk at the time of the survey release who completed all modules of their assigned condition during implementation in the Testing Centre.

Given the low completion rate of the first followup survey, some alterations were made to the recruitment strategies used for the second followup survey. Specifically, instructions provided to participants within the recruitment email on how to review the goals they set within the eLearn course were simplified and emphasized that this step was not mandatory for completing the followup survey. Additionally, no announcement was posted within the eLearn course itself for the second followup survey. The OneCard incentive credit was increased from $3 to $5 and a draw was also offered as incentive for completion of the second followup survey.

105 participants completed the second followup survey out of the 830 still registered; a 12.65% success rate. Of those who participated in either the first followup survey or the second followup survey, 48 completed both surveys — a 5.78% success rate. The low response rate for completing the followup surveys suggests that a large influence in the successful participant uptake during implementation of the OGS program was the decision to have students complete the program in the controlled environment of the Testing Centre, rather than at their leisure in non-controlled conditions.

Randomized Control Trial Participant Demographic Information

A total of 1035 students participated in the study. Of those, 984 enrolled during the fall semester and had available academic achievement data (i.e., grades, retention). The sample of students included in our analyses included 554 males (56.3%) and 430 females (43.7%) who were between 17 and 64 years of age with a mean age of 20.87 (SD = 5.50). Despite the wide variation in the age of the participants, 87.5% of them were emerging adults between 17 and 24 years of age. The majority of students were domestic (n = 944, 95.9%) and a small group were international students (n = 40, 4.1%). On average, students took six courses during the fall term (range 1 to 10; SD = 1.20). Only eight international students had available achievement data from high school. For the domestic students with available data (n = 935), their high school grades ranged from 9% to 94.8% with a mean of 73.26% (SD = 8.38); 5.2% had high school grades below 60% and less than 0.5% had high school grades below 50%.

Using the randomization feature at the time of enrolment into the eLearn course, as detailed above, participants were randomized into the intervention and the control groups. We performed a series of checks to determine if the randomization was successful.

Table 1: Means and Standard Deviations of Age of Participants among Control and Intervention Groups

	Mean	Standard Deviation
Control Group	20.83	5.39
Intervention Group	20.92	5.62

Table 2: Means and Standard Deviations of High School Grades among Control and Intervention Groups

	Mean	Standard Deviation
Control Group	73.42	8.71
Intervention Group	72.96	8.29

Table 3: Gender Distribution of Control and Intervention Groups

	Female	Male
Control Group	42.9%	57.1%
Intervention Group	44.5%	55.5%

Table 4: Distribution of Domestic and International Students in Control and Intervention Groups

	Domestic	International
Control Group	96.4%	3.6%
Intervention Group	95.4%	4.6%

As expected, the age of the participants did not significantly differ ($F (1, 982) = 0.05$, $p = .82$) across the control group and the intervention group. The high school grades did not significantly differ ($F (1, 941) = 0.69$, $p = .41$) across the control group and the intervention group. Also, the gender distribution did not significantly differ across the groups ($X2 (1) = 0.26$, $p = .61$). Finally, the distribution of domestic and international students did not significantly differ across the groups ($X2 (1) = 0.58$, $p = .45$). Overall, these results indicate that the two groups were sufficiently comparable to conclude that our randomization process succeeded.

Primary Outcome: Analyses of Administrative Data

Our first research question is our primary research question: To what degree can the PASS Program intervention be effective when delivered at a Canadian community college? We address this question with an examination of Mohawk College student records before and after implementation of the OGS program. More specifically, we examined the grades of students during the fall semester (after the intervention took place) and their retention rates during the winter semester. Analyses were conducted for the 984 students with available academic achievement data.

Grades after the Intervention during the Fall Semester

First, we examined the effect of the intervention on the fall semester grades of all students with available academic achievement information (n = 984). The control and intervention groups were dummy coded (0 and 1) and included as the predictor of a multiple regression analysis. Results showed that the effect of the intervention was not significant (B = -1.699, S.E. = 1.492, p = .255). The intervention explained less than 1% of variance in grades (R2 = .001). The difference in the grades of students in the control group (67.42%) and the intervention group (65.72%) was not practically/clinically meaningful.

A notable portion of students had extremely low grades during the fall semester — from 0–29% (see Figure 1). Students with a semester grade point average below 29% is most commonly an indicator that they did not continue in their studies at the college. As a result, the distribution of the grades was non-normal (see Figure 1), which raised doubts about the trustworthiness of our first multiple regression analysis. Therefore, we decided to exclude participants with grades lower than 30% during the fall semester because these participants were presumed not to have completed all required exams/tasks/courses during the semester. Results with this group of 892 participants showed that the effect of the intervention was statistically significant (B = -2.726, S.E. = 0.966, p = .005), but in the opposite direction than expected. Although the grades of students in the control group were significantly higher (73.92%) than the students in the intervention group (71.19%), the difference was not practically/clinically meaningful because it explained less than 1% of variance in grades (R^2 = .008).

Figure 1: Distribution of Grades during the Fall 2018 Term

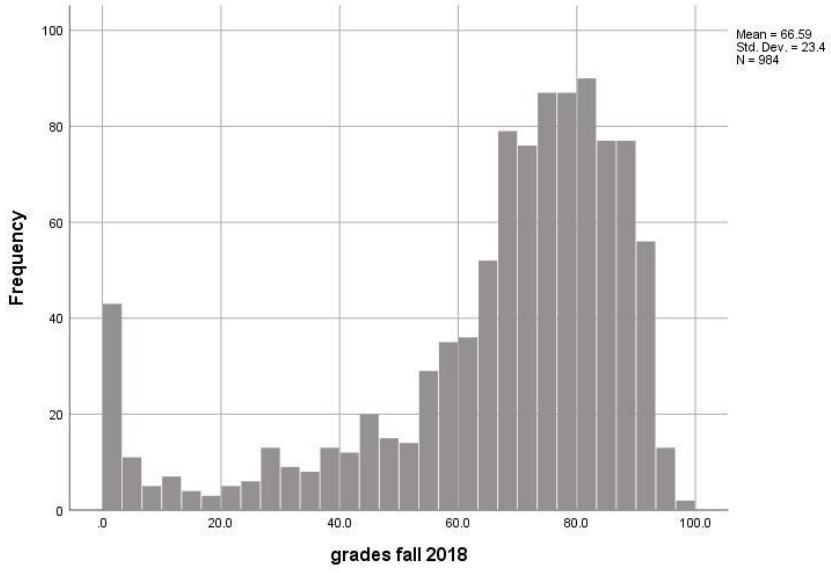
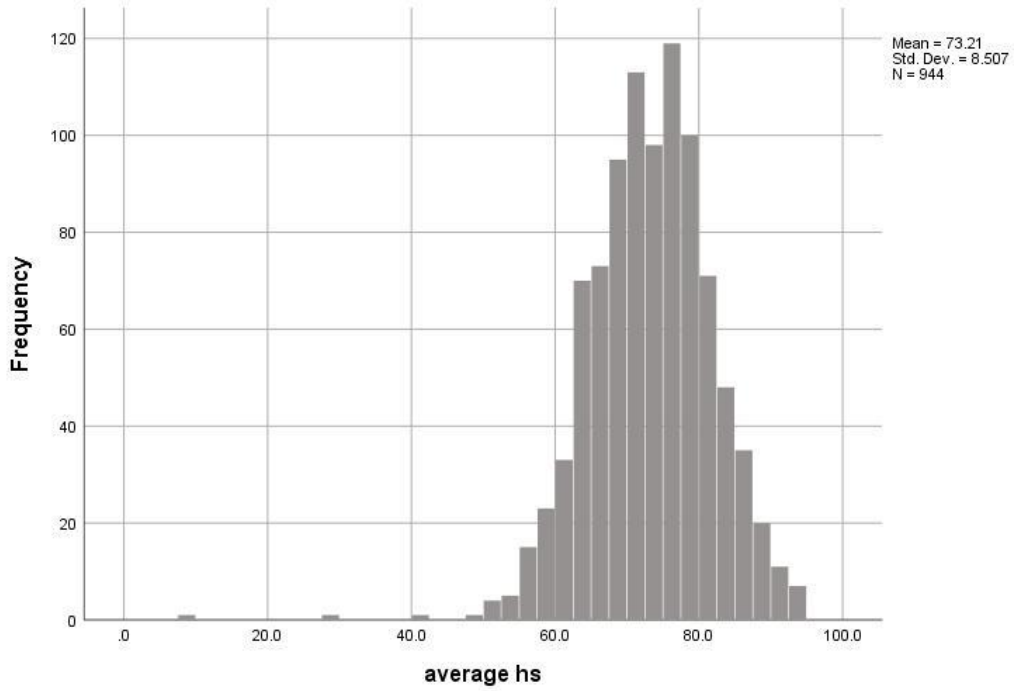


Figure 2: Distribution of High School Grades among Students with Available Data



In the past, wise social psychology interventions have been shown to be differentially effective for students with different levels of risk of experiencing academic difficulties. Among university students, the PASS Program has been found to be effective with students coming in with past experience of goal success and high perceived academic competence. Therefore, we wanted to examine whether the effect of the OGS program could differ for students at Mohawk with comparably lower high school grades. As shown in Figure 2 above, we were concerned by the fact that some students were admitted with extremely low high school grades. To avoid including outlier cases in our analyses, we excluded all participants with high school grades lower than 50%. We therefore conducted our moderated regression analysis with a sample of 848 participants. In this model, the intervention dummy variable (0 = control, 1 = intervention), the high school grades, and the intervention × high school grades were entered as predictors of the fall semester grades. A significant interaction (i.e., intervention × high school grades) would indicate that past grades from high school moderated the effect of the intervention. High school grades were a significant predictor of the fall semester grades (B = 0.677, S.E. = 0.076, p < .001). The effect of the intervention was also statistically significant (B = -2.205, S.E. = 0.888, p = .013), but in the opposite direction than expected. More importantly, the interaction effect (intervention × high school grades) was significant (B = 0.243, S.E. = .111, p = .029). To evaluate this interaction, we examined the effect of the OGS program for students with high school grades of 50%, 60%, 74% (the average of the sample), 80% and 90%. These results are shown in Table 5.

Table 5: Effect of the Online Goal-setting Program for students with different high school grades

High school grades	Effect of OGS program (B)	p value	OGS program	Control group
50%	-7.994	.004	49.35	57.34
60%	-5.568	.002	58.55	64.12
74% (average)	-2.205	.013	71.30	73.50
80%	-0.716	.524	76.88	77.66
90%	1.710	.394	86.14	84.43

Overall, the results of our analysis revealed that the OGS program had an unexpectedly negative effect on the grades of students. The negative effect is small and largely inconsequential — albeit statistically significant — for students admitted with average grades from high school. However, this negative effect of the OGS program becomes more significant and practically important for students admitted with low grades from high school. In contrast, the OGS program starts producing positive effects — albeit not statistically significant — for students admitted with higher grades from high school. These unexpected results will be re-explained in the discussion section.

Retention after the Intervention during the Winter Semester

Retention is a binary dependent variable. We therefore conducted a binary logistic regression using the same sample of 848 participants used in our previous analysis of the fall semester grades. In the current model, the intervention dummy variable (0 = control, 1 = intervention), the high school grades, and the intervention × high school grades were entered as predictors of the winter semester retention (0 = not enrolled, 1 = re-enrolled). A significant interaction (i.e., intervention × high school grades) would indicate that past grades from high school moderated the effect of the intervention.

High school grades were a significant predictor of retention (B = 0.073, S.E. = 0.024, p = .002, odds ratio = 1.076 with a sample effect size (d = 0.040)). The effect of the intervention was also statistically significant (B = -0.692, S.E. = 0.272, p = .011, odds ratio = 0.501, with a moderate effect size (d = 0.379)), but in the opposite direction than expected. The interaction effect (intervention × high school grades) was not significant, (B = 0.005, S.E. = .031, p = .865, odds ratio = 1.005, 9d = 0.003)). Overall, 93.3% of the students in the control group re-enrolled during the winter term compared to only 87.1% of the students in the OGS program.

We also wanted to examine if the effect of the intervention remained significant after controlling for the fall semester grades. In the current model, the intervention dummy variable (0 = control, 1 = intervention), the fall semester grades, and the intervention × fall grades were entered as predictors of the winter semester retention (0 = not enrolled, 1 = re-enrolled). Fall semester grades were a significant predictor of retention (B = 0.101, S.E. = 0.015, p < .001, odds ratio = 1.106), whereas the effect of the intervention was no longer statistically significant (B = -0.556, S.E. = 0.378, p = .142, odds ratio = 0.557). The interaction effect (intervention × high school grades) was not significant (B = -0.011, S.E. = .019, p = .577, odds ratio = 0.989).

Overall, these results of the retention analyses indicate that the potentially negative effect of the OGS program on the winter semester retention is not directly attributable to the OGS program itself but rather to its potentially negative effect on the fall semester grades for some students.

Discussion and Conclusions

Summary and Findings

Our first research question asked:

- To what degree can the PASS Program intervention be effective when delivered at a Canadian community college?

Past studies with university students have found that the PASS Program was able to minimize the academic shock of students during the transition from high school to university. University students randomized into the PASS Program experienced a significantly weaker decline in grades (5% versus 10%) from high school to university compared to students randomized into a control group. Unfortunately, these results were not replicated in our large sample of college students. In the current study, the revised PASS Program, or the OGS program, was associated with significantly poorer grades for the college students who were randomized into the OGS program compared to those of were randomized into the control group. The size of the negative effect was negligible for students with average grades but stronger for those students admitted to Mohawk with a lower high school GPA.

Results of our retention analyses indicated that participants in the OGS program were less likely to return to school during the winter semester. However, this effect disappeared after controlling for the effect of the fall semester grades. As such, the potentially negative effect of the OGS program on the winter semester retention is not directly attributable to the OGS program itself but rather to its potentially negative effect on the fall semester grades for some students.

Our second research question asks:

- How do at-risk students respond to this intervention?

The OGS program was associated with significantly poorer grades for the college students who were randomized into the OGS program compared to those who were randomized into the control group. This effect was significantly moderated by admission grades from high school. Students admitted with high grades from high school did not experience a significant negative effect from the OGS program. However, the fall semester grades of students admitted with very low grades from high school (50% and 60%) were negatively impacted by their participation in the OGS program. These results are important because they suggest that the OGS program is not a suitable intervention for students admitted with low grades from high school — a population of student often considered to be at a higher risk of experiencing academic difficulties during the transition to college.

Why the OGS Program is Not Effective in this Sample of College Students?

Our original hypothesis — that the PASS Program, when altered, would have a positive impact with college students — was wrong. There is potential to tweak the program for a particular student group in college — those who were high academic achievers in high school. For other student groups, a different intervention might be more impactful.

Many reasons could explain the unexpected findings reported in this study. First, the OGS program asks participants to set specific but difficult goals. Setting goals that are realistically difficult (i.e., challenging but attainable) may be unrealistic for college students during the transition from high school to college, particularly for those students admitted with low grades from high school. Such an interpretation would explain why the OGS program had stronger negative effects for the students admitted with low grades (50% and 60%) from high school. This finding is important because it suggests that the OGS program — in its current form — should not be used as a motivational tool to improve the grades and the retention of students who are at the greatest risk of academic difficulties during the transition from high school to college. The OGS program is a multi-component program involving setting personally meaningful goals, creating useful action plans, and devising if-then coping plans to manage difficulties. A potential solution would be to revise the OGS program to eliminate the need for students to set difficult or challenging goals. In our opinion, asking students to set difficult goals is less desirable for college students and likely explains the unexpected negative effects observed in this study.

Second, the OGS program was completed during the summer, before the students even started their college education. In past studies, university students completed the PASS Program during the second part of the fall semester — after completing their first midterms. Students may need time to adjust and experience the challenges of being college students before they can actually benefit from a goal setting, planning and coping program. The results of this study raise important questions about the need to consider the time at which such interventions are delivered to the students in postsecondary education.

Third, the current study was conducted with a large sample of students while they were completing intake material and tests during the admission process. Past studies were conducted with smaller samples of volunteers who were participating in studies to obtain course credits or monetary compensation. As such, university students who participated in previous studies self-selected into the study whereas the college students who participated in the current study could not select among a list of different studies. Our findings suggest that motivational interventions like the PASS Program may be effective only when students freely select to participate in such interventions. Making the PASS Program (in any variation) a mandatory and inherent part of the enrolment process does not appear advisable given the results obtained in the current study.

Fourth, the PASS Program was originally tested as an online intervention that students could take alone, at the time and location of their convenience. In the current study, participants completed the OGS program on a computer in a testing centre at a specific time and place. One effect of implementing within the Testing

Centre is potential increased student anxiety at the time of completing the program decreasing the program's positive impacts. Failure to replicate past results could potentially be attributable to the fact that we used a different delivery mode for this study with college students. Future work should compare online versus offline delivery modes of motivational interventions such as the PASS Program.

Fifth, past studies have shown that many variables (perfectionism, self-efficacy, academic competence, academic overload) from the baseline questionnaire can moderate the effectiveness of the PASS Program. Better outcomes of the PASS Program have been obtained for students with past experience of successful goal pursuits. Students who feel competent and self-efficacious at school are more likely to benefit from goal-setting interventions. Students who engage out of intrinsic motivation and values are also more likely to benefit from such interventions. In contrast, students who feel overloaded and students with high levels of perfectionism may not benefit as much from goal setting, planning and coping interventions. Future analyses, using the data from the baseline questionnaire, could be conducted to determine whether we can replicate these effects — obtained with university students — with our current dataset of college students.

Finally, student development theory could provide some insight, specifically Sanford's (1962a, 1962b, 1967) theory of challenge and support. Sanford's theory explains that student growth and development occurs when the right balance between challenge and support is found. Too little challenge and students could feel comfortable, while too much challenge and students may feel overwhelmed. In both of these conditions, development is not likely to occur. However, the amount of challenge a student can handle is a product of the amount of support provided. Finding the right balance for that student will facilitate development. It is possible that the revised PASS Program was too challenging for new students at this time in the student lifecycle. Our implementation approach did not offer much by way of support either. The concept of readiness is equally important in this theory, which explains that a student cannot learn or develop unless they are ready to accept the challenges and supports of the environment. It is possible, that students simply were not ready to participate in an in-depth goal-setting program when we offered it.

Implications for Institutional Policy and Practice

Offering psychoeducational interventions as a universal academic support can, in fact, have the opposite effect. Randomized control trials are needed even for those "classic interventions" that we take for granted. It was an unexpected result that a goal-setting intervention could be academically harmful to some student populations. Without the knowledge gleaned through this randomized control trial, this intervention might have been integrated into Mohawk's suite of academic support services without worry of potential undesirable effects. It is possible that other higher education initiatives are actually hurting rather than helping our students; therefore, it is integral that proper testing occurs to gain a comprehensive understanding of the impacts of the interventions we offer our students.

The PASS Program, even with initial adaptation to suit the needs of a new institution, will not suit all student populations at Mohawk College. Uncovering the efficacy of this strategy for college students allows us to communicate how to best offer this program within the college, and also to convince stakeholders at the

college of the importance of this research. The challenges that were uncovered during this pilot will help us to further develop the program and engage in further research that works to discover interventions that meet the needs of college students.

Directions for Future Research

As we argued at the start of this report, interventions like the PASS Program need to be tailored to the needs, demands and constraints of each individual institution in which they are to be delivered. A number of minor and significant changes were made to the original PASS Program for it to be implemented within Mohawk's context; however, these changes, such as implementing within the Testing Centre, could have had an impact on the success of the program. What we have uncovered in our study is that understanding when, why and for whom an intervention is effective is essential. It is important that this process be iterative, rigorous and informed by randomized control trials to truly understand the impacts of an intervention in each new context.

Without appropriate customization, programs run the risk of being unappealing, inefficient or, as we've seen in our study, having negative academic implications for particular student populations. Phase II served as our first year of pilot testing, and our results have provided us with areas to focus on in future research.

Additional testing would allow us to deepen our understanding of when the best time is to offer a goal-setting intervention. The important impacts of timing for interventions was discovered at Mohawk during testing of the proactive advising intervention model where it was found that group advising offered prior to the start of the school year had positive academic impacts for at-risk populations (Finnie, et al., 2017a). Furthermore, testing of the future authoring intervention, a narrative goal-setting program, had positive results on student academic success (Finnie, et al., 2017b). What is especially of note is that both the proactive advising and future authoring interventions seemed to work at the same point in time of the student life cycle as when we administered the OGS program. Given the positive results previous user-testing of the PASS Program has had with university students, the results from our current study point to the importance of understanding and using the right intervention at the right time for the right people. Given that we have found two interventions at this early stage of a student's time in college that are effective, we will continue to implement those in our regular college practices. It is possible that we re-explore this OGS intervention later in the student lifecycle with more academically prepared students, and with some additional supports (advisors/mentors) available. Such an approach, which may be more in alignment with the original implementation at the University of Ottawa, may yield more positive results.

The low response rate for completing the followup surveys that were emailed to participants suggests that the decision to have students complete the program as a part of AfS testing in the controlled environment of the Testing Centre was a large influence in the successful implementation of the OGS program. However, the PASS Program was originally designed to be an online intervention that students can take alone, at the time and location of their convenience. Therefore, future work should compare online versus in-person

delivery modes of motivational interventions such as the PASS Program. Furthermore, there is opportunity to explore offering the OGS program in tandem with other academic support services at Mohawk College.

Further testing of the OGS program with Mohawk students is needed. Gaining a deeper understanding of *why* the intervention had a negative impact for some students may allow us to better integrate the program into Mohawk's other services. Adding a form of assistance (e.g., one-on-one mentoring; talking about goal setting in small groups) may help students learn how to set goals. For example, with high school populations, a program called "Check and Connect" is one of the few programs found to have a significant effect on retention (Maynard, Kjellstrand, & Thompson, 2014; Sinclair, Christenson, Lehr, & Anderson, 2003). With this particular intervention, students have to connect with a significant adult once a week to evaluate their school engagement. Integrating the OGS program with advising services offered at Mohawk may have more positive academic impacts for Mohawk students, and perhaps particular populations of students.

Further analysis of the data gathered in the baseline questionnaire and followup surveys will also allow us to begin to understand for whom this intervention is most successful. Interventions like the PASS Program are not a "one-size-fits-all" tool. As we found in our study, asking some groups of students to set difficult goals may actually have negative academic implications. Understanding what student populations benefit most from an intervention, and which student populations may not, is also integral to figuring out what works for our diverse student population.

The unexpected results of our study highlight the importance of randomized control trials and validating our "common sense" assumptions about interventions. Our preliminary findings highlight questions for future research and emphasize how essential testing is for student success interventions. This is research we will continue to advocate for and carry out as we work to uncover what works in supporting postsecondary and, more specifically, college-student academic success.

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Appendix — "Top 10 Tips for College Success" Poster

TOP 10 TIPS FOR COLLEGE SUCCESS

Coaching and Advising Services at Mohawk

Services in The Square

The Square provides a variety of services for students including:

- Admissions
- Financial Assistance
- Counselling
- Accessible Learning Services (ALS)

Student Success Advisors (SSAs)

SSAs are your first point of contact for academic and program advising at Mohawk College!

Book a meeting with your SSA to answer questions, discuss your concerns, and create an action plan for success!

Name:_____

Office:_____

Program Coordinators

Every program at the college has a Program Coordinator who can answer program-specific, academic questions.

You will meet your Program Coordinator at **Day One** orientation on Tuesday, September 4th, 2018.

One question I need answered today is:

_____

_____

MyMohawk Information:

MohawkID (Your Student Number): _____

Mohawk Email: _____

Next Steps:

☐ _____

☐ _____

☐ _____

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