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Student perceptions of academic misconduct amongst their peers during the rapid transition to remote instruction

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Abstract

The sudden move from traditional face-to-face teaching and learning to unfamiliar virtual spaces during the early weeks and months of the COVID-19 pandemic demanded many members of educational communities around the world to be flexible and teach and learn outside of their comfort zones. The abruptness of this transition contributed to instructors' concerns about academic cheating as they could no longer assess learning and monitor student progress using their usual strategies and methods. Students also experienced disruptions to their usual ways of learning, which may have contributed to poor decision-making, including engagement in academic misconduct. The present study examined students' beliefs about increased engagement in academic misconduct by their peers during the rapid obligatory transition to remote instruction due to the COVID-19 pandemic in March 2020. In January 2021, a retrospective online survey was distributed to students in undergraduate courses. We focused our analyses of the responses from students at a single university in Canada. We found that beliefs of increased cheating depended upon student gender (men vs women), status (domestic vs international), year of study (Years 1/2 vs Years 3+), and discipline (Science, Technology, Engineering, and Mathematics vs Social Sciences and Humanities). These are important findings as they provide insight into the nature of the culture of academic integrity during a stressful and confusing period in postsecondary students' lives.

Keywords: Academic integrity, Academic dishonesty, Contract cheating, COVID-19, Emergency remote teaching, Outsourcing behaviours, Perceptions of cheating, Rapid transition

In March 2020, the COVID-19 pandemic required administration, faculty, staff, and students at many postsecondary institutions around the world to shift quickly from their traditional campus-based delivery of education to remote teaching and learning to comply with lockdown orders (UNESCO 2020). The speed of this transition left many instructors ill-prepared to adapt and administer the final components of courses that were in progress at the time. Because of the tight time-constraints (less than one week in many cases) and lack of knowledge and skills to deliver effective online course content and assessments, many instructors transferred their campus-based teaching



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and assessment methods to the digital environment with limited success (Iglesias-Pradas et al. 2022). Instructors also felt disconnected from their students (Moorhouse & Kohnke 2021) and could not monitor them directly in online learning environments leading to feeling uncertain about evaluating learning accurately (Jelińska & Paradowski 2021; Reedy et al. 2021) and fear that cheating would increase (Al Shlowiy et al. 2021; Chierichetti & Backer 2021). Fears of increased academic misconduct may have been partially justified as students have reported a greater likelihood of engaging in academic misconduct in online courses than in traditional in-person courses (Studiocity Canada & Angus Reid 2022; Watson & Sottile 2010). The purpose of the present study was to examine students' beliefs about increased engagement in academic cheating by their peers during the rapid transition to remote instruction. Students' beliefs about cheating norms are important because these beliefs can influence their decisions to cheat in the future and can help us understand the culture of academic cheating within postsecondary institutions (Awdry & Ives 2021, 2022; Lindstrom 2022; McCabe et al. 2002; Stone et al. 2009).

Literature review

Social distancing and other regulations to prevent the spread of COVID-19 resulted in required rapid transition from face-to-face delivery of most courses to remote teaching and learning at many higher educational institutions around the world (UNESCO 2020). This abrupt shift to remote and online instruction created numerous challenges and concerns for administrators, instructors, and students. For example, instructors were required to learn and adopt new technologies for online education quickly to stay connected with students and encourage them to continue to engage in learning activities and assessments (Zizka & Probst 2022). Instructors were also anxious about accurately assessing their students' learning remotely (Balderas & Caballero-Hernández 2020; Chierichetti & Backer 2021) due to perceived inadequacies of traditional assessment methods modified for the reality of remote teaching. As a result of these choices, course quality may have diminished inadvertently in this time of remote instruction (Hodges et al. 2020). These issues, among others, led to heightened worries that students would deviate from the values of academic integrity, be less committed to their learning, and cheat more when studying remotely than when attending classes on campuses (Al Shlowiy et al. 2021; Amzalag et al. 2022; Chierichetti & Backer 2021).

Evidence from studies examining how the internet was used during the early stages of the pandemic suggest that instructors were somewhat justified in their concerns about increases in academic cheating. Comas-Forgas et al. (2021) examined five years (2016 – 2020) of search engine activity in Spain, which revealed an increase in the use of keywords related to exam cheating over time. Inspection of the monthly trends in 2020 showed a rise in the use of keywords associated with engagement in cheating behaviours in March and April and then a spike in December 2020 that aligned with the rapid transition to remote instruction and with another wave of the pandemic, respectively. Another way to examine student engagement in contract cheating is to analyze questions posted to homework help sections of academic file-sharing sites. These homework help sections allow users to seek answers to academic work quickly, but (unfortunately) have been used to participate in contract cheating (Adam 2021; Lancaster & Cotarlan

2021) or the outsourcing of academic work to third parties (Clarke & Lancaster 2006). Lancaster and Cotarlan (2021) analyzed the questions (related to five science, technology, engineering, and mathematics [STEM] fields) posted to these homework help sections during a 2-year period that included the rapid transition to remote instruction. The researchers discovered that the average number of questions posted per day between April and August 2020 increased 196% from the previous year, whereas the year-over-year increase during September 2019 to March 2020 was only 12.7%. Thus, it appears that STEM students were seeking academic supports outside of their postsecondary institutions during the early weeks and months of the COVID-19 pandemic. Unfortunately, Lancaster and Cotarlan were unable to examine these data by postsecondary institution or even country of origin, doing so may have provided some insight in the culture of academic integrity in specific universities or colleges, and jurisdictions.

Analyzing internet search term and academic file-sharing site use, however, provides indirect evidence of increased cheating. More direct evidence of increases in cheating rates during the pandemic has come from studies asking students about their involvement in various forms of academic misconduct. Jenkins et al. (2022), for example, surveyed 214 psychology students at a large Southeastern university in the United States (US). Analysis of responses to questions about cheating revealed that the COVID-19 pandemic was associated with a large proportion of first-time cheating (46%), and with deliberate acts to circumvent instructors' attempts to prevent academic misconduct (e.g., using software, taping notes to computer screens, using a second device, calling friends). Using a process mining tool to determine the likelihood of cheating based on exam start time, time of completion, grade, and class, Balderas and Caballero-Hernández (2020) found evidence of increased cheating in a computer science course in a university in Spain during the pandemic. In a recent non-peer reviewed report, Studicity Canada and Angus Reid (2022) stated that 58% of 1,014 postsecondary students in Canada surveyed, witnessed peers cheating on assessments during the past year; this percentage varied by discipline, age group, and domestic or international student status. Moreover, 28% of students reported that they would cheat if they knew that other students cheated; this percentage also varied by a number of student demographic variables. More students in full-time studies (30%), full-time employment (34%), and enrollment in accounting and finance (34%), life sciences and medicine (32%), and business and management (28%) programs indicated that they would cheat if others cheated. Taken together, these research studies and reports provide evidence of increased cheating in the context of remote teaching and learning during the pandemic.

Individual difference factors, such as being male, having low grades (Bertram Gallant et al. 2015; Chow et al. 2021), participation in extracurricular activities, perceived pressure to succeed, and age (McCabe & Trevino 1997) have been found to be correlated with academic cheating. Greater engagement in academic misconduct is also observed when students observe their peers' cheating behaviours (McCabe & Trevino 1997), which may give the impression that everyone cheats, and this is normal and acceptable. Another risk factor for engaging in academic misconduct is studying in a language that is different from one's first language, which impacts international students disproportionately (Bertram Gallant et al. 2015; Bretag et al. 2019) and may be related to differing understandings of academic integrity and misconduct (Sanni-Anibire et al. 2021) than

domestic students. Students in the online learning environment have also admitted to cheating more than those in face-to face-classes of the same course, but did not consider such acts (e.g., inappropriate collaboration, receiving or sending test questions and looking up information on the internet during a test) as cheating or considered them trivial (Burgason et al. 2019). Cheating in online courses may be due to the decreased motivation (Daniels et al. 2021) and heightened anxiety (Eshet et al. 2021) associated with learning course content in an environment where instructors are often perceived as being more distant (both physically and socially) from their students due to interactions via technology rather than in-person (Zizka & Probst 2022). Increased cheating has been linked to a greater sense of anonymity in online courses and courses with larger numbers of students (Daniels et al. 2021).

The present study

The purpose of the present study was to examine students' beliefs about increased engagement in academic cheating, particularly outsourcing behaviours, by their peers during the rapid transition to remote instruction, as an indicator of the culture of integrity at University of Manitoba. Outsourcing academic assessments to third parties (often to commercial entities) for completion and then submitting them as one's own is a serious concern in higher education. Outsourcing behaviours fall on a continuum ranging from sharing notes to exam impersonation (Bretag et al. 2018). Obtaining another's notes (which is becoming increasingly common through subscription-based websites) is problematic because students begin to "view notes and textual summaries as products, rather than artefacts of engagement in a learning process" (Bretag et al. 2018, p. 2). We collected data using a retrospective online survey and asked students to rate their level of belief that others were more engaged in outsourcing behaviour at the start of the pandemic.

An online survey approach that gathered information about students' beliefs about cheating norms (rather than asking students about their own cheating behaviours) was used to mitigate the impact of social desirability bias. The collection of subjective cheating norms can also help us to understand the *culture* of academic cheating within post-secondary institutions (Awdry & Ives 2021, 2022; Lindstrom 2022; McCabe et al. 2002; Stone et al. 2009). Subjective norms can influence students' decisions to cheat in the future, regardless of whether or not there are clear institutional policies (Smyth & Davis, 2003) or student honour codes (McCabe et al. 2002) prohibiting such behaviour. Given the individual difference factors associated with academic cheating as described above, we also investigated whether student demographic variables (i.e., gender, year of study, discipline of study, or domestic/international student status) were associated with differences in beliefs about increased engagement in academic cheating by classmates during the early months of the pandemic.

Method

Study context

The present study was part of a multi-institutional, multi-national, mixed-methods project (conceived of in March and April 2020) designed to investigate how students, instructors, and other staff perceived the rapid transition to remote instruction during

the early months of the COVID-19 crisis (Bartolic et al. 2021; Bartolic & Guppy 2021). The first author of the present study (who was not part of the larger research team) was invited at a later time to add survey questions in their area of expertise, namely academic integrity and academic misconduct. Administrators, and instructors and their undergraduate students taking courses in five broad discipline areas (i.e., engineering/applied science, chemistry/natural science, history/humanities, political science, and psychology/social sciences) from nine postsecondary institutions around the world were invited to be interviewed or complete an online survey. Each institution shared their data with the principal investigators (located at one of the nine institutions) but retained the right to store and analyze data collected at their institution, and publish findings independently. This paper describes the results of our analysis of information collected from students at University of Manitoba.

Study setting

University of Manitoba is the largest research-intensive university in the province of Manitoba, Canada, with over 30,000 undergraduate and graduate students (~20% of whom identify as international students) and over 9,000 academic and support staff. Before and during the initial stages of the COVID-19 pandemic, faculty members and sessional instructors at University of Manitoba raised concerns to university administration, support staff, and the teaching and learning centre staff about students' unpermitted use of academic file-sharing and tutoring services (e.g., Chegg) and how this use serves as a gateway to contract cheating (see also Lancaster & Cotarlan 2021; Jenkins et al. 2022; Seeland et al. 2020). University of Manitoba has promoted academic integrity actively for over 10 years by hiring staff dedicated to supporting administrators, faculty members, and students to teach and learn with integrity by developing resources, delivering professional development workshops, creating promoting campaigns, and creating collaborative networks within and beyond University of Manitoba, among other activities (Gervais 2018; Stoesz et al. 2020). Despite these efforts, the transition to remote instruction seemed to coincide with a rise in cheating overall (e.g., 3.0% to 4.3% of total population of undergraduate students; Hann 2020).

Participants

Undergraduate students enrolled in 81 first, second, third, and fourth year Winter 2020 (January to April) academic term courses at the University of Manitoba were selected to receive the invitation (sent in January 2021) to participate in the present study. The invitation email asked students to share their views on the experiences they had during the rapid transition to remote instruction that began on March 16, 2020.

Study measure

The full 50-min survey for the project covered several topics, including perceptions of the teaching and learning environment, using learning management systems, and changes in course requirements, and demographic/student characteristic variables. The order of the questions in the full survey were held constant. For the present study, we analyzed the responses to a subset of 14 questions, including student characteristics (e.g., age, gender, international or domestic status, year of study), the course

that students were asked to keep in mind when completing the survey (i.e., courses in chemistry, engineering, history, political science, or psychology), and their beliefs about whether academic misconduct occurred more during the rapid transition to remote instruction than before the pandemic.

Early in the survey, students were asked to respond to two statements regarding their beliefs about their instructors’ concerns about academic cheating and other students’ engagement in academic misconduct. Later in the survey, students were asked to rate the strength of their beliefs about *increases in outsourcing behaviors* during the rapid transition to remote instruction than before the pandemic. These outsourcing behaviours, listed in Fig. 1, fall on a spectrum ranging from sharing behaviours (two statements about buying, selling, or trading notes, and sharing assignments) to indisputable cheating behaviours (five statements) (after Bretag et al. 2018). Students responded to all nine statements on a 7-point Likert-type scale ranging from 1 = *Strongly disagree* to 7 = *Strongly agree*. Instructions and statements were presented in the following way: “Please indicate your level of agreement with the following statements about the transition to remote instruction during the Spring 2020 semester on a scale of 1 to 7, with 1 being *strongly disagree* and 7 being *strongly agree*. Compared with the first part of the term/semester, after courses transitioned to remote instruction: I believe that other students were buying, selling, or trading notes more often.”

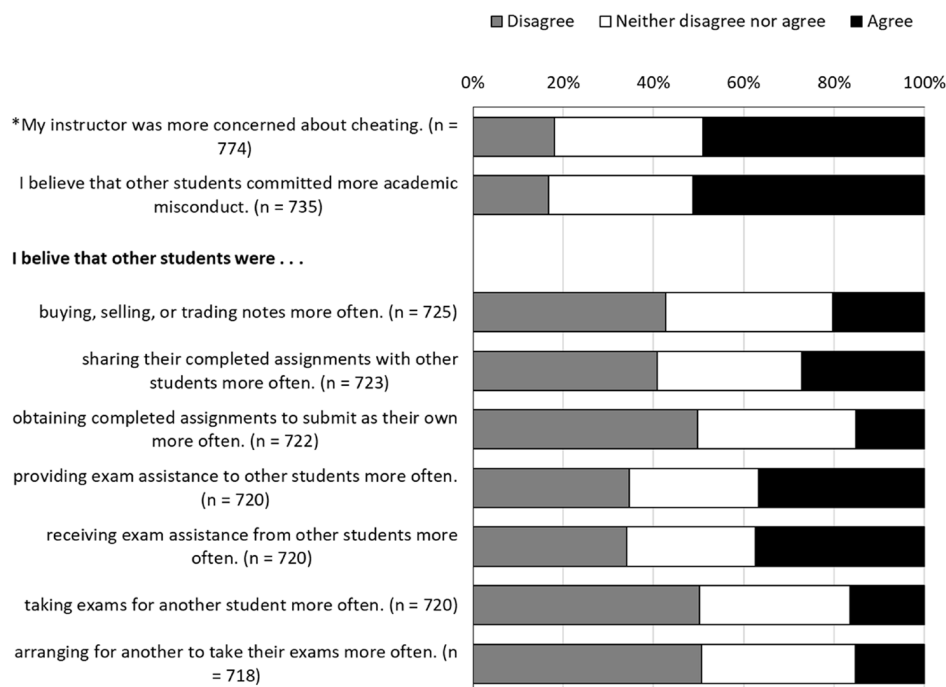


Fig. 1 Frequencies of responses to items assessing beliefs about increases in academic misconduct during the rapid transition to remote instruction. Note. This figure illustrates the proportions of respondents who disagreed, agreed, or neither agreed/disagreed that their peers engaged in more academic misconduct during the rapid transition to remote instruction. Responses of strongly, moderately, and somewhat agree or disagree were combined into single Agree or Disagree categories. *Item responses were reverse coded

Procedure

Nearly one year after the rapid transition to remote instruction (i.e., January 2021), an email invitation to respond to questions in a retrospective online survey (created and made available via Qualtrics, Provo, UT) was distributed to 5,276 students. Data was collected anonymously from January 28 to April 13, 2021. Names of students who consented to participate were entered into a draw to win one of four \$400 electronic gift cards for Amazon.ca. This study protocol was approved by the University of Manitoba Research Ethics Board in June 2020.

Data cleaning and analysis

Survey data file containing 1,461 records was downloaded from Qualtrics and cleaned and analyzed using the Statistical Package for Social Sciences (SPSS), Version 27 for Windows (IBM Corp, Armonk, NY). Data was cleaned in a stepwise manner. First, records that were coded in Qualtrics as previews and spam were removed ($n = 74$) and without an indication of consent were deleted ($n = 6$). Second, only the variables of interest for the present study were retained (i.e., demographic and academic misconduct variables) for analysis and all other variables were deleted. Records in which participants failed to respond to at least one of the academic misconduct questions were deleted from the dataset ($n = 532$). We suspect that the length of the full survey contributed to a significant drop in the number of students who responded to the questions analyzed in the present study. Lastly, records with duplicate IP addresses were flagged and course and gender responses were compared (as per Teitcher et al. 2015); records were retained if the data differed. For records with the same IP addresses, course, and gender data, only the first attempt at survey completion was retained and all other records were deleted ($n = 69$). After completing these data cleaning steps, the data file contained 780 records for analysis. Thus, response rate was about 14.9%, similar to previous research on academic misconduct during the pandemic (Ferguson et al. 2021). Variables were primarily nominal or ordinal and did not meet normality assumptions. Chi-square and Fisher exact test were used to analyze categorical variables. A p -value of less than 0.05 was considered statistically significant.

Results

Demographic characteristics

On average, participants in our sample were 20.8 years of age ($SD = 3.7$, $Range = 16$ – 52 years). The majority of respondents identified as women and as domestic students. About 55% of respondents indicated that they were in their first or second year of university. When completing the survey, 58% and 42% of respondents were asked to keep in mind a particular course in STEM or Social Sciences and Humanities (SSH) course (respectively) that they were enrolled in during the rapid transition to remote instruction. See Table 1.

Beliefs about increases in academic misconduct

Approximately half of the respondents believed that their instructors were more concerned with cheating (49.1%; $Mdn = 4$, $Range = 1$ – 7) and their peers committed

Table 1 Participant characteristics ($N = 780$)

Variables	Frequency	Percent ^a
Gender ($n = 718$)		
Woman	455	63.4
Man	244	34.0
Non-binary, Not listed, and Prefer not to answer	19	2.6
Student status ($n = 718$)		
Domestic	645	89.8
International	73	10.2
Year of study ($n = 716$)		
Year 1 and 2	398	55.6
Year 3 +	318	44.4
Discipline ($n = 786$)		
Science, Technology, Engineering, and Mathematics (STEM)	456	58.0
Social Sciences and Humanities (SSH)	330	42.0

^a Percent calculated based on the actual responses for each variable as the denominator

more academic misconduct (51.2%; $Mdn = 5$, $Range = 1 - 7$) during the transition to remote learning. A lower proportion of students, however, agreed that specific acts of outsourcing behaviour increased during this time. For example, only about one fifth and one quarter of students believed that 'buying, trading or selling notes' (20.3%) and 'sharing completed assignments' (27.2%), respectively, increased during this period. When asked about their beliefs about increases in providing or receiving exam assistance, 36.7% and 37.5% of students, respectively, agreed that these outsourcing behaviours increased. See Fig. 1.

Next, we calculated the number of outsourcing behaviors that respondents believed increased during the transition to remote instruction by coding responses of *Somewhat agree*, *Agree*, and *Strongly agree* as one, and all other responses as zero. These codes were then summed to produce a total outsourcing score ranging from 0 (*no outsourcing behaviours increased*) to 7 (*outsourcing behaviors in all categories increased*). About half of participants (50.2%) believed that at least one type of cheating behaviour increased during the transition to remote instruction. The correlation between strength in agreement about increases in academic misconduct in general and number of specific behaviours believed to have increased was significant [$r(713) = 0.57$, $p < 0.001$].

Perceived increases in academic misconduct by student characteristic

We examined whether student perceptions of academic misconduct were impacted by gender, domestic/international student status, year of study, or discipline (see Table 2). Compared to their international counterparts, domestic students were 1.63 times more likely to have the overall belief that peers were engaging in more academic misconduct during the transition, and 0.78 times less likely to agree that their instructors were more concerned about cheating. Compared to Year 3+ students, Year 1 and 2 students were 1.22 times more likely to agree that 'other students committed more academic misconduct' and to report an increase of at least one outsourcing behavior. STEM students were 1.33 and 1.31 times more likely than those in SSH to agree that their peers engaged

Table 2 Beliefs about increases in academic misconduct and instructor concerns about cheating by gender, student status, year of study, and discipline

Variable	Overall belief that academic misconduct increased		Outsourcing behaviors increased		Instructors more concerned about cheating	
	Agree	Neutral/disagree	≥ 1 behaviour	None	Agree	Neutral/disagree
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Gender						
Men	121 (50.2)	120 (49.8)	128 (52.7)	115 (47.3)	97 (39.9)	146 (60.1)
Women	239 (52.6)	215 (47.4)	222 (48.9)	232 (51.1)	244 (53.6)	211 (46.4)
<i>RR</i> (95%CI)	.95 (.82, 1.11)		1.08 (.93, 1.25)		.74 (.62, .89)	
<i>p</i>	.58		0.38		.001	
Status						
Domestic	345 (53.6)	299 (46.4)	325 (50.4)	320 (49.6)	306 (47.4)	339 (52.6)
International	23 (32.9)	47 (67.1)	33 (46.5)	38 (53.5)	44 (61.1)	28 (38.9)
<i>RR</i> (95%CI)	1.63 (1.16, 2.30)		1.08 (.84, 1.41)		.78 (.64, .95)	
<i>p</i>	0.001		0.62		0.03	
Year of study						
Year 1 and 2	221 (55.9)	174 (44.1)	216 (54.5)	180 (45.5)	207 (52.0)	191 (48.0)
Year 3 +	146 (46.1)	171 (53.9)	142 (44.7)	176 (55.3)	143 (45.1)	174 (54.9)
<i>RR</i> (95%CI)	1.22 (1.05, 1.41)		1.22 (1.05, 1.42)		1.15 (.99, 1.35)	
<i>p</i>	0.01		0.01		0.07	
Discipline						
STEM	247 (57.2)	185 (42.8)	237 (55.6)	189 (44.4)	225 (50.6)	220 (49.4)
SSH	130 (42.9)	173 (57.1)	127 (42.5)	172 (57.5)	155 (47.1)	174 (52.9)
<i>RR</i> (95%CI)	1.33 (1.14, 1.55)		1.31 (1.12, 1.53)		1.07 (.93, 1.24)	
<i>p</i>	< .001		0.001		0.35	

STEM Science, Technology, Engineering, and Mathematics, SSH Social Sciences and Humanities

Table 3 Multiple regression model predicting beliefs about increases in outsourcing behaviours during the rapid transition to remote instruction

	<i>b</i> (95% CI)	<i>SE B</i>	<i>β</i>	<i>p</i>
Constant	3.55 (3.37, 7.73)	.09		< .001
Year 1 and 2 vs Year 3 +	-.28 (-.48, -.07)	.11	-.10	.008
Domestic vs International	.40 (.06, .74)	.17	.08	.02
Stem vs SSH	-.18 (-.39, .03)	.11	-.06	.10
Woman vs Man	.15 (-.07, .36)	.11	.05	.18

in more academic misconduct after the transition to remote learning and to report at least one outsourcing behavior occurred more frequently, respectively.

Regression

The multiple regression model predicting the belief that outsourcing behaviour increased during the rapid transition to remote instruction (average belief rating across seven outsourcing items), as displayed in Table 3, was significant, $F(4, 681) = 4.50, p = 0.001$, accounting for 2.6% of the variation. Two predictor variables, Year of Study and Student

Status, were associated with the belief that outsourcing behaviours increased from before to during the transition to remote instruction. According to this analysis, students in Year 1 and 2 (vs Year 3+) and international (vs. domestic) students believed more strongly, on average, that outsourcing behaviours increased during the transition from in-person teaching and learning to remote instruction during the first month of the pandemic. These results need to be interpreted with caution, however, as visual inspection of the histogram and P-P Plot of standardized residuals suggested non-normality.

Perceived increases in specific outsourcing behaviors by student characteristic

As shown in Table 4, men were 1.48 times more likely than women to agree that peers shared completed assignments more during the transition to remote instruction. As a group, domestic students were 0.51 times less likely than international students to agree that peers obtained completed assignments to submit more often. Year 1 and 2 students were more likely than Year 3+ students to agree that five (of seven) outsourcing behaviours occurred more during the transition to remote learning. Four of these behaviours involved exams, which is often considered an egregious form of academic misconduct in postsecondary studies. Similarly, STEM students were more likely than SSH students to agree that four outsourcing behaviors (including sharing/obtaining completed assignments and providing/receiving exam assistance) occurred more often during the transition to remote instruction.

Discussion

During the early stages of the pandemic, the sudden move from the traditional face-to-face teaching and learning environment to unfamiliar virtual spaces demanded many members of the educational community to be flexible and teach and learn outside of their comfort zones. Students, in particular, experienced disruptions to their usual ways of learning, resulting in discomfort and increased stress (Ferguson et al. 2021; Jenkins et al. 2022). This increased stress may have contributed to poor decision-making and engagement in academic misconduct that was observed directly or indirectly by others. The primary goal of the present study was to determine whether students believed that their peers engaged in more contract cheating behaviours during the rapid transition to remote instruction, as the measurement of beliefs can serve as an indicator of the culture of academic integrity (or cheating) within a postsecondary institution—in our case, the culture of University of Manitoba. Approximately half of the respondents believed that their peers were involved in more acts of academic misconduct during the early part of the global pandemic and that their instructors were more concerned about cheating than before the pandemic. We also found that students who identified as men, international students, or were studying in their first or second year or in STEM fields were more likely to report that their peers were engaging in more sharing and cheating acts during the transition to remote instruction. We discuss these findings in detail below.

About half of the respondents believed that their instructors were more concerned with cheating and their peers committed more academic misconduct during the rapid transition to remote learning. Half of the respondents also believed that at least one outsourcing behaviour listed in our survey increased during the transition to remote instruction. These findings are consistent with publicly available academic misconduct

Table 4 Beliefs about increases in outsourcing behaviors during the rapid transition to remote instruction to remote instruction by gender, student status, years of study and discipline

Variable	Buying, selling, or trading notes		Sharing completed assignments		Obtaining completed assignments to submit		Providing exam assistance		Receiving exam assistance		Taking exams for another student		Arranging for another to take their exams	
	Agree n (%)	Neutral/ disagree n (%)	Agree n (%)	Neutral/ disagree n (%)	Agree n (%)	Neutral/ disagree n (%)	Agree n (%)	Neutral/ disagree n (%)	Agree n (%)	Neutral/ disagree n (%)	Agree n (%)	Neutral/ disagree n (%)	Agree n (%)	Neutral/ disagree n (%)
Gender														
Men	53 (21.8)	190 (78.2)	83 (34.3)	159 (65.7)	44 (18.2)	198 (81.8)	90 (37.3)	151 (62.7)	92 (38.3)	148 (61.7)	38 (15.8)	203 (84.2)	38 (15.8)	202 (84.2)
Women	86 (18.9)	368 (81.1)	105 (23.2)	348 (76.8)	61 (13.5)	391 (86.5)	164 (36.4)	287 (63.6)	167 (36.9)	285 (63.1)	75 (16.6)	376 (83.4)	67 (14.9)	383 (85.1)
RR (95% CI)	1.15 (85, 1.56)		1.48 (1.16, 1.89)		1.35 (95, 1.92)		1.03 (84, 1.26)		1.04 (85, 1.27)		95 (66, 1.36)		1.06 (.74, 1.53)	
p	0.372		0.002		0.119		0.804		0.742		0.829		0.740	
Student status														
Domestic	129 (20.0)	516 (80.0)	170 (26.4)	473 (73.6)	88 (13.7)	554 (86.3)	236 (36.9)	404 (63.1)	242 (37.8)	398 (62.2)	102 (15.9)	538 (84.1)	95 (14.9)	544 (85.1)
International	14 (19.7)	57 (80.3)	21 (29.6)	50 (70.4)	19 (26.8)	52 (73.2)	23 (32.4)	48 (67.6)	23 (32.4)	48 (67.6)	14 (19.7)	57 (80.3)	12 (17.1)	58 (82.9)
RR (95% CI)	1.01 (62, 1.66)		.89 (61, 1.31)		.51 (.33, .79)		1.14 (80, 1.62)		1.17 (82, 1.66)		81 (49, 1.34)		.87 (50, 1.50)	
p	1.000		0.574		0.008		0.517		0.438		0.400		0.599	
Year of study														
Year 1 and 2	86 (21.7)	310 (78.3)	119 (30.2)	275 (69.8)	67 (17.0)	327 (83.0)	159 (40.5)	234 (59.5)	162 (41.2)	231 (58.8)	78 (19.8)	315 (80.2)	69 (17.6)	324 (82.4)
Year 3 +	57 (17.9)	261 (82.1)	72 (22.6)	246 (77.4)	40 (12.6)	277 (87.4)	100 (31.6)	216 (68.4)	103 (32.6)	213 (67.4)	38 (12.0)	278 (88.0)	38 (12.1)	276 (87.9)
RR (95% CI)	1.21 (90, 1.64)		1.33 (1.04, 1.72)		1.35 (94, 1.94)		1.28 (1.05, 1.56)		1.27 (1.04, 1.54)		1.65 (1.15, 2.36)		1.45 (1.01, 2.09)	
p	0.222		0.027		0.114		0.019		0.019		0.006		0.045	
Discipline														
STEM	94 (22.1)	332 (77.9)	138 (32.5)	287 (67.5)	76 (17.9)	348 (82.1)	170 (40.2)	253 (59.8)	173 (41.0)	249 (59.0)	78 (18.5)	344 (81.5)	73 (17.3)	348 (82.7)
SSH	53 (17.7)	246 (82.3)	58 (19.5)	240 (80.5)	33 (11.1)	265 (88.9)	94 (31.6)	203 (68.4)	97 (32.6)	201 (67.4)	41 (13.8)	257 (86.2)	37 (12.5)	260 (87.5)
RR (95% CI)	1.25 (92, 1.68)		1.67 (1.28, 2.18)		1.62 (1.11, 2.37)		1.27 (1.04, 1.56)		1.26 (1.03, 1.54)		1.34 (.95, 1.90)		1.39 (.97, 2.01)	
p	0.160		<0.001		0.011		0.023		0.023		0.103		0.075	

STEM Science, Technology, Engineering, and Mathematics, SSH Social Sciences and Humanities

reports published by universities (e.g., Hann 2020; Ohio State University n.d.; Stewart 2021; University of British Columbia, n.d.). For example, during the 2019–2020 academic year at the University of Manitoba, incidents of cheating that were formally identified and proceeded through university procedures increased 43.3% from the 2018–2019 academic year (Hann 2020). Although findings presented in university academic misconduct reports and those from the present study do not speak to the underlying causes of increased academic cheating cases over time, it seems likely that the increase stems from instructors' vigilance in detecting and formal reporting of misconduct (Al Shlowiy et al. 2021; Chierichetti & Backer 2021), and students finding it difficult to obtain adequate academic support during the pandemic (Studiocity Canada & Angus Reid 2022; Studiocity & Angus Reid 2021).

We found that men were more likely than women to perceive an increase in the sharing of completed assignments during the rapid transition to remote instruction. However, there were no significant gender differences in perceptions of increases in other types of academic misconduct that we surveyed. Although sharing assignments and other educational materials are not necessarily acts of academic misconduct, those who do so are more likely to use file-sharing websites and professional cheating services, and to pay to use these services (Bretag et al. 2018). Much of the previous research on sex (or gender) differences in academic cheating has found evidence that males are more accepting of academic cheating (Chow et al. 2021), and are at greater risk for engaging in academic misconduct, particularly plagiarism, than their female counterparts (Burgason et al. 2019; Chow et al. 2021; Kelly & Worell 1978; Kisamore et al. 2007; McCabe & Trevino 1997; Nonis & Swift 2001). Our study adds to these previous findings by showing that many students who identify as men were also aware that their peers were engaging in more risky sharing behaviours during the transition to remote learning than before the pandemic.

We also found that students earlier (vs later) in their postsecondary programs and enrolled in courses within the STEM (vs SSH) disciplines were more likely to perceive that academic misconduct had increased and their instructors were more concerned about cheating during the rapid transition to remote instruction than before the pandemic. Our findings are consistent with those reported in previous research demonstrating that younger students (or those who are less mature) are more likely to cheat (Bretag et al. 2018; Klein et al. 2007; McCabe & Trevino 1997; Stoesz & Los 2019), and that discipline differences in the frequencies of certain outsourcing behaviours exist (Awo-soga et al. 2021; Bertram Gallant et al. 2015; Bretag et al. 2018). For example, Awosoga et al. (2021) found that science students were more likely to witness incidents of academic misconduct than those in SSH. Interesting, some research shows that students in engineering, education, commerce, and health sciences programs are more likely to provide completed assignments to other students (Bretag et al. 2018). The findings from the present study and past research may be related to the types of assessments that are often implemented in introductory (which often have more younger students enrolled in them) and/or STEM courses. It has been argued that courses that rely on multiple-choice tests, test bank questions, and problem sets are more likely to see higher rates of outsourcing to homework "help" sites, and may have prompted a surge in use of more "authentic" assessments as a cheating cure (see Schroder 2021). Unfortunately, this

thinking is naïve (see Xu & Li 2022, for a review), as all types of assessment can be outsourced, from viva and reflections on practicum to research, analysis, and thinking and “real world” tasks although some are outsourced less frequently than others (Bretag et al. 2019; Ellis et al. 2020).

Contrary to some previous research demonstrating that international student status and studying in a second language are risk factors for academic misconduct (Bertram Gallant et al. 2015; Bretag et al. 2019), our study revealed that domestic students were more likely than international students to perceive that academic misconduct had increased during the transition to remote teaching. However, we also found that international students believed more strongly that their instructors were more concerned about cheating in remote teaching and learning situations. Perhaps this finding is due to international students being sensitive to the general concern that some instructors already held prior to the pandemic – that cultural differences in the meaning of academic integrity and how it is demonstrated contribute to acceptance and increased engagement in academic misconduct by international students (MacLeod & Eaton 2020). Although some research has revealed that country of study is a predictor of academic misconduct, and contract cheating in particular (Awdry & Ives 2022), the conclusion that international students generally do not understand academic misconduct may be false. Sanni-Anibire et al. (2021) surveyed international students about academic misconduct and found that the group was fairly knowledgeable and confident in their knowledge about the issue. The authors also found, however, that one third of international students felt fear, anxiety, or confusion when reading policies and procedures and were uncertain about how to respond when they witnessed others’ engaging in academic cheating. Confusion about which specific behaviours are inappropriate because of a lack of clear guidance is not limited to international students, many students have reported confusion about the learning aides that were prohibited and allowed when completing online assessments during the transition to remote instruction (Reedy et al. 2021).

Examining the culture of integrity at a postsecondary institution requires more than simply considering student behaviour – it also requires investigating how faculty, administrators, and other higher education professionals approach teaching and learning with integrity, and the supports they require to promote academic integrity and prevent academic misconduct (Eaton et al. 2023). All too often, postsecondary institutions focus disproportionately on the students’ responsibility to avoid misconduct. In Canada, this is evident in academic integrity policy documents, where procedures for dealing with allegations and consequences of cheating are emphasized and the commitment from the university community to support learning with integrity is absent (see Stoesz et al. 2019; Stoesz & Eaton 2022; Miron et al., 2021). An integrity culture should not be grounded in fear of punishment as is argued to be the case in Western approaches to higher education, where “monetary value and students’ desire to not “waste” their money on irrelevant knowledges” are present (Lindstrom 2022, p. 127). Instead, Lindstrom suggests that Indigenous perspectives be incorporated into integrity teachings and with the inclusion of “moral and ethical guidelines for living a good life in-relation to self, other living entities and the natural world” (2022, p. 132). An important challenge for Canadian postsecondary education will be to “challenge colonial assumptions within postsecondary

spaces” and “honour Indigenous truths and perspectives around the purpose and practice of education” (Poitras Pratt & Gladue 2022, 107).

Interestingly, a large proportion of respondents in the present study did *not* believe that outsourcing behaviours had increased during the rapid transition to remote instruction. Perhaps these findings are due to certain behaviours already occurring in distance and online courses at a high level prior to the COVID-19 pandemic. This assertion is consistent with the work of Burgason et al. (2019). Burgason et al. found that 43% and 29% of undergraduate criminal justice students enrolled in traditional face-to-face or distance courses (respectively) used existing notes or PowerPoint slides when they completed online exams. Further, 46% and 71% of students indicated that using notes during an online exam was not a form of academic misconduct (or was viewed as trivial). Alternatively, students in the present study may have felt that instructors cared about their physical and mental health during the stressful and uncertain early days of the pandemic, and appreciated the attempts that instructors made to be flexible and attend to students’ individual needs. Indeed, research shows that satisfaction with the teaching and learning environment (including curriculum design, assessment and feedback) (Harper et al. 2018), personal relationships with instructors (MacGregor & Stuebs 2012), and smaller class sizes (Awosoga et al. 2021) may be associated with more ethical decision-making by students.

Together, the findings of the present study demonstrate that a culture of integrity may be impacted during difficult events. Such knowledge is helpful because it sheds light on shifts in cultural norms that may still be evident after the difficult event is over. Further, understanding how a culture of integrity changes during stressful and confusing periods can help educators and administrators foresee future shifts, and work proactively to address them through education, supports, and policy.

Limitations and future directions

Although our study provides some interesting insights into students’ perceptions of academic misconduct during the rapid transition to remote instructions, several study limitations must be acknowledged. Our study findings were based on the analyses of responses from a convenience sample who responded to email correspondence about the study, limiting the generalizability of our findings to the university population as a whole. In addition, we were limited in the number of items about academic misconduct that we could include in the larger survey. These items focused on outsourcing behaviours (on the spectrum of sharing to exam impersonation) and not other items such as assessing beliefs about increases in other types of cheating (e.g., plagiarism). Our study also relied on student respondents’ memory of the events of the early days of the pandemic, asking them to recall their perceptions of their peers’ engagement in academic misconduct and their instructors concerns nearly a year prior to the survey. The retrospective nature of the data may have biased students’ responses with some remembering events in a more positive or negative light, depending on their overall experiences of their postsecondary studies, personal life situations, and what they may have seen or heard in the news or on social media. Finally, our analyses

were limited to the data collected from one institution. In future research, analysing responses from all institutions participating in the larger study may provide a more fulsome picture of students' beliefs about increased cheating during the transition to remote instruction.

New ways to cheat have emerged relatively recently. Artificial intelligence, for example, can be used to generate text and some researchers suggest that it may become the dominant form of cheating in the future as it is expected to be cheaper, quicker, and more difficult to detect than using a contract cheating supplier, and may not even be considered as cheating by students (Abd-Elaal et al. 2022). In the present study, we did not ask students about the use of auto-generated writing as a type of outsourcing behaviour, however, it is important to explore the prevalence of this problem and how it evolves over the next several months and years. Educators and administrators also need to be made aware of this new frontier in cheating, be trained in how to identify the indicators of artificially produced writing, and reconsider their assessment methods to include assignment types that are more difficult to automatically generate (Abd-Elaal et al. 2022). The alarm bell has already been rung about the prevalence of auto-generated nonsensical research papers being published in academic journals, conference proceedings, and as book chapters (see, for example, Cabanac & Labbé, 2021; Van Noorden 2014) and it will not be too long before we see a similar or greater problem in the postsecondary student population.

Conclusions

The COVID-19 pandemic had and still is having an enormous impact on students, instructors, administrators, and postsecondary institutions as a whole. The abruptness of this transition and the associated stress contributed to instructors' concerns about academic cheating as many felt that they could no longer assess learning and monitor student progress using their usual strategies and methods (Balderas & Caballero-Hernández 2020; Chierichetti & Backer 2021). The results of the present study are a unique contribution to the growing corpus of research on the impact of COVID-19 on postsecondary students with regards to academic misconduct. Over half of students believed that the emergency remote instruction was associated with more academic misconduct by their peers than they had observed prior to this period. This is an important finding as it provides insight into the nature of the culture of academic integrity during a stressful and confusing period in postsecondary students' lives, which may help educators and administrators understand shifts in integrity or outsourcing cultures and adapt to future adverse events.

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Authors' contributions

BMS and AED were involved in project conception, BMS and MQ analyzed and interpreted the results, AED was involved in recruitment and data collection, BMS and MQ drafted the manuscript, and all authors finalized the manuscript for submission. All the authors read and approved the final manuscript.

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Availability of data and materials

The data is unavailable for sharing.

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The authors declare that they have no competing interests.

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