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The Importance of Others: The Link Between Stress and Social Connectedness in University Students

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The Importance of Others: The Link Between Stress and Social Connectedness in University Students

Abstract

The mental health of undergraduate students is a concern across many North American institutions. To support students' mental well-being and help them manage stress, many Canadian post-secondary institutions have introduced a mid-semester break during the fall term. However, there has been limited work evaluating whether this fall break is associated with a decrease in stress (a well-established correlate of mental health). Further, it is not known which demographic variables and lifestyle factors (e.g., sleep patterns, regular exercise) may contribute to a change in stress surrounding the fall break. We assessed the effects of the fall break on perceived stress levels and investigated whether these effects varied according to gender and the quality of students' social network. Our results indicate that on its own, the fall break did not reduce students' level of perceived stress. Further, students who reported feeling socially disconnected reported greater stress (both pre- and post-break) than those who reported being more content with their social network. Men in our sample reported less perceived stress than women. We recommend that mental health initiatives on campuses integrate strategies to build social connections between students and emphasize outreach programs to students who report feeling socially disconnected. We acknowledge the increased necessity and challenge of doing this in the context of education in the time of COVID-19.

La santé mentale des étudiants et des étudiantes de premier cycle est une préoccupation dans de nombreux établissements d'Amérique du Nord. Afin de soutenir la santé mentale des étudiants et des étudiantes et les aider à gérer le stress, de nombreux établissements d'enseignement post-secondaire canadiens ont introduit des vacances au milieu du semestre d'automne. Toutefois, on a peu évalué ces vacances pour savoir si elles ont eu pour résultat une baisse du stress (un corrélatif bien établi de la santé mentale). De plus, on ne sait pas quelles variables démographiques et quels facteurs de style de vie (par exemple les habitudes de sommeil, l'exercice régulier) peuvent contribuer au changement dans le niveau de stress en relation avec les vacances d'automne. Nous avons évalué les effets des vacances d'automne sur le stress tel que perçu par les étudiants et les étudiantes et nous avons cherché à savoir si ces effets variaient en fonction du sexe et de la qualité des liens sociaux des étudiants et des étudiantes. Nos résultats indiquent qu'en soi, les vacances d'automne ne réduisaient pas le niveau de stress perçu. De plus, les étudiants et les étudiantes qui étaient socialement déconnectés ont rapporté un stress plus important (tant avant qu'après les vacances) que celui des personnes qui avaient rapporté être plus satisfaites avec leurs liens sociaux. Parmi notre échantillon, les hommes ont rapporté ressentir moins de stress que les femmes. Nous recommandons que les initiatives concernant la santé mentale sur les campus intègrent des stratégies pour établir des connexions sociales parmi les étudiants et les étudiantes et soulignent les programmes de sensibilisation destinés aux étudiants et aux étudiantes qui rapportent se sentir déconnectés socialement. Nous reconnaissons la nécessité grandissante et les défis d'accomplir cela dans le contexte de l'enseignement au temps de la COVID-19.

Keywords

fall break, stress, mental health, undergraduate students, social connectedness, social network; vacances d'automne, stress, santé mentale, étudiants et étudiantes de premier cycle, connectivité sociale, réseaux sociaux

The mental well-being of post-secondary students has received considerable attention in recent years due to a rise in the prevalence of stress, depression, and anxiety in this group (Beiter et al., 2015; Canadian Alliance of Student Associations, 2019; Leahy et al., 2010; Moreira & Telzer, 2015; Stixrud, 2012) and because of a higher occurrence of psychological distress than in the general population (Auerbach et al., 2016; Leahy et al., 2010). This difference is substantial: Leahy et al. (2010) found the rate of self-reported psychological distress in a cross-section of undergraduate students to be more than four times that of an age-matched control. Accordingly, advocacy groups such as the American College Health Association (ACHA) have created targeted missions to promote and advance the health and well-being of post-secondary students. The ACHA publishes ongoing reports to provide data on several behaviours in undergraduates, including mental health measures. To date, the association has surveyed more than 1.4 million students at over 740 institutions across North America (ACHA, 2020). The Spring 2019 ACHA survey of 55,284 Canadian students found that in the past 12 months: 64% of respondents reported feeling hopeless, 69% experienced overwhelming anxiety, and 52% felt so depressed that it negatively impacted their ability to function. Over half of surveyed students said that they faced a higher than average amount of stress in the past year, with 15% of the respondents reporting “tremendous” stress (ACHA, 2019). In spite of (or perhaps due to) the prevalence of psychological distress in student populations, post-secondary institutions are significantly lacking in supports for students’ mental health (Giamos et al., 2017; Gibbons et al., 2018; Gibson, 2019; Kupfer, 2019, 2020). These and other findings (Li & Hasson, 2020; Linden & Stuart, 2020; Lun et al., 2018; Robinson et al., 2016; Tung et al., 2018) suggest that the psychological state of post-secondary students is in crisis.

The wellness of post-secondary students is of special concern given that the stressors impacting their mental health may be different than those of their non-student counterparts or individuals who are in a different life stage. There are several factors unique to students that may contribute to an increased rate of mental distress. Not surprisingly, academic pressures are a major source of stress (Deasy et al., 2014; Geslani & Gaebelein, 2013). In fact, a recent study polled students throughout an entire semester regarding their major stressor each week. Academics were by far the most commonly reported stressor; they were reported five times more frequently than other stressors (such as personal or financial stressors) (Pitt et al., 2017). Academic stressors can take a variety of forms, such as frequent exams, waiting for grades, and managing a combined academic and occupational workload (Deasy et al., 2014). Additionally, many students are striving for exceptional grades (Robotham & Julian, 2006) in order to earn or maintain scholarships or gain admission to professional or graduate school. Students rank preparing for and writing examinations as their most significant source of stress (Geslani & Gaebelein, 2013), however this stress can be mitigated. For example, lower stress is reported among those students with greater time management skills (Misra & McKean, 2000). The financial responsibilities associated with post-secondary education also drive students’ stress. For example, Canadian dental students with more than \$100,000 in debt reported significantly more financial-related stress than those with less debt (Hayes et al., 2017), and Poplaski et al. (2019) found that students who use financial aid self-report higher levels of financial stress. Typically, nearly half of students report finances as a major source of stress (ACHA, 2019; Aselton, 2012; Pitt et al., 2017). Additionally, financial and academic stressors may interact: high levels of financial support from family are associated with more stable academic performance throughout university (Cheng et al., 2012), perhaps because students must otherwise work to support their basic needs (Baik et al., 2015). Students may also live a somewhat nomadic lifestyle, changing housing, lifestyle, and social networks several times throughout the year, and stress commonly arises from such changes (Pitt et al., 2017). Finally, the recent

coronavirus disease 2019 (COVID-19) pandemic has resulted in sudden changes in the academic term. With the majority of post-secondary institutions pivoting to the delivery of online classes from in-person instruction, there have been major changes and disruptions in the typical routines of students leading to great uncertainty about the future. Emerging research indicates deleterious effects of the pandemic on student mental health (e.g., Cao et al., 2020; Huckins et al., 2020; Smith et al., 2022; Son et al., 2020).

There are considerable consequences of ongoing psychological stress, which can occur when an individual feels unable to adequately handle environmental demands (Cohen et al., 1995). A vast body of established literature suggests that ongoing psychological stress may contribute to multiple poor health outcomes and increased disease risk (see Cohen et al., 1995; Poplaski et al., 2019). The pioneering works of stress researchers (e.g., Selye, 1950) indicate that stress results in the broad disruption of the body's balance due to unexpected external or internal demands. Although the appraisal of any given situation may vary greatly between individuals, in students, multiple stressors associated with a busy term schedule may culminate in a common and unhealthy physiological response: the dysregulation of the body's normal response to stress. However, there is evidence indicating that a perceived sense of social support can mitigate the impact of daily stressors on health (Crockett et al., 2007; Hefner & Eisenberg, 2009). While individuals may differ in terms of the factors that define their perceptions of social support, there are some underlying commonalities, such as the general and personal belief that family and friends are available to provide support (Reid et al., 2016). The Stress Buffering Hypothesis suggests that those with high levels of social support might be more resilient in managing daily stressors due specifically to support from others, and that high social support allows for the maintenance of a high level of mental health functioning regardless of stress (Cohen & Willis, 1985). Considering this in light of the links between stress and overall health, it is not surprising that several studies have found an association between social support and health outcomes. For example, Berkman and Syme (1979) showed that higher mortality is linked with a smaller number of social connections, and a recent meta-analysis indicates a large effect size ($OR=1.29$) of social isolation on mortality (Holt-Lunstad et al., 2015). Other works investigating the links between perceived social support and health behaviours are consistent with the idea that social support may act as a buffer to mental stress (Cohen & Willis, 1985; He et al., 2018; Ueno, 2005), and may also serve to benefit important physiological processes such as improved cardiovascular health (Uchino et al., 1996), better functioning of the immune system (Uchino et al., 1996), longer life expectancy (Holt-Lunstad et al., 2015), and lower levels of hormones that are produced in relation to stress (Uchino et al., 1996).

Arguably, social support has the most potential benefit in populations that are at high risk of experiencing stress, namely post-secondary students. Among students, support from others may take a variety of forms: tangible support (e.g., receiving financial assistance from parents), appraisal support (e.g., a friend who reassesses a situation as inconvenient instead of stressful), and emotional support (e.g., commiserating with a classmate after a challenging exam) (Cohen & McKay, 1984). In the literature on social support and health (Hefner & Eisenberg, 2009), students' perception of stress is affected by their connectedness to others. A number of studies have found that the negative effects of stress can be buffered when individuals feel that others are responsive and sympathetic to their needs (Cohen & Willis, 1985; Crockett et al., 2007). For example, Raffaelli and colleagues (2013) examined how social support could moderate the distress that adolescents experience when applying to university. They found that social support was a significant moderator of the relation between stress and symptoms of depression. Moreover, Zhou and colleagues (2013) observed that social support significantly moderated the relation between

perfectionism, symptoms of depression, and anxiety in college students (Zhou et al., 2013) and Cruwys et al. (2014) found that the effectiveness of therapy to treat depression is increased when participants have a strong sense of social belonging. Nevertheless, the effects of social support vary across gender: women (particularly young women) report experiencing more psychological distress than men (McQuaid et al., 2021), but are more likely than men to obtain social support during times of stress (American Psychological Association, 2012; Arthur, 1998; Cohen & McKay, 1984). Taken together, these results suggest that students' perceived social support may affect their reaction to various stressors. However, the effects of social support on stress within a contemporary Canadian student population have not been investigated. Given the recent concerns around stress and mental health of this population, it is timely to do this.

We have studied the impact of a fall semester break on student stress for several years. Our broader research indicates that a fall break is not a sufficient standalone stress-relief intervention for the student body as a whole (Poole et al., 2017, 2018). Our current work aims to (1) replicate our previous work on student stress around the timing of the fall break, and (2) identify distinct groups of students who are experiencing particularly high levels of stress, with the goal of pinpointing groups that may need additional, focused supports to manage their stress and maintain good mental health. Here, we investigated the interaction between students' social network and stress within the context of the fall break across three Canadian universities.

Method

Participants and Recruitment

Undergraduate students at McMaster University ($N=27,900$), University of Waterloo ($N=33,300$), and University of Ottawa ($N=5,000$) were recruited via email with a link to participate in two online surveys during the fall of 2017. All three universities are located within the province of Ontario and within driving distance of fewer than six hours to each other. Students were emailed the week before and the week after their fall break. Each school held its break at a different time during the month of October with week-long breaks at McMaster University and at University of Ottawa, and a 2-day break at University of Waterloo. This research was approved by the Research Ethics Boards at all institutions, conforming to standards of ethical conduct as per Canada's Tri-Council Policy Statement on the ethical conduct for research involving human participants.

Materials and Procedure

Students accessed the surveys directly by clicking on a link in the email; access was possible for one week following each initial email. The surveys presented a series of demographic and stress-related questions (see full details in Poole et al., 2018). Participants indicated consent after reading a letter of information available at the start of each survey and had the option to skip questions. Each participant created a unique and anonymous ID code at the outset to allow us to link pre- and post-break responses. All respondents were offered one entry into a prize draw for participation in each survey.

Survey response rates varied across the three universities (McMaster University: 13.7%; University of Waterloo: 10.0%; University of Ottawa: 21.3%); a total of 8,242 students responded to our survey. Exclusion criteria from this total ($n=652$) consisted of incomplete responses, students not enrolled in fall semester courses, and graduate students. We further limited our subject

pool to include participants who had completed both the pre- and post-break survey, with a final sample size of 710 respondents (568 females, 142 males; mean age of 20 years). (Note that our gender question included non-binary response options and 10 respondents selected these options. They were excluded from this analysis due to small sample size). Our final sample comprised 316 undergraduates at McMaster University, 312 from University of Waterloo, and 82 from University of Ottawa.

In this study, we focused on a subset of the survey questions. We assessed pre-break and post-break stress using the Perceived Stress Scale (PSS; Cohen et al., 1983), which is a standardized and validated stress inventory that assesses the degree to which an individual views their life to be stressful. The scale has 10 items that measure the recent frequency of various thoughts and feelings related to stress. Each item is scored on a 5-point scale ranging from “never” to “very often” (scored as 0 and 4, respectively). Total PSS is calculated by summing the responses on the 10 items; scores can thus range between 0 and 40. Higher scores on the PSS indicate greater perceived stress. The PSS has good reliability and validity (see Cohen et al., 1983 for details). We assessed social support through a single survey item: How do you characterize your social network? A. prefer being alone, B. disconnected, C. adequate, D. well connected. These four options were developed in consultation with several experts in student experience and mental health at McMaster University, including a clinical psychologist. We recognize that the use of a single item to evaluate social support may cause initial concern regarding validity. However, our measure does possess good face and construct validity as demonstrated by the extant literature on this construct, which indicates that our measure was adequate. Various measures of social support (e.g., subjective or objective (Holt-Lunstad et al., 2015), absence of support (loneliness) (Cacioppo et al., 2015) or presence of support (connected) (Holt-Lunstad et al., 2015; Holt-Lunstad et al., 2010)) have shown parallel links to health. Furthermore, the respondent’s *perception* of social support, as opposed to the *actual presence* of support, is key (Cohen & Willis, 1985; Crockett et al., 2007; Helgeson, 1993). Although recommendations for risk assessment regarding health suggest including multiple measures of this construct (Holt-Lunstad et al., 2015), we sought only to categorize individuals according to social network quality, with a secondary aim to limit the time that it takes to complete our survey so that it was not a cumbersome experience for our respondents.

Results

Across the three universities, 8,242 students completed our survey. Our final sample ($N=710$) was limited to students who (a) met the inclusion criteria listed above and (b) responded to both the pre- and the post-break survey, so as to allow an assessment of change in stress scores. Details of the sample are presented in Table 1. Overall, our respondents feel satisfied with their social network. More than three quarters (78%) of students reported feeling adequately connected or well connected. However, a substantial gender difference exists: while 83% of females fall into these two categories, only 59% of males do.

Table 1
Frequency of Social Network Quality Rating by University and Gender

		McMaster University		University of Waterloo		University of Ottawa		% of respondents (by gender)
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Females (<i>n</i> =568)	Prefer to be alone	13	5	15	6.4	6	8.2	6
	Disconnected	30	11.5	21	9	12	16.4	11.1
	Adequately connected	159	60.7	138	59.2	29	39.7	57.4
	Well connected	60	22.9	59	25.3	26	35.6	25.5
Males (<i>n</i> =142)	Prefer to be alone	8	14.8	9	11.4	2	22.2	13.4
	Disconnected	11	20.4	25	31.6	3	33.3	27.5
	Adequately connected	24	44.4	35	44.3	3	33.3	43.7
	Well connected	11	20.4	10	12.7	1	11.1	15.5
<i>Total</i>		316		312		82		

The association between social network and perceived stress was assessed before and after each university’s fall break. To allow analysis of the broadest sample of students and because patterns were similar at all sampled universities, the three universities were collapsed in this analysis. Patterns were analysed using a 2 (time) x 2 (gender) x 4 (social network) mixed design ANOVA. The combined

analysis revealed no main effect of time on perceived stress, $F(1,702)=0.08$, $p>.05$; mean pre-break PSS=20.2, mean post-break PSS=20.3), but significant main effects of social network, $F(3,702)=20.2$, $p<.001$, $\eta^2=0.08$, and gender, $F(1,702)=20.2$, $p<.001$, $\eta^2=0.03$; mean PSS males=18.8, mean PSS females=21.7. Furthermore, there was a significant interaction between social network and time, $F(3,702)=2.63$, $p<.05$, $\eta^2=0.01$. Mean perceived stress scores are provided in Table 2.

Table 2

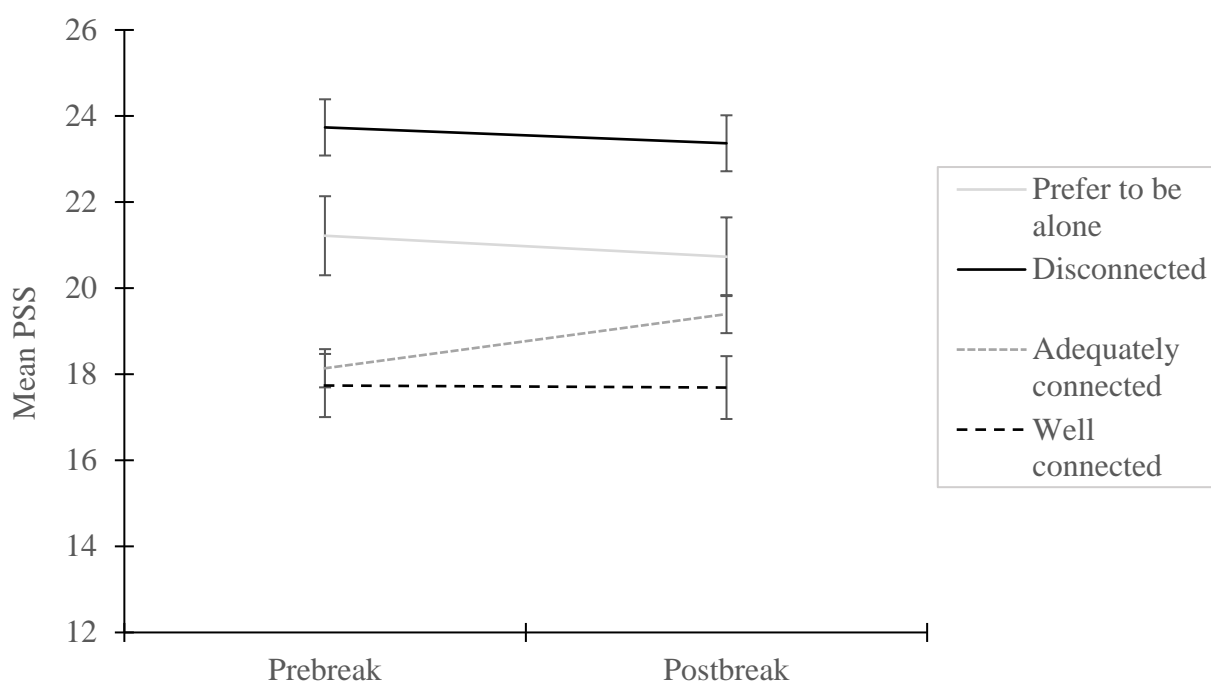
Mean Stress Scores by Self-reported Social Network and Gender, in the Week Before and the Week after the Fall Break

Gender	Time	Mean	SEM	Mean PSS by social network
Prefer being alone				
Male	prebreak	20.8	1.47	21.2
	postbreak	19.6	1.46	
Female	prebreak	21.6	1.10	
	postbreak	21.9	1.10	
Disconnected				
Male	prebreak	22.2	1.03	23.9
	postbreak	22.1	1.02	
Female	prebreak	25.3	0.81	
	postbreak	24.7	0.80	
Adequately connected				
Male	prebreak	16.0	0.81	19.9
	postbreak	18.2	0.81	
Female	prebreak	20.2	0.36	
	postbreak	20.6	0.35	
Well connected				
Male	prebreak	16.0	1.37	19.0
	postbreak	15.9	1.36	
Female	prebreak	19.5	0.53	
	postbreak	19.5	0.53	

Note. Scores are collapsed across three universities ($N=710$).

Simple effects investigating the interaction between social network and time were run via four paired-samples t-tests. These revealed no significant differences between pre-break and post-break stress for well-connected, disconnected, or students who prefer to be alone. Post-break stress was higher than pre-break stress in the adequately connected group; however this effect was not significant when familywise error was controlled, $t(387)=-2.24$, $p=.025$ (familywise error was set at $p=.05$, therefore to control for multiple comparisons $p<.0125$ was required for comparisons to be significant). The details of these effects are illustrated in Figure 1.

Figure 1
Mean Stress Scores Before and After the Fall Break, Classified by Social Network



Further post hoc tests were done using Tukey’s HSD to investigate the main effect of social network on perceived stress (averaged over the two time points). These revealed that students who feel disconnected showed significantly higher perceived stress than that of: well connected students (mean difference=4.87, $p<.001$), adequately connected students (mean difference=4.00, $p<.001$), and students who prefer being alone (mean difference=2.69, $p=.03$). No other differences were significant ($p>.09$).

Discussion

There has been a recent surge in discussions around the state of mental health of students on university and college campuses (Auerbach et al., 2016; Chiose, 2016; Gibson, 2019; Kupfer, 2019, 2020; Rosenberg, 2018; Rushowy, 2017). Across Canada, post-secondary institutions are introducing fall semester breaks from classes in an effort to support student mental health. However, very little empirical evaluation of this intervention has been reported. As part of a mixed-methods longitudinal study (Agnew et al., 2019; Poole et al., 2017, 2018), we have surveyed undergraduate students at three Canadian universities, with an interest in assessing the effect that a fall break has on their perceived levels of stress. Here, we additionally sought to identify distinct groups of students who are at high risk of psychological distress. Given the literature linking mental health and social connectedness (Chao, 2012; Denenny et al., 2015; Dunkley et al., 2000), we were particularly interested in determining whether a subjective sense of connection to others,

as reported through a social network rating in our questionnaire, corresponded to differences in perceived stress.

In our sampled institutions, we found that the experience of a fall break did not decrease students' level of perceived stress. This replicates our earlier findings (e.g., Poole et al., 2017, 2018) and adds strength to our previous work where we employed between-subjects analyses to compare student stress before and after a fall break. Here, we compared pre- and post-break stress within the same participants, thus increasing the statistical power of our research design to detect an effect of the fall break. However, we again found no decrease in stress. The results from our study may be interpreted as a concerning finding, as the fall break is being put forth as a crucial strategy to support students' mental well-being. Notably, one limitation in our work is the lack of a control institution (with no fall break), mainly due to the recent adoption of fall breaks across most post-secondary institutions in Canada. As such, we do not suggest that institutions should abolish the fall break (as it may have other benefits and is popular among students), but it is important that administrators are aware that a fall semester break is not a standalone strategy to decrease student stress.

Critically, our data indicate that those who perceive themselves as socially disconnected report greater stress than do students who are adequately connected, well connected, and those who prefer to be alone. This pattern did not differ by gender and is in line with the research reviewed earlier, suggesting that social support can buffer experienced stress (Cohen & Willis, 1985; Crockett et al., 2007; Raffaelli et al., 2013; Zhou et al., 2013). While our design and that of others does not imply causality (Cohen & Willis, 1985; Wright et al., 2013), we suggest that social support may be one way to mitigate student stress, as the benefits of social support have recently been shown to generalize to other populations living in high-stress situations. For example, there is evidence that maternal stress during pregnancy predicts obesity in toddlerhood and beyond (Entringer, 2013). Kroska et al. (2018) tracked the effects of social support amongst pregnant women who were experiencing high levels of stress due to a local natural disaster. They found that the link between maternal stress and offspring health was buffered by strong social support: the children of women who reported high social support during pregnancy did not show the typical increased risk of obesity, but those of women with low social support did (Kroska et al., 2018). Among college students, previous work (Chao, 2012) has shown a significant interaction between perceived stress and social support, such that compared to students with high social support, students with low social support report lower psychological well-being.

Implications and Future Work

Our current work indicates that undergraduate students who feel socially disconnected are a high-risk population for stress. Recent data from American institutions in light of the ongoing COVID-19 pandemic indicate that half of the respondents in a survey of 1,300 post-secondary students felt isolated from friends and family. Nevertheless, many (63%) students used video chats to stay connected with their social networks (Neal, 2021). Another similar survey of about 2000 American students conducted at about the same time (Spring 2021) indicated that many (65%) students reported fair or poor mental health. At the same time, 47 percent indicated that they could use some or more support from their post-secondary institution during the pandemic, with nonbinary and female-identifying students revealing feelings of constant worries around anxiety and about life (Ezarik, 2021). In particular, LGBTQ+ students are an especially vulnerable population, as indicated by a recent report suggesting that this group reported more difficulties in

pursuing post-secondary education because of the pandemic than their cisgender counterparts (Conron et al., 2021). As such, we encourage institutions to continue their focus on increasing social supports and to further create an environment where students, particularly female-identifying and those from the LGBTQ+ communities, as there is some evidence to suggest that such groups might be more likely to access mental health services when student wellness websites have prominent displays of institutional commitment to equity, diversity, and inclusion (Seehus et al., 2021). We recognize that this is a challenging task. Recent work indicates the importance of community-building in enriching the student experience. For example, Baik and colleagues (2015) have published important work that outlines specific student-reported recommendations on what post-secondary institutions can do to better support student mental health and wellbeing. Using a diverse group of students ($N = 2525$) from multiple academic backgrounds, the research team found that although most student-generated recommendations related to instructors (e.g., increased approachability, the use of different teaching and learning strategies, and the understanding of unique student circumstances), and the need for increased student supports (e.g., academic skills, counselling, and student advising), close to one quarter of the respondents made recommendations around the culture of their program. In particular, students raised the importance of creating a sense of community in order to “make a community of students, not a situation (where) students feel treated like a number and not a person.” Another respondent recommended to “build upon the existing structure that fosters a sense of community and family amongst the students.”

In line with this work, we encourage institutions to take a bottom-up approach where staff, faculty, and program managers may organize special student working groups as partners in brainstorming and implementing realistic and student-centered approaches to removing barriers in creating a more inclusive and student-centered environment with well thought out spaces for student interactions. We particularly recommend that, in forming such groups, special attention is paid to best practices related to equity, diversity, and inclusion principles. Engaging diverse students as partners in the creation, review, and improvement of institutional initiatives, strategies, and programs for peer-to-peer networking and cohort building can allow students the opportunities to build positive social connections with one another. Engaging students as partners in the co-creation of a culture that fosters positive interactions with their peers can result in two important benefits: (a) it can empower students to take ownership and set priorities that speak directly to their varied experiences (Bovill et al., 2011; Bovill et al., 2016), and (b) it can encourage the inclusion of students that might be at a higher risk of isolation and marginalization, such as those from indigenous groups, mature students, international students, and from LGBTQ+ communities.

Our aim through this work is to highlight the importance of perceived social connectedness in relation to student mental health and well-being. Our assessment of social support was through a single survey item: How do you characterize your social network? A. prefer being alone, B. disconnected, C. adequate, D. well connected. Although the question was developed in consultation with mental health professionals at one of our sampled institutions, we highly recommend future studies assessing a similar relationship between mental health and social connection to use validated scales to strengthen their experimental design. We further recommend that among the multiple approaches currently employed by post-secondary institutions to better the student experience, special attention should be directed to activities that allow for better peer-to-peer interactions. We strongly suggest taking a student-centered approach, whereby students are recruited as partners in varying capacities in order to improve institutional practices, with a key focus on the student’s voice, so that we may challenge our traditional approaches and to encourage “shared ownership” in co-creating the student experience to foster academic excellence

in the context of a strong institutional community (Gravett et al., 2019). While shared ownership might be difficult to enact during the COVID-19 pandemic, we feel that developing strong communities is particularly important at this time, and as such should be a major focus of post-secondary institutions.

References

- Agnew, M., Poole, H., & Khan, A. (2019). Fall break fallout: Exploring student perceptions of the impact of an autumn break on stress. *Student Success, 10*(3), 45-54.
<https://doi.org/10.5204/ssj.v10i3.1412>
- American College Health Association. (2019). *American College Health Association-National college health assessment II: Canadian reference group executive summary*.
https://www.acha.org/documents/ncha/NCHA-II_SPRING_2019_CANADIAN_REFERENCE_GROUP_EXECUTIVE_SUMMARY.pdf
- American College Health Association. (2020). *National college health assessment participation history*.
https://www.acha.org/NCHA/About_ACHA_NCHA/Participation_History/NCHA/About/Participation_History.aspx?hkey=992b3d9a-9d22-46b8-911c-1f187dd5fb6c
- American Psychological Association. (2012). *Gender and stress*.
<https://apa.org/news/press/releases/stress/2010/gender-stress>
- Arthur, N. (1998). The effects of stress, depression, and anxiety on postsecondary students' coping strategies. *Journal of College Student Development, 39*(1), 11-22.
- Aselton, P. (2012). Sources of stress and coping in American college students who have been diagnosed with depression. *Journal of Child and Adolescent Psychiatric Nursing, 25*(3), 119-123.
- Auerbach, R. P., Alonso, J., Axinn, W. G., Cuijpers, P., Ebert, D. D., Green, J. G., Hwang, I., Kessler, R. C., Liu, H., Mortier, P., Nock, M. K., Pinder-Amaker, S., Sampson, N. A., Aguilar-Gaxiola, S., Al-Hamzawi, A., Andrade, L. H., Benjet, C., Caldas-de-Almeida, J. M., Demyttenaere, K., ...Bruffaerts, R. (2016). Mental disorders among college students in the World Health Organization world mental health surveys. *Psychological Medicine, 46*(14), 2955-2970. <https://doi.org/10.1017/S0033291716001665>
- Baik, C., Naylor, R., & Arkoudis, S. (2015). *The first year experience in Australian universities: Findings from two decades, 1994-2014*. University of Melbourne.
https://melbourne-cshe.unimelb.edu.au/_data/assets/pdf_file/0016/1513123/FYE-2014-FULL-report-FINAL-web.pdf
- Beiter, R., Nash, R., McCrady, M., Rhoades, D., Linscomb, M., Clarahan, M., & Sammut, S. (2015). The prevalence and correlates of depression, anxiety, and stress in a sample of college students. *Journal of Affective Disorders, 173*, 90-96.
<https://doi.org/10.1016/j.jad.2014.10.054>
- Berkman, L.F., & Syme, S. L. (1979). Social networks, host resistance, and mortality: A nine-year follow-up study of Alameda County residents. *American Journal of Epidemiology, 109*(2), 186-204.
- Bovill, C., Cook-Sather, A., & Felten, P. (2011). Students as co-creators of teaching approaches, course design, and curricula: Implications for academic developers. *International Journal for Academic Development, 16*(2), 133-145.

- Bovill, C., Cook-Sather, A., Felten, P., Millard, L., & Moore-Cherry, N. (2016). Addressing potential challenges in co-creating learning and teaching: Overcoming resistance, navigating institutional norms and ensuring inclusivity in student–staff partnerships. *Higher Education*, 71(2), 195-208. <https://doi.org/10.1007/s10734-015-9896-4>
- Cacioppo, J. T., Cacioppo, S., Cole, S. W., Cacioppo, J. P., Goossens, L., & Boomsma, D. I. (2015). Loneliness across phylogeny and a call for comparative studies and animal models. *Perspectives in Psychological Science*, 10(2), 202-212.
- Canadian Alliance of Student Associations. (2019, January 30). *Students launch campaign demanding government action on mental health*. https://www.casa-acae.com/students_launch_campaign_demanding_government_action_on_mental_health
- Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Research*, 287, 112934. <https://doi.org/10.1016/j.psychres.2020.112934>
- Chao, R. C. L. (2012). Managing perceived stress among college students: The roles of social support and dysfunctional coping. *Journal of College Counseling*, 15(1), 5-21. <https://doi.org/10.1002/j.2161-1882.2012.00002.x>
- Cheng, W., Ickes, W., & Verhofstadt, L. (2012). How is family support related to students' GPA scores? A longitudinal study. *Higher Education*, 64, 399-420.
- Chiose, S. (2016, September 8). Reports of mental health issues rising among postsecondary students: Study. *The Globe & Mail*. <https://www.theglobeandmail.com/news/national/education/reports-of-mental-health-issues-rising-among-postsecondary-students-study/article31782301>
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24(4), 385-396. <https://doi.org/10.1037/t02889-000>
- Cohen, S., Kessler, R. C., & Gordon, L. U. (1995). Strategies for measuring stress in studies of psychiatric and physical disorders. *Measuring stress: A guide for health and social scientists*. Oxford University Press.
- Cohen, S., & McKay, G. (1984). Social support, stress and the buffering hypothesis: A theoretical analysis. In A. Baum, S. E. Taylor, & J. E. Singer (Eds). *Handbook of psychology and health* (pp. 253-267). Lawrence Erlbaum.
- Cohen, S., & Willis, T.A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, 98(2), 310-357.
- Conron, K. J, O'Neill, K. (co-first authors), & Sears, B. (2021). *COVID-19 and students in higher education: A 2021 study of the impact of the COVID-19 pandemic on the educational experiences of LGBTQ and non-LGBTQ U.S. adults aged 18-40*. The Williams Institute, UCLA. <https://pointfoundation.org/research/>
- Crockett, L. J., Iturbide, M. I., Stone, R. A. T., McGinley, M., Raffaelli, M., & Carlo, G. (2007). Acculturative stress, social support, and coping: Relations to psychological adjustment among Mexican American college students. *Cultural Diversity and Ethnic Minority Psychology*, 13(4), 347-355. <https://doi.org/10.1037/1099-9809.13.4.347>
- Cruwys, T., Haslam, S. A., Dingle, G. A., Jettten, J., Hornsey, M. J., Chong, E. M. D., & Oei, T. P. S. (2014). Feeling connected again: Interventions that increase social identification reduce depression symptoms in community and clinical settings. *Journal of Affective Disorders*, 159, 139-146. <https://doi.org/10.1016/j.jad.2014.02.019>

- Deasy, C., Coughlan, B., Pironom, J., Jourdan, D., & Mannix-McNamara, P. (2014). Psychological distress and coping amongst higher education students: A mixed method enquiry. *PLoS ONE*, 9(12). <https://doi.org/10.1371/journal.pone.0115193>
- Denenny, D., Thompson, E., Pitts, S. C., Dixon, L. B., & Schiffman, J. (2015). Subthreshold psychotic symptom distress, self-stigma, and peer social support among college students with mental health concerns. *Psychiatric Rehabilitation Journal*, 38(2), 164-170. <https://doi.org/10.1037/prj0000124>
- Dunkley, D. M., Blankstein, K. R., Halsall, J., Williams, M., & Winkworth, G. (2000). The relation between perfectionism and distress: Hassles, coping, and perceived social support as mediators and moderators. *Journal of Counseling Psychology*, 47(4), 437-453. <https://doi.org/10.1037/0022-0167.47.4.437>
- Entringer, S. (2013). Impact of stress and stress physiology during pregnancy on child metabolic function and obesity risk. *Current Opinion in Clinical Nutrition and Metabolic Care*, 16(3), 320-327. <https://doi.org/10.1097/MCO.0b013e32835e8d80>
- Ezariq, M. (2021, April 14). *Students struggling but not seeking campus mental health support*. <https://www.insidehighered.com/news/2021/04/14/students-struggling-not-seeking-campus-mental-health-supports>
- Geslani, G. P., & Gaebelein, C. J. (2013). Perceived stress, stressors, and mental distress among doctor of pharmacy students. *Social Behavior and Personality: An International Journal*, 41(9), 1457-1468. <https://doi.org/10.2224/sbp.2013.41.9.1457>
- Giamos, D., Lee, A. Y. S., Suleiman, A., Stuart, H., & Chen, S. P. (2017). Understanding campus culture and student coping strategies for mental health issues in five Canadian colleges and universities. *Canadian Journal of Higher Education*, 47(3), 136-151. <https://doi.org/10.47678/cjhe.v47i3.187957>
- Gibbons, S., Trette-McLean, T., Crandall, A., Bingham, J. L., Garn, C. L., & Cox, J. C. (2018). Undergraduate students survey their peers on mental health: Perspectives and strategies for improving college counseling center outreach. *Journal of American College Health*, 67(6), 580-591. <https://doi.org/10.1080/07448481.2018.1499652>
- Gibson, V. (2019, February 14). As more students seek mental-health care, they face long waits or pay out of pocket - as universities struggle with demand. *The Globe and Mail*. <https://www.theglobeandmail.com/canada/article-faced-with-long-waits-for-mental-health-care-students-and/>
- Gravett, K., Kinchin, I. M., & Winstone, N. E. (2019). 'More than customers': Conceptions of students as partners held by students, staff, and institutional leaders. *Studies in Higher Education*. 45(12), 2574-2587. <https://doi.org/10.1080/03075079.2019.1623769>
- Hayes, A., Hoover, J. N., Karunanayake, C. P., & Uswak, G. S. (2017). Perceived causes of stress among a group of western Canadian dental students. *BMC Research Notes*, 10(1), 714.
- He, F. X., Turnbull, B., Kirshbaum, M. N., Phillips, B., & Klainin-Yobas, P. (2018). Assessing stress, protective factors and psychological well-being among undergraduate nursing students. *Nurse Education Today*, 68, 4-12. <https://doi.org/10.1016/j.nedt.2018.05.013>
- Hefner, J., & Eisenberg, D. (2009). Social support and mental health among college students. *American Journal of Orthopsychiatry*, 79(4), 491-499. <https://doi.org/10.1037/a0016918>
- Helgeson, V. S. (1993). Two important distinctions in social support: Kind of support and perceived versus received. *Journal of Applied Social Psychology*, 23(10), 825-845. <https://doi.org/10.1111/j.1559-1816.1993.tb01008.x>

- Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T., & Stephenson, D. (2015). Loneliness and social isolation as risk factors for mortality: A meta-analytic review. *Perspective on Psychological Science*, 10(2), 227-237. <https://doi.org/10.1177/1745691614568352>
- Holt-Lunstad, J., Smith, T. B., & Layton, J.B. (2010). Social relationships and mortality risk: A meta-analytic review. *PLOS Medicine* 7(7): e1000316. <https://doi.org/10.1371/journal.pmed.1000316>
- Huckins, J. F., DaSilva, A. W., Wang, W., Hedlund, E., Rogers, C., Nepal, S. K., Wu, J., Obuchi, M., Murphy, E. I., Meyer, M. L., Wagner, D. D., Holtzheimer, P. E., & Campbell, A. T. (2020). Mental health and behavior of college students during the early phases of the COVID-19 pandemic: Longitudinal smartphone and ecological momentary assessment study. *Journal of Medical Internet Research*, 22(6). <https://doi.org/10.2196/20185>
- Kroska, E. B., O'Hara, M. W., Elgbeili, G., Hart, K. J., Laplante, D. P., Dancause, K. N., & King, S. (2018). The impact of maternal flood-related stress and social support on offspring weight in early childhood. *Archives of Women's Mental Health*, 21(2), 225-233.
- Kupfer, M. (2019, December 9). *Students call for more mental health supports after death at U of O*. CBC News. <https://www.cbc.ca/news/canada/ottawa/mental-health-student-death-university-of-ottawa-1.5390046>
- Kupfer, M. (2020, February 12). *U of O students demand better mental health services amid deaths*. CBC News. <https://www.cbc.ca/news/canada/ottawa/university-of-ottawa-mental-health-petition-1.5459501>
- Leahy, C. M., Peterson, R. F., Wilson, I. G., Newbury, J. W., Tonkin, A. L., & Turnbull, D. (2010). Distress levels and self-reported treatment rates for medicine, law, psychology and mechanical engineering tertiary students: Cross-sectional study. *Australian & New Zealand Journal of Psychiatry*, 44(7), 608-615. <https://doi.org/10.3109/00048671003649052>
- Li, Z. S., & Hasson, F. (2020). Resilience, stress, and psychological well-being in nursing students: A systematic review. *Nurse Education Today*, 104440.
- Linden, B., & Stuart, H. (2020). Post-secondary stress and mental well-being: A scoping review of the academic literature. *Canadian Journal of Community Mental Health*, 39(1), 1-32. <https://doi.org/10.7870/cjcmh-2020-002>
- Lun, K. W. C., Chan, C. K., Ip, P. K. Y., Ma, S. Y. K., Tsai, W. W., Wong, C. S., Wong, C. H. T., Wong, T. W., & Yan, D. (2018). Depression and anxiety among university students in Hong Kong. *Hong Kong Medical Journal*, 24, 466-472. <https://doi.org/10.12809/hkmj176915>
- McQuaid, R., Cox, S. M. L., Ogunlana, A., & Jaworska, N. (2021). The burden of loneliness: Implications of the social determinants of health during COVID-19. *Psychiatry Research*, 296(3), 113648. <https://doi.org/10.1016/j.psychres.2020.113648>
- Misra, R., & McKean, M. (2000). College students' academic stress and its relation to their anxiety, time management, and leisure satisfaction. *American Journal of Health Studies*, 16(1), 41-51.
- Moreira, J. F. G., & Telzer, E. H. (2015). Changes in family cohesion and links to depression during the college transition. *Journal of Adolescence*, 43, 72-82.
- Neal, K. (2021, March 16). *TimelyMD survey finds 4 of 5 college students still stressed BY Covid-19 after one year*. TimelyMD. <https://timely.md/time:ymg-survey-finds-4-out-of-5-college-students-still-stressed-by-covid-19-pandemic-one-year-later>

- Pitt, A., Oprescu, F., Tapia, G., & Gray, M. (2017). An exploratory study of students' weekly stress levels and sources of stress during the semester. *Active Learning in Higher Education*, 19(1), 61-75.
- Poole, H., Khan, A., & Agnew, M. (2017). One week, many ripples: measuring the impacts of the Fall reading week on student stress. *Collected Essays on Learning and Teaching*, 10, 163-172.
- Poole, H., Khan, A., & Agnew, M. (2018). Stressing in the fall: Effects of a Fall Break on Canadian undergraduate students. *Canadian Journal of Higher Education*, 48(3), 141-164. <https://doi.org/10.7202/1057133ar>
- Poplaski, S., Kemnitz, R., & Robb, C. A. (2019). Investing in education: Impact of student financial stress on self-reported health. *Journal of Student Financial Aid*, 48(2), 1-18.
- Raffaelli, M., Andrade, F. C. D., Wiley, A. R., Sanchez-Armass, O., Edwards, L. L., & Aradillas-Garcia, C. (2013). Stress, social support, and depression: A test of the stress-buffering hypothesis in a Mexican sample. *Journal of Research on Adolescence*, 23(2), 283-289. <https://doi.org/10.1111/jora.12006>
- Reid, G. M., Holt, M. K., Bowman, C. E., Espelage, D. L., & Green, J. G. (2016). Perceived social support and mental health among first-year college students with histories of bullying victimization. *Journal of Child and Family Studies*, 25(11), 3331-3341.
- Robinson, A. M., Jubenville, T. M., Renny, K., & Cairns, S. L. (2016). Academic and mental health needs of students on a Canadian campus. *Canadian Journal of Counselling and Psychotherapy*, 50(2), 108-123.
- Robotham, D., & Julian, C. (2006). Stress and the higher education student: A critical review of the literature. *Journal of Further and Higher Education*, 30(2), 107-117. <https://doi.org/10.1080/03098770600617513>
- Rosenberg, D. (2018, February 9). 1 in 5 college students have anxiety or depression. Here's why. *The Conversation*. <https://theconversation.com/1-in-5-college-students-have-anxiety-or-depression-heres-why-90440>
- Rushowy, K. (2017, October 10). Student mental health needs growing, Ontario colleges say. *Toronto Star*. <https://www.thestar.com/news/queenspark/2017/10/10/student-mental-health-needs-growing-ontario-colleges-say.html>
- Seehuus, M., Moeller, R. W., & Peisch, V. (2021). Gender effects on mental health symptoms and treatment in college students. *Journal of American College Health*, 69(1), 95-102. <https://doi.org/10.1080/07448481.2019.1656217>
- Selye, H. (1950). *The physiology and pathology of exposure to stress*. Acta.
- Smith, A., Filice, D., Poole, H., Khan, A., Whalen, K., & Smilek, D. (2022). Indicators of student well-being in Canadian undergraduates before and during the COVID-19 pandemic. *Scholarship of Teaching and Learning in Psychology*, Advance online publication. <https://doi.org/10.1037/stl0000338>
- Son, C., Hegde, S., Smith, A., Wang, X., & Sasangohar, F. (2020). Effects of COVID-19 on college students' mental health in the United States: Interview survey study. *Journal of Medical Internet Research*, 22(9), e21279.
- Stixrud, W. R. (2012). Why stress is such a big deal. *Journal of Management Education*, 36(2), 135-142. <https://doi.org/10.1177/1052562911430317>
- Tung, Y. J., Lo, K. K., Ho, R. C., & Tam, W. S. W. (2018). Prevalence of depression among nursing students: A systematic review and meta-analysis. *Nurse Education Today*, 63, 119-129.

- Uchino, B. N., Cacioppo, J. T., & Kiecolt-Glaser, J. K. (1996). The relationship between social support and physiological processes: A review with emphasis on underlying mechanisms and implications for health. *Psychological Bulletin*, *119*(3), 488. <https://doi.org/10.1037/0033-2909.119.3.488>
- Ueno, K. (2005). The effects of friendship networks on adolescent depressive symptoms. *Social Science Research*, *34*, 484-510. <http://dx.doi.org/10.1016/j.ssresearch.2004.03.002>
- Wright, K. B., Rosenberg, J., Egbert, N., Ploeger, N. A., Bernard, D. R., & King, S. (2013). Communication competence, social support, and depression among college students: A model of Facebook and face-to-face support network influence. *Journal of Health Communication*, *18*(1), 41-57. <https://doi.org/10.1080/10810730.2012.688250>
- Zhou, X., Zhu, H., Zhang, B., & Cai, T. (2013). Perceived social support as moderator of perfectionism, depression, and anxiety in college students. *Social Behavior and Personality*, *41*(7), 1141-1152.