COU Academic Colleagues Committee Report to the Ontario Tech U AC

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Synopsis

This report provides an overview of two meetings held on October 11 and 12, 2022, and the full Council meeting (with Executive Heads and Academic Colleagues) on October 13, 2022. The meetings focused on Proximal and Distal Teaching Modalities. The Academic Colleagues meetings were held in a hybrid format (both in-person and online), while the full Council meeting occurred online.

Background

The objective of the COU Academic colleagues committee is to support the COU council, consisting of the executive heads of the institution members of the COU, with feedback from academic colleagues concerning COU initiatives.

Meeting Summaries

COU Colleagues Meeting (October 11 and 12, 2022)

Evening meeting, October 11, 2022

Proximal and Distal Teaching Modalities

- The discussion began with an exploration of lessons learned from online teaching during the first two years of the pandemic in different disciplines. Labs were particularly challenging to conduct while all teaching was online. There was a mixed bag in engineering, architecture, and studio courses. On the one hand, students seemed to be more prepared and it was easier to bring in experts. On the other hand, some students were more disengaged and got "zoomed out".
- The different modalities tend to cater to different needs and allowed ill students and international students with visa problems to continue to participate.
- At the graduate level, it was easier to bring in external examiners.
- Participants noted a decline in academic standards among students entering from high school, as well as a lack of preparation for university-level courses.
- Some benefits to online delivery were noted, including:
  - increased equity for students unable to attend in person;
  - students becoming more open to using technology and different modes of presentation;
  - forced instructors to think about pedagogical issues and evaluation when traditional exams are not possible;
  - use of chat and reactions seemed to help students be more engaged;
  - some felt more confidence speaking online than in physically large classrooms;
  - no worries about getting medical notes from students; and,
  - made it easier to change exam styles.
- Some challenges due to online delivery were noted, including:
  - Grade inflation;
  - Fully remote does not work for all students;

- o Need to have a good reason for students to attend in person (why are in-person classes important); and,
  - o Student expectations have changed.
- The hybrid or Hi-flex model posed different benefits and challenges:
  - o It is easier to use Universal Design for Learning;
  - o Curating well-edited video lectures is very time-consuming → could simply audio record lectures as you give them in person and provide ppt slides with the recording;
  - o Providing choice in comparable assignments to allow students to choose the one(s) that best suits their learning style;
  - o There are tech challenges even in classes designed for hybrid teaching, especially in late afternoon and evening classes when tech support is not available.
- Strategic decision-making: The group also discussed how these issues should be taken into account when making strategic decisions. With a better understanding of both the challenges and benefits of different delivery modalities, how do we determine strategy going forward? Prior to the onset of the pandemic, most universities were working to increase their online offerings. Now, we have a better sense of what works and what doesn't. A question was raised about the spectrum of enrolment strategies. At one end, there is the possibility of using MOOCS or Athabasca courses to teach the basic 1000-person classes (e.g., 1st year physics or psychology) and then individual universities could provide small tutorials. At the other end, small enrolment courses (e.g., 15 people) could be shared with nearby universities to boost the number of 'bums in seats' and be able to provide a greater variety of courses.
- To provide tech support and to trouble shoot during late afternoon and evening classes, could students be hired?
- The personal preferences of individual faculty members should not drive course delivery choices. There should be pedagogical reasons, proper support, and strategic decisions to allow for multi-year commitments to online delivery methods. The differences between online or asynchronous modalities vs remote or synchronous modes are important to bear in mind when making these decisions.
- Diversity in delivery methods is important and should be considered in relation to institutional demographics, such as: are students younger or older, direct entry or not, commuter or not, and so on. Students should be taught in different ways to help encourage diversity of thought (i.e., avoid a monoculture or standardized delivery methods). This point was seen as an important reason to avoid having one institution or instructor deliver course content to large numbers of students across the province.
- At one university, in a large 1st year survey course, they found an increase in attendance when the lectures were delivered in person and tutorials were online – students were more willing to come to campus for a 3-hour lecture than for a 1-hour tutorial.
- At the level of individual courses, it is important to focus on the pedagogical reasons for delivery choice. At the program level, it is important to focus on student experience and preparing for success after graduation. At the institutional level, universities have invested in infrastructure that needs to be used. Demographics influence all of these levels. Student experience and success research indicates that students who are engaged overall in on-campus activities are more likely to be successful. In addition, universities have a community role to play in terms of research and presence in the community.

1. **Information Sharing**
   - The group shared some of the challenges that their university is facing and the decisions that have been made around masking and virtual/in-person meetings. Many are struggling to get folks back on-campus.

2. **COU President's Report (Steve Orsini)**
   - Continuing to tell the story of the vital role universities play in Canadian society. They are working to gather key facts about higher graduation rates, higher employment rates, higher resilience, etc. They are looking at questions about the mission of Ontario universities and how academic freedom supports that mission. They expect that the provincial government will appoint an expert panel on universities.
   - Ongoing question of how universities will fulfill their mandates and deliver on those missions without financial stability. Government has been indicating that they want more control over universities even as their funding declines. COU is developing a financial sustainability strategy to present to the government. An important component of this must be tuition flexibility. As part of this process, COU is developing fiscal health metrics that can be presented to the government in order to alleviate concerns about the financial sustainability of universities.
   - COU is also concerned about potential recommendations coming out of the Auditor-General's report on Laurentian, such as the imposition of more controls over universities, including limits on their ability to borrow and invest in infrastructure and the possible appointment of a supervisor with authority over university finances. There are also concerns about the potential for a recommendation that university budgets will be consolidated with the province's budget (as happens in some other provinces).
   - Given the situation at Laurentian University, how do we ensure as a sector that this does not happen to other universities? Is it possible to find a sector-based solution that reflects institutional autonomy and keeps accountability with the board, not the government? At the same time, there is a need to work with the government to ensure that early warning signs are not missed.
   - It is a good idea to determine a way to demonstrate the social return on investment, to show how we are addressing issues that don't lend themselves well to numbers.
   - Pointed to the impact on Canada and Ontario's university brand due to the low quality of education and lack of supports for international students in light of the recent 5th Estate documentary.

3. **COU Internal Updates**
   - The remainder of the meeting was composed of updates from various committees.

1. Welcome from the Chair

2. President's Report – COU strategy will be revised as more information comes available as to government intentions.

3. Public Advocacy ** – will be centred around five main pillars, including supporting student success, building a competitive economy, supporting regional economic development, rebuilding Ontario's health care system, and a transforming university sector.

4. COU Constitutional Review ** – COU is modernizing its government structure to be compliant with not-for-profit legislation.

5. Academic Colleagues' Report – update from Academic Colleagues

6. Discussion Item – Proximal and Distal Teaching Modalities

Academic Colleagues presented to the Executive Heads about the ideas and issues related to different teaching modalities. The presentation was based on the discussion noted above during the Academic Colleagues meetings. The academic colleagues through their discussion have determined that a remote or online delivery could have two major benefits which include access of information and enhancement of the material. Both would result in a benefit to the student population as it would enhance their learning opportunities. Negatives to remote or online teaching have also been identified and they include a lack of engagement in the classroom environment, a lack of community and belonging among the student population, and reduced loyalty to the postsecondary institution. The academic colleagues believe that the positives can be enhanced and the negatives can be mitigated by allowing each institution and, within that institution, each department or program to be able to understand their students' needs as well as identify opportunities and determine the optimal balance of curriculum delivery. Through these decisions, we believe that the outcomes that are important to the sector end to the government such as student satisfaction, job readiness, well trained students, efficient university operations, and the sector that is responsible responsive to its community can be achieved. It should be the goal of every Ontario university to support students during their studies and to ensure they are well positioned to maximize their potential after graduation and throughout their life. The value of the university sector will be identified by reaching these mutually beneficial outcomes.

The pandemic forced us to teach remotely and we "got by". When we look at pursuing the "optimal" teaching modalities, some of the benefits are related to distal teaching, particularly regarding the removal of barriers to access to lecture material by students from equity-deserving groups and how this can be enabled through asynchronous or synchronous online delivery. Asynchronous, online classes, for example, immediately make the "classroom" more accessible to students with mobility issues or chronic illness; they also permit neurodivergent (e.g. ADHD) students to set up a workspace that may be more conducive to learning. Online courses (synchronous or asynchronous) can be accessed by students irrespective of their location, providing new opportunities for students from remote areas, and international students to participate while also accommodating students with mobility issues or other limitations on ability to return to campus (e.g. immuno-compromised students during peak cold/flu season and pandemic circumstances). Asynchronous elements and online courses reduce the need to

attend on-campus classes, reducing commuting time as well as the need for physical classrooms, reducing the impact of space constraints as well as improving student participation rates. Online courses can also reduce the need for accommodations (e.g. students recovering from illness/surgery who couldn't come to campus but are capable of participating remotely) or due to a parent having to stay home with a sick child); asynchronous elements can offer flexibility for students with chronic or longer-term illnesses to catch up on their studies.

While some students learn really well online, we must be aware / cautious of some of the challenges with learning online, especially with regard to student engagement and mental health. Dr. Kim Hellemans presented some data from a survey she conducted during Feb 2022 among Carleton University students. She was wondering: do students like learning online? Are they successful? How does this relate to symptoms of mental health? An article co-authored by Dr. Hellemans based on this research is attached. In sum, while there are students who greatly benefit from the flexibility and accessibility of learning online, we need to acknowledge that there is a huge benefit for in-person learning, specifically around feelings of support and connection to the campus, peers, and professors, and this significantly impacts mental health symptoms.

With regards to technology usage, students, faculty and staff all gained experience and some expertise in hybrid and online delivery of courses. Infrastructure and supportive resources were put into place. As folks moved back on-campus, there was hope that we could enhance the rush job we *all* did to manage through that time and not only retain the before-covid online adopters but would *retain* some or perhaps many of the forced online adopters who found the tools valuable. An ideal university has a mix of delivery modes across programs to give students flexibility in their studies. Some courses are certainly more suited for one mode or another. One thing the academic colleagues completely agree on is that one size does not fit all. In addition, improvements are need in the infrastructure for classroom technology. At many universities, faculty and students had little influence on the tools and infrastructure that was set up so that the technology ended influencing the pedagogy instead of the other way around. Instructors get told "you can't do that" when trying to design courses. The experience for students is vital, but when the technology does not work or there is no support for troubleshooting, the student experience is undermined. Beyond advice, there is often little support for faculty members to use the technology to create and edit, for instance, the video lectures needed for asynchronous teaching; this is something that takes a significant amount of time – often triple the amount of time needed to prepare for an in-person lecture. It is important for there to be support for faculty to be able to give students the best possible online lecture experience, not just something that is adequate.

Coping With the COVID-19 Pandemic: Examining Gender Differences in Stress and Mental Health Among University Students

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The COVID-19 pandemic has imposed a wide variety of unprecedented challenges, many of which appear to be disproportionately affecting the mental health and well-being of young adults. While there is evidence to suggest university students experience high rates of mental health disorders, less is known about the specific impacts of the COVID-19 pandemic on student mental health and how they are coping with this stress. To address this gap, we conducted an online study among undergraduate students ($n = 366$) to examine the impact of the COVID-19 pandemic on academics, social isolation, and mental health, as well as the extent to which they have been implementing a variety of coping strategies. The pandemic had a more pronounced negative effect on female students' academics, social isolation, stress and mental health compared to male counterparts. Moreover, for females, frequent use of social media as a coping mechanism was associated with greater perceived negative impacts on their academic performance and stress levels, compared to males. However, frequent social media use related to similar negative mental health effects for both males and females. While male and female students both reported using substances to cope, for males the use of cannabis was associated with greater negative impacts on academic outcomes, stress and mental health compared to females. These findings highlight the need for adequate student support services across the post-secondary sector, and point to the importance of gender informed interventions to address the impacts of the COVID-19 pandemic.

Keywords: coping, COVID-19, emerging adults, mental health, university students, stress

INTRODUCTION

The COVID-19 pandemic has introduced a unique set of challenges and stressors that have negatively impacted mental health and wellness (1–3). In addition, specific sociodemographic groups are being disproportionately affected. In this regard, emerging data indicate that the pandemic is negatively influencing the mental health and increased self-reports of loneliness in younger populations more so than in any other age group (4–6). This might be due, in part, to young individuals' educational, economic, and social lives being highly disrupted by the public health crisis (7). For example, higher levels of depression and loneliness have been reported among

adolescents and young adults, which has been attributable to the increased stress associated with the pandemic (8–10). Recent data also indicate that females are at increased risk of loneliness, depression and anxiety during COVID-19 (11–14).

University students represent one group of young or emerging adults (aged 18–25) that have been particularly impacted by COVID-19 (15). With the quick closures of universities, students encountered uncertainty and concern about their academic future, as well as social isolation and a lack of supports (16). High levels of stress, anxiety and depression are prevalent among post-secondary education students (17), in part because of the academic, social, and personal demands of navigating through higher education (18). More generally, emerging adulthood is considered a vulnerable period that coincides with the onset of mental health disorders, such as anxiety and depression (19), which can negatively impact developmental trajectories by reducing academic achievements, increasing substance use and poor health behaviors (20). Indeed, even prior to the COVID-19 pandemic, high rates of mental health concerns existed with ~35% of post-secondary students reporting a lifetime mental health disorder (21). University students also reported high rates of substance use, with 62.8% reporting alcohol use and 24.7% reporting cannabis use in the past month (17), potentially as a method of coping with the stress they experience as students (22, 23). Thus, the COVID-19 pandemic may exacerbate these issues, occurring at an already vulnerable time period, as university students suffer the psychological impacts of the COVID-19 lockdown (8, 16). Preliminary data indicate that the impact of remote learning may have negative consequences on student well-being, as a recent study reported higher levels of stress and isolation as well as negative mood during a synchronous online learning experience, compared to a traditional face-to-face learning environment (24).

While it is evident that the COVID-19 pandemic is having a significant negative impact on students, the full range and nature of its impacts on academics, social relationships and mental health are not yet clear. Moreover, we do not have a thorough understanding as to the coping strategies students are implementing to deal with the stress of COVID-19. To this end, the current study examined how the COVID-19 pandemic impacted university student academics, social relationships, and well-being, as well as the nature and extent of coping strategies endorsed by students to deal with the stress of the pandemic. Given the recent evidence that a subset of young people have increased their alcohol, tobacco and cannabis use during the COVID-19 pandemic (25, 26), we were particularly interested in exploring coping strategies pertaining to drug and alcohol use. In addition, considering evidence that young females are particularly impacted by COVID-19 (13), we focused on identifying gender differences in each of these domains. We predicted that females would report that the COVID-19 pandemic more negatively impacted their academics, social isolation, stress and mental health compared to males. We also predicted that students would employ a range of unhealthy coping strategies to deal with the stress of the pandemic, such as the use of alcohol and cannabis. Moreover, we hypothesized that unhealthy coping strategies, in

particular substance use and eating fast food and/or sweets, would relate more strongly to greater negative impacts of the COVID-19 pandemic on stress and mental health. To conduct this project, we surveyed undergraduate students registered in academic classes throughout the summer (May–August) 2020 term. Ultimately, we hope that by identifying the specific challenges and stressors students are encountering during the COVID-19 pandemic, and how students are coping with these challenges, we may be better able to provide tailored supports and resources for these students.

METHODS

Participants

This study comprised 366 undergraduate students from Carleton University (M_{age} = 21.0 years, range = 18–29 years). The majority of participants reported their gender identity as female (71.0%, n = 260), followed by male (28.1%, n = 103), gender queer (0.5%, n = 2), and transwoman (0.3%, n = 1). The sample was of mixed ethnic/racial backgrounds including participants who identified as Asian (12.3%, n = 45), South Asian (9.3%, n = 34), South East Asian (2.7%, n = 10), Arab/West Asian (7.4%, n = 27), Black (8.7%, n = 32), Latin American/Hispanic (3.3%, n = 12), Indigenous (0.8%, n = 3), White/European (49.4%, n = 181), and other (6.0%, n = 22).

When asked about their current employment, just under half of participants, 44.9% (n = 164) were unemployed, whereas 31.0% (n = 113) of participants reported being employed part-time, 16.7% (n = 61) were employed full-time, 7.4% (n = 27) reported their employment status as other and one participant did not answer this question. Among those who were unemployed, the majority (66.5%, n = 109) reported that their unemployment was due to the COVID-19 pandemic. Most participants responded that they currently reside in Canada, with 93.4% (n = 342) in Ontario, 1.4% (n = 5) in Alberta, 1.9% (n = 7) in Quebec, 0.5% (n = 2) in British Columbia, and 0.3% (n = 1) in each of Nova Scotia and Newfoundland & Labrador. Otherwise, 1.1% (n = 4) reported residing in China, and 0.3% (n = 1) reported residing in each of France, Bermuda, Anguilla, and the United States of America. When asked about living arrangements, 66.9% (n = 245) reported living in a household of 2–4 people, 23.2% (n = 85) reported living in a household of 5–8 people, 8.5% (n = 31) reported living alone, and 1.4% (n = 5) reported other living arrangements. Approximately a third of participants, 35.5% (n = 130), reported that their living arrangement had changed due to the COVID-19 pandemic.

Procedure

Participants comprised undergraduate students from Carleton University, Ottawa, Ontario, Canada, recruited through the university's online research system. Participants completed this study during the COVID-19 pandemic, between May and August 2020. Within the context of the COVID-19 pandemic, in Ontario, a state of emergency was in effect from March 17, 2020 to July 24, 2020. This resulted in the closure of all schools, child care, indoor recreation facilities, restaurants, bars, and all non-essential services and businesses. From May through

to August 2020, Ontario instituted a three-stage plan to lift economic restrictions, however, social distancing and social restriction guidelines remained, including restrictions on the size of gatherings. Thus, over the course of this study recruitment from Carleton University, classes were all being offered on-line, campuses were closed, and many social restrictions were in place.

Following informed consent, participants completed an online survey hosted on Qualtrics (Qualtrics, Provo, UT). The survey contained demographic questions (e.g., age, gender, mental health status) and questions related to the COVID-19 pandemic. Once the questionnaires were completed, all participants received an online debriefing form and were compensated with course credit. This study was cleared by the Carleton University Research Ethics Board (REB # 111775).

Measures

Negative Impacts of the COVID-19 Pandemic

To assess the specific impacts of the COVID-19 pandemic, participants were asked separate questions regarding the extent to which the COVID-19 pandemic had negatively impacted their (1) mental health, (2) stress levels, (3) social relationships and (4) academic performance, with response options ranging from (0: not at all, 1: a little, 2: a moderate amount, 3: very much, 4: an extreme amount). Due to small n/cell for specific groups, responses were collapsed for statistical analyses into three categories: (0) not at all/a little, (1) a moderate amount, and (2) very much/an extreme amount. In addition to the above questions, participants were also asked to rate the difficulty of the social isolation caused by the COVID-19 pandemic, and the transition to online learning, with response items ranging from (0: very easy, 1: easy, 2: neutral, 3: difficult, 4: very difficult). For analyses, once again responses were collapsed into three categories: (0) very easy/easy, (1) neutral, and (2) difficult/very difficult.

Coping With the COVID-19 Pandemic

It was also of interest to ask participants how they had been coping with the COVID-19 pandemic. Participants were asked how often they had been employing a range of coping methods to deal with the stress of the COVID-19 pandemic with response options ranging from 0: not at all, 1: a little, 2: a moderate amount, 3: very much, 4: an extreme amount. For analyses, this scale was collapsed into three categories: (0) not at all/a little, (1) a moderate amount, and (2) very much/an extreme amount. The specific coping strategies assessed and asked to participants comprised separate questions regarding: (1) social media; (2) connecting with family/friends through videoconferencing (Zoom, FaceTime, etc.); (3) exercising; (4) sleeping; (5) eating fast food/sweets; and (6) using substances (vaping nicotine, alcohol and cannabis use). These options were selected based on common behaviors and coping strategies endorsed by young adults (22, 27–29).

Statistical Analyses

Statistical analyses were performed using SPSS for Windows 27.0 (SPSS, Chicago, Illinois, USA). Prior to analyses, a number of validity checks were performed to ensure quality of data.

These included the time to complete the survey and that responses on reverse coded items of scales aligned. There were too few individuals who reported their gender identity other than male/female ($n = 3$), thus, for gender-based analyses these individuals were excluded, however they were included in all other results. As data were grouped in ordinal categories [i.e., questions assessing the negative impacts of COVID-19 comprised three groups: (0) very easy/easy, (1) neutral, and (2) difficult/very difficult and questions assessing coping with COVID-19 comprised three groups: (0) not at all/a little, (1) a moderate amount, and (2) very much/an extreme amount], chi-square analyses were performed when assessing these questions according to gender. Due to the ordinal data, Spearman's Rho was used to correlate the responses to questions assessing the negative impacts of COVID-19 and the responses to the coping with COVID-19 questions. Significance was determined at $p < 0.05$.

RESULTS

The Impacts of the COVID-19 Pandemic on Academic Outcomes

Of all participants, 37.7% ($n = 138$) reported that the transition to online learning during the COVID-19 pandemic was difficult or very difficult, whereas 31.1% ($n = 114$) reported being neutral, and 31.1% ($n = 114$) said the transition was easy/very easy. As shown in **Figure 1A**, this differed significantly by gender [$\chi^2_{(2, N=363)} = 8.56, p = 0.014$]. Specifically, a greater proportion of females reported that the transition to online learning was difficult or very difficult compared to males ($p < 0.05$). In contrast, more males reported the transition was very easy/easy ($p < 0.05$) compared to females.

When asked about the extent of negative impact of the COVID-19 pandemic on schoolwork, 30.6% ($n = 112$) of participants reported that it negatively impacted them very much or an extreme amount, whereas 27.9% ($n = 102$) reported a moderate negative impact and 41.5% ($n = 152$) reported little to no negative impacts. This differed significantly by gender [$\chi^2_{(2, N=363)} = 8.44, p = 0.015$; **Figure 1B**]. Again, a greater proportion of females reported that the COVID-19 pandemic had negatively impacted their schoolwork very much or an extreme amount compared to males ($p < 0.05$).

The Impacts of the COVID-19 Pandemic on Social Isolation and Relationships

Of participants, 41.3% ($n = 151$) reported that social isolation had been difficult or very difficult, whereas 31.7% ($n = 116$) reported being neutral, and 27.0% ($n = 99$) said isolation was easy/very easy. This differed significantly by gender [$\chi^2_{(2, N=363)} = 9.29, p = 0.01$]. As shown in **Figure 1C**, females were more likely to report social isolation as being difficult or very difficult compared to males ($p < 0.05$), whereas males were more likely to report social isolation as being easy or very easy compared to females ($p < 0.05$).

With regard to social relationships, 35.8% ($n = 131$) of participants reported that COVID-19 negatively impacted them very much or an extreme amount, whereas 27.9% ($n = 102$)
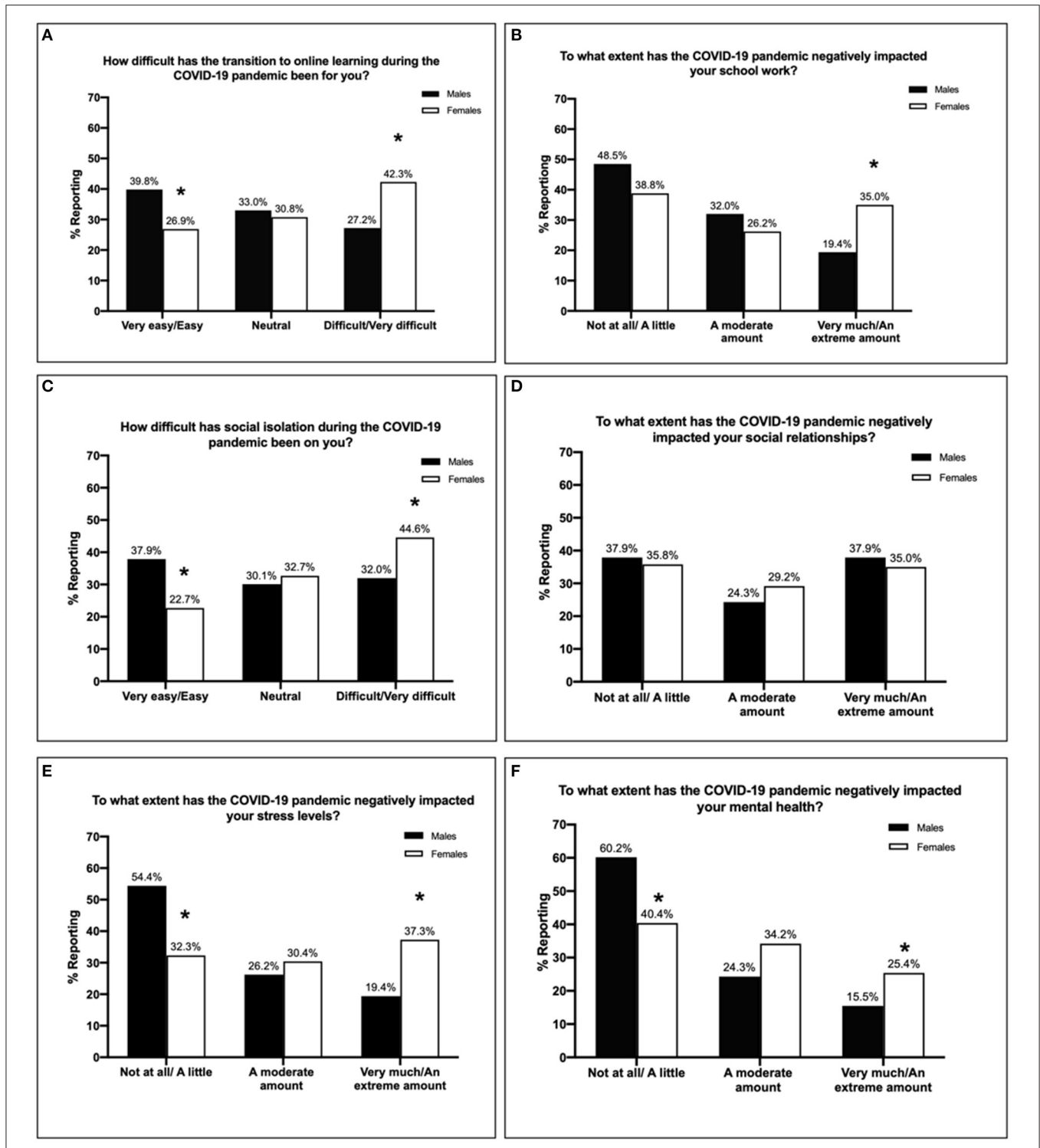
FIGURE 1 | The difficulty of the transition to online learning during the COVID-19 pandemic **(A)**, and the extent of negative impact of COVID-19 on schoolwork **(B)**, according to gender. The difficulty of social isolation during the COVID-19 pandemic **(C)** and the extent of the negative impact of COVID-19 on social relationships **(D)**, according to gender. The negative impacts of COVID-19 on stress **(E)** and mental health **(F)**, according to gender. *$p < 0.05$ relative to males within the same category.

reported a moderate negative impact and 36.3% ($n = 133$) reported little to no negative impacts. These negative impacts did not differ according to gender [$\chi^2_{(2, N=363)} = 0.91$, $p = 0.63$; **Figure 1D**].

The Impacts of the COVID-19 Pandemic on Stress and Mental Health

Of participants, 32.5% ($n = 119$) reported that COVID-19 negatively impacted their stress levels very much or an extreme amount, whereas 29.0% ($n = 106$) reported a moderate negative impact and 38.5% ($n = 141$) reported little to no negative impacts. As shown in **Figure 1E**, this differed significantly according to gender [$\chi^2_{(2, N=363)} = 17.08$, $p = 0.0002$]. Namely, females were more likely to report the negative impacts of COVID-19 on stress levels to be very much or an extreme amount compared to males ($p < 0.05$), whereas males were more likely to report the negative impacts to be not at all or a little compared to females ($p < 0.05$).

Of participants, 23.0% ($n = 84$) reported that COVID-19 negatively impacted their mental health very much or an extreme amount, whereas 31.1% ($n = 114$) reported a moderate negative impact and 45.9% ($n = 168$) reported little to no negative impacts. These negative impacts differed significantly according to gender [$\chi^2_{(2, N=363)} = 11.79$, $p = 0.003$]. Again, as shown in **Figure 1F**, females were more likely to report the extent of the negative impact on mental health to be very much or an extreme amount compared to males ($p < 0.05$). Once again, males were more likely to report that COVID-19 negatively impacted their mental health not at all or a little compared to females ($p < 0.05$).

Coping With the COVID-19 Pandemic

Tables 1, **2** reflect how often participants endorsed specific coping methods to deal with the stress of the COVID-19 pandemic. As shown in **Table 1**, the majority of participants reported connecting with friends/family members through Facetime, Zoom, Skype, etc. (60.4%), and using social media (79.2%) as a coping mechanism at least a moderate amount. However, gender differences were found in relation to using these video-chat platforms, [$\chi^2_{(2, N=363)} = 16.36$, $p = 0.0003$], and in relation to social media use, [$\chi^2_{(2, N=363)} = 14.86$, $p = 0.001$]. Specifically, females were more likely to report using online technologies/applications very much or an extreme amount to cope with the stress of the COVID-19 pandemic compared to males ($p < 0.05$; **Table 1**).

Overall, just under half of participants (48.1%) reported exercising to cope with COVID-19 at least a moderate amount (**Table 1**). This did not differ significantly by gender [$\chi^2_{(2, N=363)} = 1.32$, $p = 0.52$]. Approximately 60% of participants reported eating fast food/sweets at least a moderate to cope with COVID-19 (**Table 1**), which did differ by gender [$\chi^2_{(2, N=363)} = 12.59$, $p = 0.002$]. Specifically, females were more likely to report eating fast food/sweets very much or an extreme amount to cope with COVID-19 compared to males ($p < 0.05$; **Table 1**). Furthermore, when examining sleep, 75.9% reported sleeping at least a moderate amount to cope with COVID-19 (**Table 1**). This also differed according to gender [$\chi^2_{(2, N=363)} = 17.48$, $p = 0.0002$], in which females were more likely to report sleeping very much or an extreme amount to cope with COVID-19 compared to males ($p < 0.05$; **Table 1**).

Some participants reported using substances specifically to cope with the stress of the COVID-19 pandemic (**Table 2**). Overall, 9.3% reported vaping nicotine products, 23.8% reported drinking alcohol, and 17.5% reported using cannabis at least a moderate amount as a coping mechanism to deal with the stress of COVID-19 (**Table 2**). Neither vaping nicotine products [$\chi^2_{(2, N=363)} = 3.42$, $p = 0.18$], drinking alcohol [$\chi^2_{(2, N=363)} = 0.55$, $p = 0.76$], nor using cannabis [$\chi^2_{(2, N=363)} = 0.05$, $p = 0.98$], differed significantly by gender.

TABLE 1 | Percentage of coping methods endorsed to deal with the stress of the COVID-19 pandemic.

	Not at all/a little % (*n*)	A moderate amount % (*n*)	Very much/an extreme amount % (*n*)
Connecting with friends/family through videoconference (*n* = 366)	39.6 (*n* = 145)	29.8 (*n* = 109)	30.6 (*n* = 112)
Males (*n* = 103)	55.3 (*n* = 57)	25.2 (*n* = 26)	19.4 (*n* = 20)
Females (*n* = 260)	33.1 (*n* = 86)	31.5 (*n* = 82)	35.4 (*n* = 92)*
On social media (*n* = 366)	20.8 (*n* = 76)	30.3 (*n* = 111)	48.9 (*n* = 179)
Males (*n* = 103)	31.1 (*n* = 32)	35.0 (*n* = 36)	34.0 (*n* = 35)
Females (*n* = 260)	16.9 (*n* = 44)	28.1 (*n* = 73)	55.0 (*n* = 143)*
Exercising (*n* = 366)	51.9 (*n* = 190)	27.3 (*n* = 100)	20.8 (*n* = 76)
Males (*n* = 103)	51.5 (*n* = 53)	24.3 (*n* = 25)	24.3 (*n* = 25)
Females (*n* = 260)	51.5 (*n* = 134)	28.8 (*n* = 75)	19.6 (*n* = 51)
Sleeping (*n* = 366)	24.0 (*n* = 88)	35.2 (*n* = 129)	40.7 (*n* = 149)
Males (*n* = 103)	33.0 (*n* = 34)	43.7 (*n* = 45)	23.3 (*n* = 24)
Females (*n* = 260)	20.8 (*n* = 54)	32.3 (*n* = 84)	46.9 (*n* = 122)*
Eating fast food/sweets (*n* = 366)	40.7 (*n* = 149)	28.1 (*n* = 103)	31.1 (*n* = 114)
Males (*n* = 103)	51.5 (*n* = 53)	31.1 (*n* = 32)	17.5 (*n* = 18)
Females (*n* = 260)	36.9 (*n* = 96)	26.9 (*n* = 70)	36.2 (*n* = 94)*

*$p < 0.05$ relative to males within the same category.

TABLE 2 | Percentage of coping methods endorsed to deal with the stress of the COVID-19 pandemic.

	Not at all/a little % (n)	A moderate amount % (n)	Very much/an extreme amount % (n)
Vaping nicotine products (n = 366)	90.7 (n = 332)	4.1 (n = 15)	5.2 (n = 19)
Males (n = 103)	86.4 (n = 89)	6.8 (n = 7)	6.8 (n = 7)
Females (n = 260)	92.3 (n = 240)	3.1 (n = 8)	4.6 (n = 12)
Drinking alcohol (n = 366)	76.2 (n = 279)	15.6 (n = 57)	8.2 (n = 30)
Males (n = 103)	76.7 (n = 79)	16.5 (n = 17)	6.8 (n = 7)
Females (n = 260)	76.5 (n = 199)	14.6 (n = 38)	8.8 (n = 23)
Using cannabis (n = 366)	82.5 (n = 302)	6.6 (n = 24)	10.9 (n = 40)
Males (n = 103)	82.5 (n = 85)	6.8 (n = 7)	10.7 (n = 11)
Females (n = 260)	83.1 (n = 216)	6.2 (n = 16)	10.8 (n = 28)

Relationships Between COVID-19 Coping Strategies and Outcomes

It was also of interest to examine the relationship between the coping strategies employed to deal with the stress of COVID-19 and the negative impacts of COVID-19 on schoolwork, social relationships, stress levels and mental health according to gender. As shown in **Table 3**, increased sleeping and eating fast food/sweets to cope with COVID-19 was associated with greater negative impacts on schoolwork for both males and females (p's < 0.01). For females only, increased coping through social media use was also related to negative impacts on schoolwork ($p < 0.01$), an effect not found for males (**Table 3**). Whereas, for males, coping with COVID-19 by using cannabis was associated with more negative impacts on schoolwork ($p < 0.01$; **Table 3**). Upon examining the negative impacts of COVID-19 on social relationships, coping through the use of social media, sleeping, and eating fast food/sweets was associated with greater negative impacts on social relationships for both males and females (p's < 0.05).

With regards to negative impacts of COVID-19 on stress levels, coping mechanisms such as social media use, sleeping, and eating fast food/sweets were all associated with greater negative impacts on stress levels for both genders (p's < 0.05), although as seen in **Table 3**, the social media effect was stronger for females. While consuming alcohol was also significantly related to greater negative impacts on stress levels for both genders ($p < 0.05$), the effect was much stronger for males compared to females (**Table 3**). Moreover, using cannabis and vaping nicotine to cope were also related to greater negative impacts on stress levels, but for males only (p's < 0.01). Concerning negative impacts on mental health, coping mechanisms such as social media use, sleeping, eating fast food/sweets more frequently were related to greater negative impacts on mental health for both genders (p's < 0.05). When it came to coping through the use of substances, cannabis use and alcohol use were associated with negative impacts on mental health for both males (p's < 0.01) and females (p's < 0.05), however, these effects were stronger for males (**Table 3**). Additionally, for males only, coping through vaping nicotine more frequently was related to greater negative impacts on mental health. Moreover, as shown in **Table 3**, exercise was not related to any outcomes of interest.

DISCUSSION

The COVID-19 pandemic, including its associated social restrictions, has certainly been a challenging situation for many individuals. Yet, it has become clear that not everyone has been equally affected by the pandemic. Among several disproportionally affected populations, young and emerging adults are particularly struggling with the current pandemic circumstances. Emerging adulthood is already a transitional and stressful period, filled with instability owing to changes in education, living arrangements, and relationships [30]. This period corresponds to biological and developmental changes [31] and the onset of mental health disorders such as anxiety and depression [19]. Moreover, emerging adulthood coincides with beginning postsecondary education, such as university. To date, much less is known about how the continuously evolving COVID-19 pandemic has impacted post-secondary students. However, if this group is already encountering a number of stress and mental health difficulties, the stress of the pandemic might further exacerbate these concerns. To this end, the current study investigated the impact of the COVID-19 pandemic on post-secondary students' academic experience, social relationships, feelings of isolation, and mental health. In addition, we examined the extent to which students were using several types of coping strategies to deal with different aspects of the pandemic.

Interestingly, we found that across all outcomes measured, the magnitude of impact of the COVID-19 pandemic varied across students. Specifically, roughly one third of students reported that the pandemic, and accompanying challenges, had little-to-no impact on academic performance, stress and mental health, and about one third indicated that COVID-19 had a moderate impact on these outcomes. These findings are encouraging as they suggest that many post-secondary students have not been considerably impacted by the pandemic. However, about one third of students in the current study indicated that the COVID-19 pandemic has been very (or extremely) difficult. In fact, the present data indicate that the pandemic has been particularly difficult on female students, a finding that parallels observations made in the general population [3, 14].

Academic Outcomes

In response to the pandemic, many Universities abruptly suspended face-to-face learning in favor of online learning. This

TABLE 3 | Spearman correlations between coping strategies and the negative impacts of COVID-19 on school work, social relationships, stress levels and mental health.

	Video-conference	Social media	Sleeping	Exercise	Fast food /sweets	Cannabis use	Vaping nicotine	Alcohol use
Neg. impact on school work								
Overall (n = 366)	0.19**	0.25**	0.24**	−0.09	0.31**	0.11*	0.09	0.17**
Males (n = 103)	0.20*	0.17	0.29**	−0.06	0.29**	0.30**	0.17	0.19
Females (n = 260)	0.14*	0.25**	0.20**	−0.11	0.30**	0.06	0.08	0.17**
Neg. impact on social relationships								
Overall (n = 366)	0.03	0.20**	0.18**	−0.05	0.20**	0.04	−0.02	0.05
Males (n = 103)	−0.00	0.22*	0.21*	−0.03	0.23*	0.16	0.05	0.15
Females (n = 260)	0.05	0.19**	0.18**	−0.06	0.19**	−0.00	−0.05	0.02
Neg. impact on stress								
Overall (n = 366)	0.10	0.31**	0.22**	−0.04	0.35**	0.12*	0.15**	0.21**
Males (n = 103)	0.04	0.23*	0.27**	0.01	0.45**	0.26**	0.34**	0.41**
Females (n = 260)	0.07	0.30**	0.14*	−0.04	0.27**	0.06	0.10	0.14*
Neg. impact on mental health								
Overall (n = 366)	0.06	0.31**	0.20**	−0.10	0.33**	0.16**	0.10	0.20**
Males (n = 103)	−0.10	0.28**	0.21*	−0.04	0.41**	0.28**	0.29**	0.35**
Females (n = 260)	0.07	0.29**	0.15*	0.11	0.27**	0.13*	0.05	0.15*

*$p < 0.05$, **$p < 0.01$.

decision, while necessary, had the potential to lead to a variety of negative social, psychological, and academic consequences for post-secondary students (32). Indeed, our data reveal that more than one third of students in the current study reported that the transition to online learning was difficult or very difficult. Moreover, just under one third reported that the pandemic negatively impacted their schoolwork very much or an extreme amount. These data are in-line with recent reports that COVID-19 has had a substantial negative influence on the academic experiences of post-secondary students (24, 33). Specifically, students have reported that the experience of online learning has resulted in significantly higher levels of stress and isolation as well as negative mood, and significantly lower levels of relatedness, concentration, focus, motivation, and performance compared to traditional face-to-face learning (24). The current study also shows that female students were more likely than male students to report that the transition to on-line learning was difficult and that the COVID-19 pandemic has negatively impacted their schoolwork. Struggling academically may increase already elevated distress among the post-secondary population (34).

Social Isolation and Relationships

Many sectors of the general population have shown a rise in self-reported loneliness during the pandemic as a consequence of social distancing measures and quarantines (35). Interestingly, the increased feelings of loneliness are greatest among younger populations (5, 6). In the current study, 41.3% of the students reported that social isolation due to COVID-19 was difficult or very difficult, and this was further differentiated according to gender, such that more female students (44.6%) reported social isolation being difficult/very difficult compared to males (32.0%). This is consistent with emerging literature showing that young adult females have experienced greater changes in levels of loneliness (36), and that female students are more likely to

experience negative mental health consequences as a result of pandemic-induced changes in their social networks (16). This is of particular concern, based on previous reports that females tend to be more susceptible to the effects of loneliness on mental health (13, 37, 38). Moreover, while approximately one third of students in our study reported negative impacts of COVID-19 on their social relationships, this result did not differ by gender. It therefore appears that while female students are struggling with more feelings of isolation, both genders are equally struggling with their social relationships. This is perhaps not surprising, given the physical distancing measures and restrictions on social gatherings put in place by public health officials to mitigate the spread of COVID-19. However, these data are worrisome considering evidence that social support buffers against the negative effects of stressors (39).

Stress and Mental Health

In the current study, one third of participants (32.5%) reported that the pandemic negatively impacted their stress levels very much or an extreme amount, and 23% reported similar negative impacts on their mental health. These data were expected given that the COVID-19 pandemic has been accompanied by many factors known to increase stress and emotional distress (40, 41), such as isolation from friends and family, loss of employment and income, unfamiliar public health measures, and uncertainty about the future (42). In line with these data, high rates of negative mental health outcomes and emotional distress as a consequence of the pandemic have also been found in the general population (2, 43, 44). However, what is most interesting is that, once again, the negative mental health consequences of the pandemic have been especially pronounced among younger populations (4). Our data support these findings by demonstrating that a proportion of university students are experiencing increased pandemic-related stress and

mental health concerns. In addition, we found that the negative impacts of COVID-19 on stress levels and mental health were much more pronounced among female students (37.3 and 25.4%, respectively) compared to males (19.4 and 15.5%, respectively). While not specific to student populations, emerging literature similarly finds that young adult females demonstrate higher levels of depression, anxiety, and stress in the wake of COVID-19 (13, 14). Indeed, females more generally have experienced a greater elevation in levels of depression, emotional distress, and panic as a result of the pandemic (45).

Coping With the COVID-19 Pandemic

A large body of research indicates that individuals not only differ in how they respond to, or cope with stressful experiences, but that differences in coping play an important role in determining various mental and physical health outcomes (46, 47). Thus, the selection of coping methods to contend with the stressor can regulate emotional responses (48). In this respect, problem-oriented coping methods (e.g., problem-solving) tend to be associated with positive outcomes, whereas emotion-focused coping strategies, such as rumination, blame and avoidance are often linked to negative outcomes (e.g., symptoms of depression) (47). Moreover, social support, which can serve as both a problem- and emotion-focused coping strategy, has frequently been shown to buffer the effects of stress and promote positive mental health outcomes (49). In the present study, we found that the frequency in use of *connecting with friends/family through videoconference* to cope with the stress of the pandemic was variable - some students reported using this method of coping very frequently, whereas others said that they video conferenced only a little bit if at all. However, video conferencing was more commonly used among female students. Connecting through video conferencing was unrelated to the social, stress and mental health outcomes measured, which may suggest that connecting through this platform might not provide the same benefit as connecting in-person. While use of the internet is undoubtedly useful and often necessary for communication in this new online era, the relationship between social media use and overall well-being is complex (50). In the context of the pandemic, social media offers a wealth of information, so much so that the World Health Organization (WHO) developed the term "infodemic" to describe the overabundance of information available online (as well as offline), and argue that this infodemic and associated misinformation can be harmful to people's physical and psychological health (51). That said, social media can also work to maintain social networks and a sense of normalcy (52), which holds the potential to be beneficial in attempting to cope with the pandemic.

Social media use, as a method of coping with the pandemic was very common in the present study, especially among female students. To be sure, these data are in line with findings from a non-student sample where females were more likely to cope with the social isolation of COVID-19 through social media use than males (53). More importantly, however, we found that frequent use of social media was associated with a greater negative impact on schoolwork and perceived stress levels among females. In contrast, among all participants, frequent social media

use similarly related to negative mental health. Indeed, several recent reports link social media use to poorer mental health during the COVID-19 pandemic (9, 54, 55). The relationship between frequent, or excessive, social media use and poor mental health has been shown prior to the pandemic (56, 57). In this regard, excessive social media use and its impacts on mental and well-being, including risk of depression, anxiety and suicide, has been of concern for several years (50, 58, 59). However, most of the data on the topic has been correlational, making it difficult to attribute causality. On the one hand, for some individuals frequent social media use might lead to poor mental health. On the other hand, it is reasonable to think that some individuals who are experiencing depression and anxiety may be more likely to engage with social media, possibly as a method of support. Social media can have some beneficial purposes (60), including reducing stigma around mental health (61). In the context of the current COVID-19 pandemic, more research will be needed to determine whether different reasons for use of social media are predictive of different mental health outcomes.

In the present study, we found that increased frequency of sleep was generally associated with a greater negative impact on academic performance, social relationships, stress and mental health. Moreover, while students were typically sleeping more in response to the COVID-19 pandemic, this might not necessarily mean their sleep quality is good, as sleep disturbances have been reported during the pandemic (62, 63). Sleeping more often or for longer periods of time could also represent an avoidance style of coping, which has often been associated with poorer outcomes (64, 65). A notable proportion of post-secondary students in the current study also indicated that they were eating fast food and sweets to cope with the COVID-19 pandemic, and this was especially the case among female students. At first glance, this might seem like an odd or trivial observation. However, emotional eating, which is often characterized by the intake of high fat and high carbohydrate foods, is a common method of coping with stress, particularly among females, and is often associated with distress and psychopathology (66–68). In this respect, emotional eating reflects emotion-focused and avoidance coping (69), which have generally been viewed as ineffective coping strategies that often exacerbate stressful experiences over time (47). However, in this context, while females were more likely to use this method to cope, eating fast foods and sweets was linked to negative impacts on stress and mental health among both male and female students (**Table 3**).

When it came to using substances, 17.5% of participants reported endorsing substance use as a coping strategy to deal with the stress of the COVID-19 pandemic a moderate to extreme amount. While there were no gender differences in the frequency of using substances to cope with the pandemic, we did find an interesting relationship between coping with substances and academics. Specifically, coping through increased cannabis use was significantly related to greater negative impacts of COVID-19 on schoolwork among males, but not females. Furthermore, the negative impact of COVID-19 on stress and mental health was more strongly associated with increased coping through the use of cannabis, alcohol and vaping nicotine among males. Prior to the pandemic, studies had found that increased stress

was associated with substance use among students (70). In fact, initiation or increase in substance use to cope with COVID-19 related stress has been most commonly reported by individuals aged 18–24 years (71). The gender difference in the current study is a noteworthy distinction to make, considering earlier literature showing that male students more frequently report coping with stress through substance use than do females (20). Further, evidence indicates that male students report higher rates of cannabis use than do females (72–74), putting them at greater risk for the development of a cannabis use disorder (75), and/or adverse academic outcomes (76).

Limitations and Future Directions

There are some limitations that must be considered when interpreting the results of this study. The current study was comprised of self-report measures asking questions regarding the impacts of the COVID-19 pandemic. Thus, it is possible that current mood states could have impacted responses. To be sure, longitudinal assessments of COVID-19 are needed to examine the impacts of the COVID-19 pandemic, and how this changes over time. Additionally, it is worth nothing that our sample consisted of students who were enrolled in courses during the summer term. Students who are taking classes during COVID-19, and therefore eligible to participate research studies, may be those who are coping more effectively with the pandemic and experiencing less of a decline in well-being and/or have greater financial security. Nevertheless, we observed trends in our data that align with predictions from other studies related to mental health and coping among young adults, suggesting that our data may be representative of other university student populations. Finally, the current sample contained more female participants than males, and therefore some of the cells for our comparisons of coping strategies by gender were small. This was particularly apparent when assessing cannabis use and vaping by gender. For this reason, the current study could have benefited from a larger number of male participants.

Taken together, it is apparent that the COVID-19 pandemic is having a substantial impact on post-secondary students' academic experience, social relationships, and mental well-being. This is very problematic, as prior to the COVID-19 pandemic one in three university students had a mental health and/or substance use disorder (21), indicating that this is already an at-risk group. Female students in particular are reporting greater negative impacts and difficulties as a result of COVID-19. Related

to these negative impacts, females are more likely to cope with the pandemic through the use of social media, potentially because they are struggling more with social isolation. By contrast, male students who are coping through the use of substances are reporting greater negative impacts on academics, stress, and mental health. In sum, these results emphasize the urgency and importance of developing support systems to mitigate the extensive negative impacts of the COVID-19 pandemic on the student population, and the development of interventions and treatments that are specific to the gendered impacts of the pandemic on mental health and well-being. Addressing student well-being and developing systems to mitigate potential declines in well-being will continue to be essential as the pandemic evolves.

DATA AVAILABILITY STATEMENT

The datasets presented in this article are not readily available because these data were not approved to be shared outside of the research team. Requests to access the datasets should be directed to robynmcquaid@cunet.carleton.ca.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Carleton University Research Ethics Board. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

KH, RM, RG, ZP, and AA contributed to the inception and design of the current experiment. Data collection were performed by RP and FS. Data analysis were performed by RP, FS, RG, and RM. The writing and editing of the manuscript was performed by RP, FS, AA, RG, KH, ZP, and RM. All authors contributed to the article and approved the submitted version.

FUNDING

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Ontario's Universities: Sector Advocacy Narrative

Narrative Arc

Ontario's universities have a vital role to play in supporting the province and addressing the issues Ontarians care about most. Universities across the province will continue to play a critical role that helps drive a competitive economy by ensuring student success, developing a highly skilled workforce, partnering with business and industry, building sustainable community infrastructure and supporting a health-care system that is prepared for the challenges of today and tomorrow.

- **Supporting Student Success:** To help Ontario's students navigate social and economic change, Ontario's universities continue to adapt their programming, courses and services to meet student needs.

  - Ontario's universities are equipping students with an adaptable skillset – future-proofing students for a rapidly changing economy by providing them with the critical thinking, problem-solving and communication skills employers are increasingly looking for in new hires.

  - [The Ministry of Colleges and Universities' 2020 Graduate Survey](#) of 2018 graduates found graduates have an employment rate of 92.7% two years after graduation and 90.4% of graduates find full-time work that is either closely or somewhat related to the skills they developed at university.

  - In addition, universities are providing additional resources and wraparound student supports that will help prepare students for today and tomorrow, including work-integrated learning and inter-disciplinary learning opportunities, as well as student mental health supports and career counselling.

- **Driving a competitive economy:** A highly skilled workforce and ground-breaking innovation responds to the needs of the job market, drives innovative solutions to fuel the economy and attracts investment.

  - We know that Ontario is facing labour shortages in key sectors – over the next 10 years, the province will need more than 950,000 skilled trade and apprenticeship jobs, as well as a total of 928,700 jobs that require a university education (including more than 233,000 in STEM and nearly 148,000 in health care). These labour market projections are in addition to the critical gaps and unfilled positions that Ontario faces today.

  - Addressing shortages in the skilled trades and highly skilled workforce will be critical to key priority areas, such as housing, automotive and infrastructure investments, ensuring Ontario has the engineers, builders, computer scientists and more who will advance important industries.

  - Universities will continue to develop the highly skilled talent that will fill critical labour shortages, help advance high-growth sectors and attract investment.

- University research supports the well-being of Ontarians, directly impacts Ontarians' lives, maximizes opportunities for commercialization and helps solve pressing issues.

- University talent and research has helped position Ontario as a leader in fast-growing sectors, such as clean technology, cybersecurity, life sciences and artificial intelligence.

- **Supporting regional economic development:** Ontario's universities are helping fuel the local workforce and stimulate local economies through employment opportunities, innovation, infrastructure and spending activities.

  - Ontario's universities are often one of the top five employers in the region, collectively employing more than [138,600 Ontarians](#) and purchasing approximately $5 billion in local goods and services each year.

  - Building, maintaining and modernizing university infrastructure benefits local communities by creating jobs in construction, maintenance and more, and fueling associated supply chains.

  - University infrastructure benefits local communities, as it gives community members and small businesses access innovative facilities and hybrid learning spaces.

- **Rebuilding Ontario's health-care system:** A strong workforce and innovation in health care, life sciences and medical technologies will ensure Ontario has the resources it needs to prepare for future shocks within the health-care system.

  - Ontario's universities will continue to educate the health-care professionals who provide communities with high-quality care, while conducting research that will help Ontarians.

- **A transforming university sector:** As universities continue to innovate, transform and support students, communities and the province, investing in a high-quality university sector over the long-term will ensure they can continue to make their fullest contribution to a world that is rapidly changing.

  - Universities continue to demonstrate their ability to adapt and pivot programs and services to meet the needs of a changing student body and labour market, as well as to do more with less, adopting innovative ways to reduce red tape and streamline processes and operations that have resulted in significant cost-savings.

  - Universities also continue to modernize and adapt their course offerings to help mid-career workers find the opportunities they need to succeed, such as micro-credential, short-duration and continuing education programs.

Successful students, leading-edge innovation and strong community partnerships are vital for a strong Ontario. By working together, we can continue to ensure Ontario has the highly skilled workforce it needs, as well as the ground-breaking research to fuel social and economic growth in order to build a stronger Ontario and a brighter future for all who live here.

Supporting Materials

- **Flagship Report:** Partnering to Drive Ontario's Recovery through Talent and Innovation

- **Accompanying Key Issue Notes and Facts:**

    o Supporting a Globally Competitive Economy

    o Developing Job-Ready Graduates

    o Driving Regional Economic Development

    o Rebuilding a World-Class Health-Care System

    o Creating Solutions to Ontario's Challenges

- **Supplementary Report:** Partnering to Develop a Highly Skilled Workforce

- **Accompanying Workforce Landing Page:**

    o How Ontario's Universities are Building a Highly Skilled Workforce

- **Data:** By the Numbers