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Contract cheating: A survey of Australian university students

Tracey Bretag, Rowena Harper,
Michael Burton, Cath Ellis, Phil Newton, Pearl Rozenberg, Sonia Saddiqui, Karen van Haeringen

Corresponding author: tracey.bretag@unisa.edu.au
University of South Australia

Abstract

Recent Australian media scandals suggest that university students are increasingly outsourcing their assessments to third parties – a behaviour known as 'contract cheating'. This paper reports on findings from a large survey of students from eight Australian universities (n=14,086) which sought to explore students' experiences with and attitudes towards contract cheating, and the contextual factors that may influence this behavior. A spectrum of seven outsourcing behaviours were investigated, and three significant variables were found to be associated with contract cheating: dissatisfaction with the teaching and learning environment, a perception that there are 'lots of opportunities to cheat', and speaking a Language Other than English (LOTE) at home. To minimise contract cheating, our evidence suggests that universities need to support the development of teaching and learning environments which nurture strong student-teacher relationships, reduce opportunities to cheat through curriculum and assessment design, and address the well-recognised language and learning needs of LOTE students.

Keywords: academic integrity, contract cheating, higher education, plagiarism, sharing economy, university

Introduction

In 2015, a series of higher education cheating scandals were reported by the Australian media (ABC Radio National 2015; Chung 2015; Visentin 2015a; 2015b). These reports suggested that there was a potentially large and unaddressed problem of Australian university students outsourcing their assessment to third parties – a behaviour known as 'contract cheating'. The purported escalation in students' use of online essay mills, file-sharing sites, and online contracting platforms sparked public and sector concerns, and led to direct involvement from Australian national regulator, the Tertiary Education Quality and Standards Agency (TEQSA), which asked the universities implicated to provide reports on their investigations and responses.

Concerns about contract cheating can be situated within a broader context of global higher education disruption, one in which the social, political and economic role of universities is

undergoing unprecedented change. The massification and internationalisation of higher education has led to larger and increasingly diverse student cohorts, often without corresponding growth in institutional funding. As a result, universities have progressively come to operate as commercial enterprises, with all operations – from student recruitment, retention, and graduate outcomes, to research funding, outputs and university rankings – driven by competitive strategies. Job opportunities for graduates are increasingly uncertain, threatened by disruptive technologies and fluctuating job markets, which contributes to a rise in 'credentialism' (Brown 2001) and more transactional and disengaged approaches to learning. A booming 'sharing economy'[1], which facilitates the exchange of goods and services via online platforms, allows individuals to outsource almost any task, large or small, creating a shift from 'you are what you own' to 'you are what you can access' (Richardson 2015). This context represents a 'perfect storm' in which contract cheating can perhaps be seen as an unsurprising symptom of an ecosystem under extreme stress.

Literature review

Lancaster and Clarke (2006, 1) first coined the term 'contract cheating' and defined it as 'the submission of work by students for academic credit which the students have paid contractors to write for them'. Although early identification of the issue tended to relate to assignments in computer coding, it has recently been recognised as an emerging problem in all disciplines across the higher education sector. The term 'contract cheating' has now evolved to encompass a cluster of practices relating to the outsourcing of students' assessment to third parties, whether or not these entities are commercial providers (Walker and Townley 2012; see also Lancaster and Clarke 2016). In addition to the outsourcing of assessment, we suggest that there are a range of behaviours which signal a 'transactional' approach to learning more generally, where education is viewed as a product to be bought, sold or traded rather than an intrinsically motivated, effortful and potentially transformative individual process. To make clear the distinction between transactional approaches to learning and contract cheating, in this research project contract cheating was defined as:

> …where a student gets someone – a third party – to complete an assignment or an exam for them. This third party might be a friend, family member, fellow student or staff member who assists the student as a favour. It might be a pre-written assignment which has been obtained from an assignment 'mill'. The third party may also be a *paid service*, advertised locally or online.

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[1] Also referred to as the collaborative, gig, on-demand and crowd-sourcing economy (Richardson 2015).

Walker and Townley (2012) point out that cheating involving third parties is cause for significant concern, because it is potentially difficult to detect[2] and constitutes a form of fraud. Moreover, institutional strategies that have been established to address longstanding issues of plagiarism and poor academic preparation, such as stronger education and learning support, appear to be less relevant for addressing these deliberate forms of cheating (Bretag and Harper et al. 2016). When contract cheating is detected, the standard response at most Australian and UK universities is for the student to be suspended or expelled (see for example, Tennant and Duggan 2008). However, students appear to have a much more relaxed attitude. A small-scale study by Newton (2015, 11) found that almost 90% of students surveyed thought 'a more lenient penalty than expulsion' should apply in cases of contract cheating.

To further complicate the issue, educators have recently raised concerns about students' propensities to outsource other aspects of learning, such as note-taking (Rogerson and Basanta 2016) and paraphrasing of text (Rogerson and McCarthy 2017). File-sharing and peer-to-peer networking sites such as ThinkSwap (www.thinkswap.com), Course Hero (www.coursehero.com) and Baidu Library (www.wenbku.baidu.com) can be used to trade notes and other course-related materials, while paraphrasing tools such as GoParaphrase (www.goparaphrase.com) or Paraphrasing Online (www.paraphrasingonline.com) can be used to automatically supply alternative phrasing for any inputted text. These behaviours are potentially problematic because they encourage students to view notes and textual summaries as products, rather than artefacts of engagement in a learning process. Moreover, although many online sites are advertised as note-sharing platforms, in reality they are used by students to share completed assignments. There is a genuine risk that buying, selling or trading notes are the beginning of a 'slippery slope' towards the outsourcing of graded assessment.

In Australia, contract cheating is currently the subject of a nationally-funded research project (www.cheatingandassessment.edu.au). The research, undertaken by the authors, included two parallel surveys, one for students and one for teaching staff, conducted at 12 higher education institutions.[3] The surveys aimed to explore staff and student experiences with and attitudes towards

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[2] A recent study by Dawson and Sutherland-Smith (2017) found that if alerted to the possible presence of contract cheating, markers were able to identify outsourced work in 62% of cases. However, in a similar study by Lines (2016), when markers were *not* alerted to the possibility of contract cheating, none was detected.

[3] The survey instruments are available here: www.cheatingandassessment.edu.au/surveys/ The 12 institutions surveyed included eight universities and four non-university higher education providers (NUHEPs). Findings from the staff survey, NUHEPs, and assessment design data will be published separately.

a range of outsourcing behaviours, and the individual, contextual and institutional factors that may contribute to these behaviours. This paper reports on key findings from the survey of university students, which sought to answer the following four research questions:
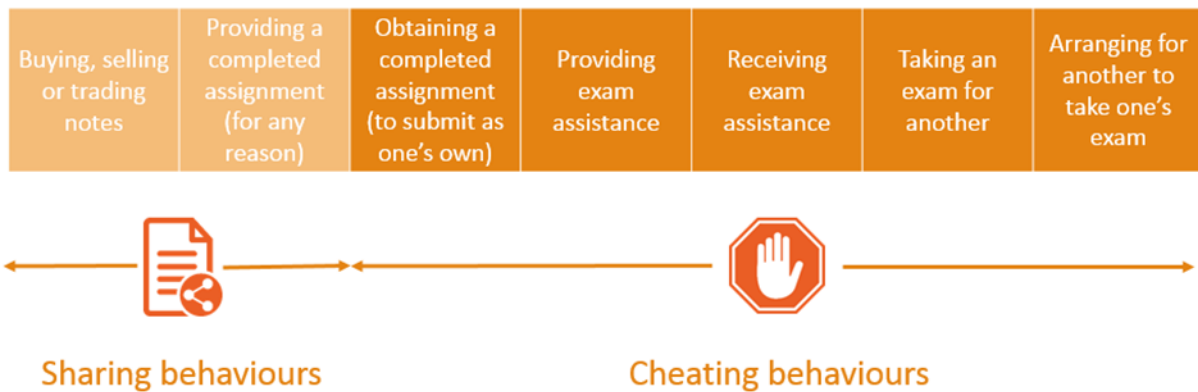
1. How prevalent is contract cheating in Australian universities?
2. Is there a relationship between cheating behaviours and sharing behaviours?
3. What are university students' experiences with and attitudes towards contract cheating and other forms of outsourcing?
4. What are the individual, contextual and institutional factors that are correlated with contract cheating and other forms of outsourcing?

Method

Given the paucity of empirical research on contract cheating, and the various ways that it has been defined in the literature, there were no established survey instruments available on which to base our items. The survey was therefore developed based on the currently available literature on contract cheating and teaching and learning, and the expertise of the research team and reference group. The survey was refined following an initial pilot at the lead institution.

As shown in Figure 1 we conceptualised an 'outsourcing spectrum' of seven distinct behaviours, ranging from sharing notes through to exam impersonation, and these provided the basis of the survey questions. The first two behaviours reflect transactional approaches to learning, but do not (or may not) constitute cheating and were therefore labelled 'sharing behaviours', while behaviours 3 to 7 are unequivocal 'cheating' behaviours. The survey did not indicate to respondents whether any of these behaviours were considered to be cheating, but for the purpose of analysis 'buying, selling or trading notes' and 'providing others with a completed assignment (for any reason)' were classified as 'sharing' behaviours, while the remaining five behaviours were classified as 'contract cheating'. The seven outsourcing behaviours are shown in Figure 1.

Figure 1: Outsourcing spectrum

| Buying, selling or trading notes | Providing a completed assignment (for any reason) | Obtaining a completed assignment (to submit as one's own) | Providing exam assistance | Receiving exam assistance | Taking an exam for another | Arranging for another to take one's exam |

Sharing behaviours   Cheating behaviours

The survey started with thirteen items seeking demographic information – age, gender, country of birth, language spoken at home, domicile (international or domestic student status), campus location (e.g. metropolitan, regional), discipline, program type, years enrolled in current program, study mode, study load, employment status and disability.

Experiences with outsourcing behaviours

Students were asked to report on whether they had engaged in any of the seven outsourcing behaviours detailed in Figure 1. If a respondent indicated they had engaged in one of these behaviours, they were then asked a series of follow up questions related to the frequency, nature, detection rates, and penalties related to that behaviour.

Attitudes towards outsourcing behaviours

On a 5 point Likert scale (from Strongly Agree to Strongly Disagree), respondents were asked to indicate their level of agreement with statements regarding the 'wrongness' of the seven outsourcing behaviours (e.g. '[Behaviour 1] is wrong'). To further examine attitudes, two additional items were included about respondents' levels of concern about the outsourcing of assessment, and their perception of its prevalence.

Experiences of the teaching and learning environment

On a 5 point Likert scale (from Strongly Agree to Strongly Disagree), respondents were asked to indicate their level of agreement with 10 statements regarding the teaching and learning environment (see Findings section for full details of questions).

Initial ethics approval was obtained from the lead institution and the surveys were piloted at one university, after which final ethics approval was given for the updated survey. Given the sensitivity of the topic, institutions and individual participants were assured of the anonymity and confidentiality of responses, with all data being reported in aggregate form only. After obtaining consent from senior managers at each participating institution, a link to the online survey was distributed through student email systems and/or online student portals. A convenience sampling method was considered to be most appropriate given the two year funding constraints of the project, and the fact that it would have been prohibitively time-consuming to coordinate random sampling at all eight participating universities. The surveys were conducted between October and December 2016, and the resulting data were analysed in SPSS and Stata in two stages. Preliminary analysis employed SPSS to generate descriptive statistics, which highlighted patterns and areas for further investigation. Certain individual (demographic) and contextual variables appeared to be correlated with outsourcing; however, we were concerned about a conflation of effects across variables. A multivariate random effects logit model (estimated in Stata) was employed to better distinguish between the effects of each variable on outsourcing behaviours. The significance of the effect of each variable on each behaviour were considered, using a Bonferroni correction for multiple comparisons. This is a conservative method, but ensures that if a significant effect is identified, there is a low probability of Type 1 error.

Findings

Responses were obtained from 14,086 students, representing 4.38% of the total student population at the eight universities surveyed. Response rates to each question varied slightly throughout the survey, so for accuracy of reporting, findings include the response rate for each question.

How prevalent is contract cheating in Australian universities?

Table 1 shows the prevalence of the seven outsourcing behaviours among Australian university students. The two sharing behaviours were the most commonly reported. Buying, trading or selling notes was reported by 15.3% of respondents, while 27.2% reported providing completed assignments to other students. A total of 814 students (5.78% of all respondents) reported engaging in one or more of the five behaviours classified as 'contract cheating'. The most common contract cheating behaviour was providing examination assistance (3.1%), although it should be noted that 'exam assistance' is a very broad term which may include a relatively minor breach such as assistance with a single question through to providing an examinee with extensive assistance to

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complete the whole exam. The least reported contract cheating behaviour was arranging for someone else to take an exam (0.2%).

Table 1: Prevalence of outsourcing behaviours among all respondents

Classification	Behaviour	% engaged (number engaged/total responses)
Sharing	Bought, sold or traded notes	15.3% (n=2,092/ 13,651)
	Provided assignment (for any reason)	27.2% (n=3,698/13,586)
Cheating	Obtained assignment (to submit)	2.2% (n=301/13,462)
	Provided exam assistance	3.1% (n=415/13,402)
	Received exam assistance	2.4% (n=322/ 13,414)
	Taken exam for another	0.5% (n=62/13,426)
	Arranged for another to take exam	0.2% (n=33/13,432)

The responses from the 814 students who reported engaging in one or more of the five contract cheating behaviours were extracted so they could be analysed as a subset, and compared to the responses of the remaining students. This subset is referred to as the 'Cheating Group', while the remaining responses (from students who did not engage in these behaviours) are classified as belonging to the 'Non-Cheating Group'.

Is there a relationship between cheating behaviours and sharing behaviours?

The sharing behaviours of the Cheating Group and the Non-Cheating Group were compared, as shown in Table 2. The overall pattern was that the Cheating group were more likely to engage in 'sharing behaviours' than the Non-Cheating Group, as indicated in the shaded cells. The Cheating Group was twice as likely as the Non-Cheating Group to buy, trade or sell notes. They were more likely than the Non-Cheating Group to use a file-sharing website for this purpose, and more than twice as likely to use a professional service for this purpose.[4] The Cheating Group was also twice as likely as the Non-Cheating Group to provide others with a completed assignment. They were more likely than the Non-Cheating Group to provide it to some kind of professional service, and they were four times more likely to have been paid money for an assignment. For both the Cheating and the

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[4] Professional service includes an online custom assignment writing service, a local custom assignment writing service, or a tutoring, editing or proofreading service.

Non-Cheating Groups, completed assignments were more commonly shared than notes (almost two times more).

What are university students' experiences with contract cheating and other forms of outsourcing?
As shown in Table 2, the most commonly reported cheating behaviour among the Cheating Group was providing exam assistance (53.2% of the Cheating Group), followed by receiving exam assistance (41%). The next most common cheating behaviour was obtaining a completed assignment to submit (37%). Of the 301 students who reported this behaviour, 68.5% reported going on to submit that work for assessment. Exam impersonation, either taking an exam for another or arranging for another to take an exam, was relatively uncommon, although still worthy of note, particularly in the case of taking an exam for someone else (7.9%).

For each cheating behaviour, a majority of the Cheating Group reported engaging in the behaviour 1-2 times (from 58% to 81.7%). A small proportion reported frequently engaging (10 or more times) in the contract cheating behaviours (from 2.9% to 9.4%). For the most commonly reported cheating behaviour (providing exam assistance), 42% of students reported engaging in this behaviour three or more times.

Table 2: Frequency and nature of outsourcing behaviours

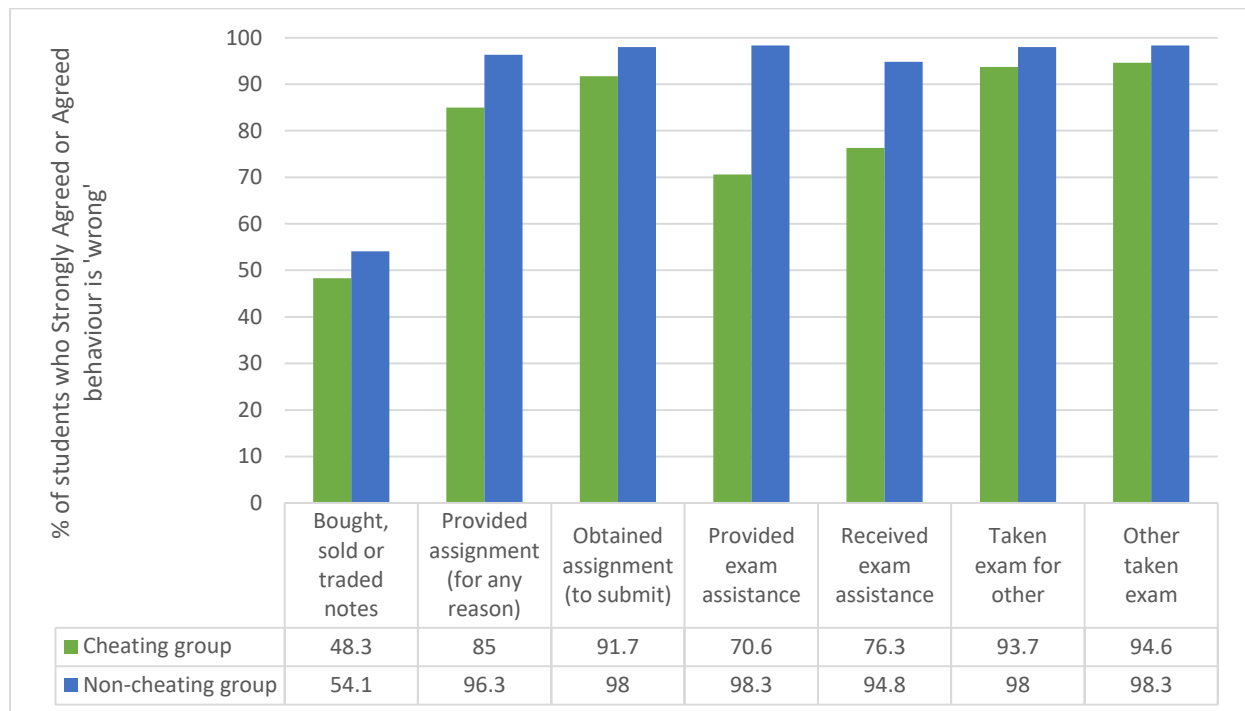| Survey items		Bought, sold or traded notes		Provided assignment (for any reason)		Obtained assignment (to submit)	Provided exam assistance	
% of subset who reported engaging in behaviour		Cheating Group	Non-Cheating Group	Cheating Group	Non-Cheating Group	Cheating Group	Cheating Group	C
		28.1% (n=229/814)	14.5% (n=1,863/12,837)	52.1% (n=424/814)	25.6% (n=3,274/12,772)	37% (n=301/814)	53.2% (n=415/780)	
	% who submitted as own work	-	-	-	-	68.5% (n=196/286)	-	
Frequency	1-2 times	37.6% (n=86/229)	42.0% (n=766/1,824)	36.6% (n=155/424)	53% (n=1705/3,217)	79.4% (n=162/204)	58% (n=239/412)	
	3-5 times	32.8% (n=75/229)	32.7% (n=596/1,824)	37% (n=157/424)	34.3% (n=1103/3,217)	13.2% (n=27/204)	27.4% (n=113/412)	
	6-9 times	9.6% (n=22/229)	8.7% (n=158/1,824)	9.2% (n=39/424)	6.2% (n=200/3,217)	4.4% (n=9/204)	8.7% (n=36/412)	
	10+ times	20.1% (n=46/229)	16.7% (n=304/1,824)	17.2% (n=73/424)	6.5% (n=209/3,217)	2.9% (n=6/204)	5.8% (n=24/412)	
Provider/ receiver	Student or former student	74.2% (n=170/229)	73% (n=1,332/1,824)	74.3% (n= 315/424)	69% (n=2,219/3,217)	41.1% (n=174/423)	66.7% (275/412)	
	Friend or family member	46.3% (n=106/229)	51.6% (n=941/1,824)	68.4% (n=290/424)	67.4% (n=2,169/3,217)	35% (n=148/423)	69.6% (n=287/412)	
	File-sharing website	31% (n=71/229)	21.3% (n=389/1,824)	2.8% (n=12/424)	1.1% (n= 34/3,217)	2.8% (n=12/423)	-	
	Professional service	25.8% (n=59/229)	11.5% (n=210/1,824)	16.1% (n=68/424)	9.2% (n=295/3,217)	7% (n=30/423)	1.5% (n=6/412)	
	Partner or girl/boy friend	14% (n=32/229)	8.4% (n=153/1,824)	19.6% (n=83/424)	14.9% (n=478/3,217)	6.1% (n=26/423)	6.1% (n=25/412)	
Money exchanged	Yes	-	-	6.4% (n=27/424)	1.6% (n=51/3,217)	13.3% (n=38/286)	3.4% (n=14/411)	

Students were asked to identify who had provided the assistance for each of the outsourcing behaviours, choosing from a range of options and selecting all that applied. For both of the sharing behaviours, the Cheating and Non-Cheating Groups reported sharing most often with a student or former student, or a friend or family member. When buying, selling or trading notes, both groups are more likely to share with a website or professional service than a partner or girl/boyfriend. This is reversed for providing a completed assignment, with students more likely to report providing to a partner or girl/boyfriend than a website or professional service.

For each cheating behaviour, a majority of the Cheating Group reported engaging in unauthorised assistance with current/former students (from 40% to 78.9%), and friends or family members (from 35% to 71.6%). A small proportion of the Cheating Group reporting using/providing a professional service. Professional services were most commonly used by students who arranged for someone to take their exam for them (18.8% of that group), and by students obtaining a completed assignment for the purpose of submitting it as their own (7% of that group). Students reported the exchange of money in a relatively small number of cases across the five cheating behaviours (from 2.8% to 16.7%), with payment most common in cases where students took an exam for someone else.

What are students' attitudes towards contract cheating and other forms of outsourcing?

Students were asked to report their levels of agreement on a 5 point Likert scale regarding the 'wrongness' of the seven behaviours investigated. Figure 2 shows that the Non-Cheating Group reported higher levels of agreement than the Cheating Group on all behaviours. The largest difference was in relation to providing assistance in an exam (98.3% vs 70.6% agreement respectively), and the smallest difference was in relation to arranging for someone to take an exam (98.3% vs 94.6% agreement respectively). Although most Non-Cheating and Cheating students agreed that providing an assignment (for any reason) was 'wrong', both groups agreed much less strongly that buying, selling or trading notes is 'wrong'.

Figure 2: Comparison of Cheating and Non-Cheating group attitudes towards outsourcing behaviours

	Bought, sold or traded notes	Provided assignment (for any reason)	Obtained assignment (to submit)	Provided exam assistance	Received exam assistance	Taken exam for other	Other taken exam
Cheating group	48.3	85	91.7	70.6	76.3	93.7	94.6
Non-cheating group	54.1	96.3	98	98.3	94.8	98	98.3

We then compared the attitudes of LOTE/English-speaking Cheating Group students and International/Domestic Cheating Group students. As shown in Figure 3, LOTE and English-speaking students reported comparable attitudes on six of the seven behaviours, with the only exception being buying, selling or trading notes, where 6.9% more LOTE students agreed that this behaviour was wrong. As shown in Figure 4, International and Domestic students reported comparable attitudes on six of the seven behaviours, with the only exception being buying, selling or trading notes, where 8.1% more International students agreed that this behaviour was wrong.

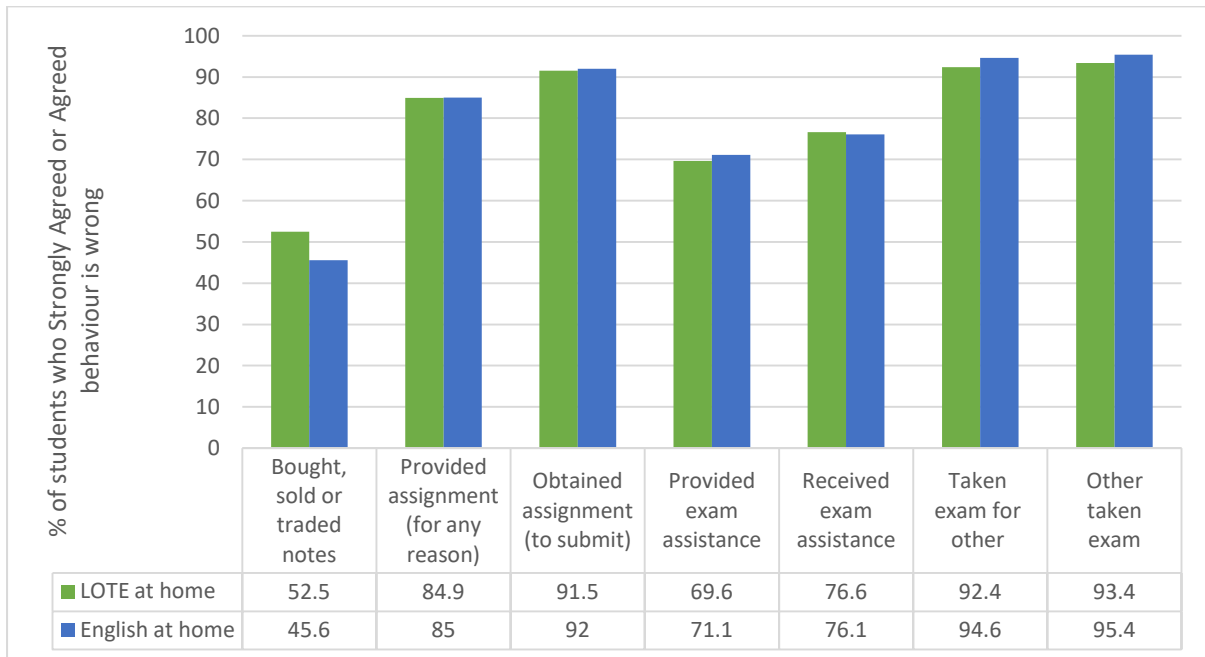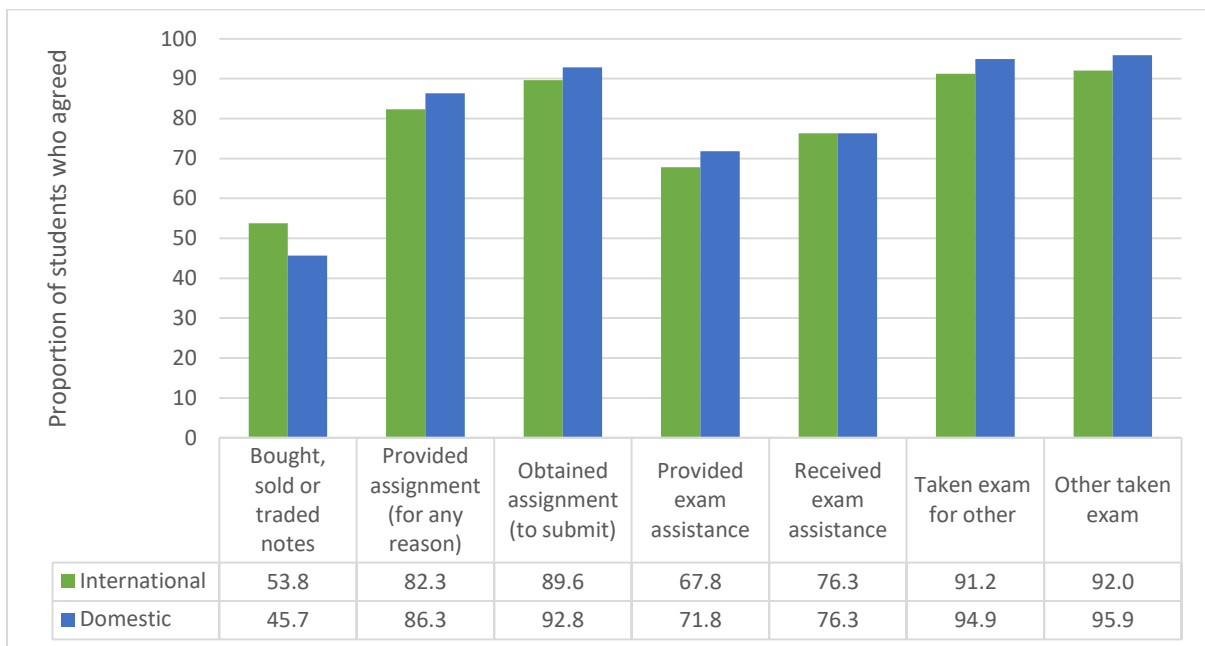*Figure 3: Comparison of LOTE vs English-speaking Cheating Group attitudes towards outsourcing behaviours*

	Bought, sold or traded notes	Provided assignment (for any reason)	Obtained assignment (to submit)	Provided exam assistance	Received exam assistance	Taken exam for other	Other taken exam
LOTE at home	52.5	84.9	91.5	69.6	76.6	92.4	93.4
English at home	45.6	85	92	71.1	76.1	94.6	95.4

Y-axis: % of students who Strongly Agreed or Agreed behaviour is wrong

Figure 4: Comparison of International vs Domestic Cheating Group attitudes towards outsourcing behaviours

	Bought, sold or traded notes	Provided assignment (for any reason)	Obtained assignment (to submit)	Provided exam assistance	Received exam assistance	Taken exam for other	Other taken exam
International	53.8	82.3	89.6	67.8	76.3	91.2	92.0
Domestic	45.7	86.3	92.8	71.8	76.3	94.9	95.9

Y-axis: Proportion of students who agreed

What are the individual, contextual and institutional factors that are correlated with contract cheating and other forms of outsourcing?

Table 3 shows a preliminary demographic 'profile' of the Cheating Group. It compares key descriptive statistics of the Cheating Group with all survey respondents to signal an over- or under-representation of certain variables in the Cheating Group. Males are over-represented in the Cheating Group by a ratio of 1:1.3; LOTE students are over-represented by a ratio of 1:1.9; International students are over-represented by a ratio of 1:2.1, and Engineering students are over-represented by a ratio of 1:1.8. In contrast, students who study externally (online only) are under-represented in the Cheating Group by a ratio of 1:0.46.

Table 3: Key demographic variables present in the Cheating Group, as compared to all respondents

Demographics	Cheating Group (n = 814)	All survey respondents (n = 14,086)
Gender *		
Female	44.0%	57.4%
Male	54.2%	41.1%
Language spoken at home		
English	59.8%	78.8%
Language other than English	40.2%	21.2%
Domicile		
Domestic	67.0%	84.7%
International	33.0%	15.3%
Discipline #		
Health Sciences	15.6%	20.7%
Business and Commerce	17.2%	17.0%
Engineering	24.6%	13.1%
Mode of study		
Internal	68.6%	64.9%
Blended	27.1%	25.8%
External (online only)	4.3%	9.3%

* Respondents also had the opportunity to indicate 'Other', or 'Prefer not to say'
# Indicates this category had a large list of response options. This table reports the top three responses.

The Cheating and Non-Cheating Groups were also compared for their perceptions of the teaching and learning environment, as shown in Figure 5. Students were asked to report their levels of agreement on a 5 point Likert scale regarding the following 10 items:
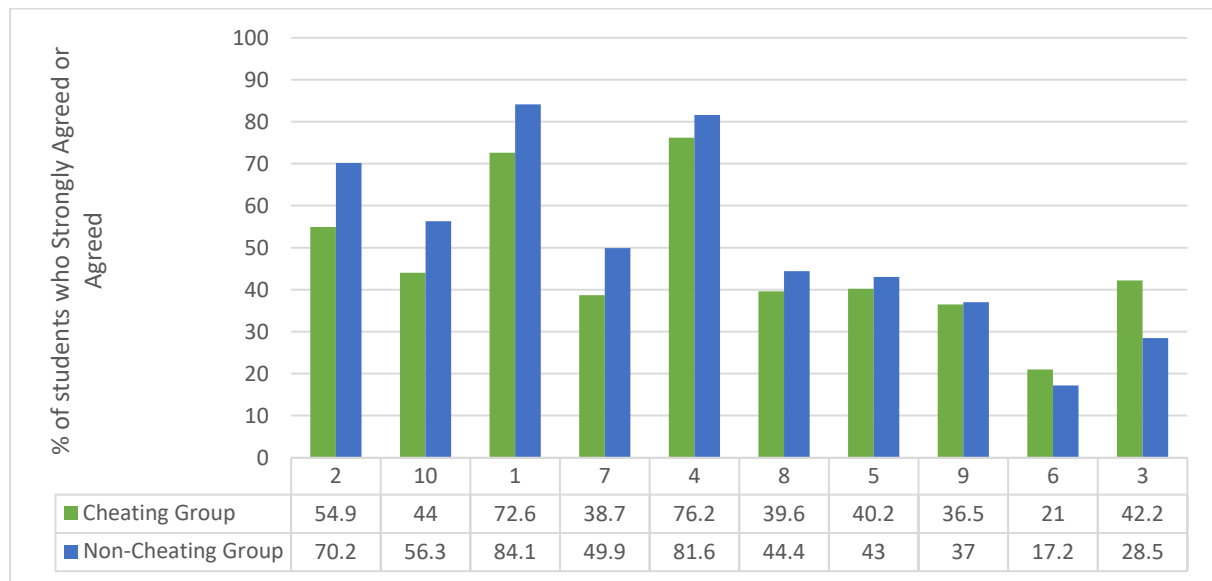
1. I have opportunities to approach my lecturers and tutors for assistance when needed

2. My lecturers and tutors ensure that I understand what is required in assignments

3. There are lots of opportunities to cheat in my subjects

4. My lecturers and tutors have explained my institution's academic integrity policy, and the consequences for breaching it

5. My lecturers and tutors spend class time teaching me how to reference (including how to quote, paraphrase and summarise with acknowledgement).
6. My lecturers and tutors spend class time talking about 'contract cheating' and its consequences.
7. My lecturers and tutors spend class time teaching me how to engage in scholarship in my discipline (i.e., research, read, critically analyse and discuss discipline material).
8. My lecturers and tutors consistently monitor and penalise academic integrity breaches in line with my institution's policy.
9. My lecturers and tutors are consistent with each other in grading assignments.
10. I receive sufficient feedback to ensure that I learn from the work I do.

Figure 5 shows the responses to these items, with items where the Cheating Group indicated the lowest levels of agreement relative to the Non-Cheating Group shown first.

As shown in Figure 5, in descending order of difference, the Cheating Group reported markedly lower levels of agreement than the Non-Cheating Group on four items: understanding assignment requirements (item 2), receiving sufficient feedback (item 10), opportunities to approach educators (item 1), and the teaching of scholarly practice (item 7). Both groups reported comparable levels of agreement (approximately 5% difference or less) on five of the ten items – explaining academic integrity policy, monitoring and penalising breaches, teaching referencing, consistent grading, and explaining contract cheating. Both groups of students indicated the lowest levels of agreement that educators explain contract cheating. The Cheating Group reported higher levels of agreement on only two items: educators explain contract cheating (item 6), and lots of opportunities to cheat (item 3).

Figure 5: Comparison of Cheating and Non-Cheating Group experiences of the teaching and learning environment

	2	10	1	7	4	8	5	9	6	3
Cheating Group	54.9	44	72.6	38.7	76.2	39.6	40.2	36.5	21	42.2
Non-Cheating Group	70.2	56.3	84.1	49.9	81.6	44.4	43	37	17.2	28.5

An issue with the analysis of individual effects is that it cannot control for other underlying variables (i.e. the number of LOTE students varies significantly between disciplines). A multivariate analysis was therefore undertaken to examine the extent to which the demographic variables and perceptions of the teaching and learning environment influenced outsourcing behaviours, including the sharing behaviours not captured by preliminary analyses of the Cheating and Non-Cheating Groups. The multivariate analysis is reported in Appendix 1, with the dependent variable for each behaviour being whether the student admitted doing the behaviour (1) or not (0), and employing a random effects logit model. To investigate the effect of discipline, it was necessary to aggregate the 14 original discipline groups down to nine, as shown in Appendix 2, to avoid small group sizes. For the purpose of presenting the findings, Arts was selected as the baseline discipline group, with the other disciplines shown as deviations from that. To investigate the effects of the 10 teaching and learning items, a factor analysis was conducted to determine whether they could be reduced to a smaller number of underlying factors. As shown I Appendix 1, only two factors were identified: Factor 1, containing a single item ('there are lots of opportunities to cheat in my subjects'), and Factor 2, containing the remaining nine items relating to the teaching and learning environment. As reported in Appendix 1, these have been labelled 'lots of opportunities to cheat' (for which higher values imply greater agreement with the statement) and 'the teaching and learning environment' (for which higher values imply a greater sense of dis-satisfaction) respectively Parameter estimates

are Odds Ratios, and parameter significance levels reflect a Bonferroni correction, to account for multiple comparisons across behaviours[5].

Of the seven outsourcing behaviours, sharing and cheating behaviours were each influenced by different variables. Although Engineering students were over-represented in the Cheating Group by a ratio of 1:1.8, the multivariate analysis (see Appendix 1) indicated no discipline effects on cheating behaviours. Rather, cheating behaviours were primarily explained by students' International or LOTE status, higher levels of dissatisfaction with the teaching and learning environment, and perceptions that there are lots of opportunities to cheat. Findings for each behaviour outlined in Appendix 1 are detailed below.

For the 15.3% of students who engaged in buying, selling or trading notes, the following groups of students were more likely to engage in that behaviour: students enrolled at a Group of Eight university[6], younger students, students who had been enrolled longer at university, students in Commerce and Law, and students who reported higher levels of dissatisfaction with the teaching and learning environment.

For the 27.2% of students who reported providing a completed assignment, the following groups of students were more likely to engage in that behaviour: younger students, students who had been enrolled longer at university, students who were working either part or full-time, students in Engineering, Education, Commerce and Health Sciences, and students who identified lots of opportunities to cheat in their subjects.

For the 2.2% of students who obtained a completed assignment to submit as their own, the internfollowing groups of students were more likely to engage in that behaviour: males, students who reported higher levels of dissatisfaction with the teaching and learning environment, and students who identified lots of opportunities to cheat in their subjects.

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[5] Wasserstein and Lazar (2016) state that "often the null hypothesis postulates the absence of an effect, such as no difference between two groups, or the absence of a relationship between a factor and an outcome. The smaller the p-value, the greater the statistical incompatibility of the data with the null hypothesis, if the underlying assumptions used to calculate the p-value hold". In discussing the results, we draw attention to effects where the p-value is equal to or less than 0.001. Given the large sample size, and the importance of avoiding false positives, we feel this level of statistical incompatibility to be appropriate.

[6] The 'Group of Eight' (Go8) comprises Australia's eight leading research Universities - The University of Melbourne, The Australian National University, The University of Sydney, The University of Queensland, The University of Western Australia, The University of Adelaide, Monash University and UNSW Sydney (https://go8.edu.au/page/about).

For the 3.1% of students who provided exam assistance, no demographic descriptors had a significant effect on that behaviour. However for the 2.4% who reported receiving exam assistance, the following groups of students were more likely to engage in that behaviour: LOTE students and those students who identified lots of opportunities to cheat in their subjects.

For the 0.5% of students who reporting taking an exam for another, the following groups of students were more likely to engage in that behaviour: International students, students who reported higher levels of dissatisfaction with the teaching and learning environment, and students who identified lots of opportunities to cheat in their subjects.

For the 0.2% of students who reported arranging for another person to take an exam for them, the following groups of students were more likely to engage in that behaviour: LOTE students, students who reported higher levels of dissatisfaction with the teaching and learning environment, and students who identified lots of opportunities to cheat in their subjects.

As indicated in Appendix 1, only three of the demographic descriptors were not significant for explaining any of the outsourcing behaviours: study mode, study load, and program level.

Discussion

Despite media reports to the contrary, our data has demonstrated that a relatively small proportion of students are engaging in contract cheating. Of the 14,086 respondents, 814 students (5.78%) reported engaging in one or more of the five cheating behaviours, and of those, a very small proportion reported doing so repeatedly. This finding supports earlier research by Scanlon and Neumann (2002) in which 6.3% of students reported having 'sometimes' purchased a paper from an essay mill, and 2.8% doing so very frequently. Curtis and Clare (2017) reported comparable findings: the percentage of students who reported engaging in contract cheating ranged from 3.5% to 7.9%, and of that group 62.5% did so more than once. Although these numbers are relatively small, it is still a cause for concern that some students are repeatedly engaging in cheating as a strategy for completing their studies.

Despite the widespread availability of file-sharing websites and commercial services that support cheating, students still primarily engage in outsourcing behaviours with people they know: other students, friends, and family. Students reported using professional services relatively rarely, and more commonly in cases of exam impersonation than for other cheating behaviours. Money was

also exchanged infrequently, most commonly in relation to 'taking an exam for someone else'. Perhaps this explains why cheating rates were not higher among fully online, external students; although their relative anonymity and remoteness spark concerns they could more easily get away with cheating, their disconnection from typical, campus-based networks of peers limits their access to the most commonly used sources of outsourced material.

Although contract cheating rates remain relatively low, sharing academic work is a common part of the learning experience for many Australian students. Moreover, students more frequently provide others with completed assignments than they do with notes. It remains unclear whether students are altruistically providing their completed assignments to others in order to assist with their learning, to serve as a 'model' for comparison, or recklessly providing their work to other students, knowing full well that the assignment will be submitted by that student as their own work. The survey did not ask students to specify, and so did not classify this behaviour as cheating for the purpose of this analysis. It is reasonable to assume, however, that some of the students who have provided others with a completed assignment did so knowing that the student would misuse it in some way, and so engaged in a behaviour that would likely be considered cheating at their institution. While this question certainly warrants further investigation, the fact that such a large proportion of students are engaging in this behaviour, as well as buying, selling and trading notes is indicative of a 'sharing economy' in which everyday tasks are routinely shared or outsourced (Cook 2017).

Furthermore, our data also indicated a possible relationship between these 'sharing' behaviours and more egregious forms of cheating. The Cheating Group were twice as likely as the Non-Cheating Group to engage in both of these sharing behaviours, more likely to use a file sharing website or professional service to do so, and more likely to exchange money in the process. This evidence indicates the possible adoption of more instrumental, transactional approaches to learning among the Cheating Group. It is unclear whether one behaviour precedes the other. For example, perhaps students begin with sharing notes, prompting disengagement from components of the learning process, which in turn starts them on a 'slippery slope' towards disengagement from other aspects of learning, including the completion of assessment. Or it may be that students in the Cheating Group are more generally disengaged, and therefore more likely to outsource all aspects of their learning, including note-taking.

Perhaps the most important contribution of this study is the identification of particular individual, contextual and institutional variables that influence outsourcing behaviours. Despite a significant amount of academic integrity research, variables relating to cheating behaviour have typically been examined in isolation, thereby risking the conflation of measured variables with other underlying factors. Much of the research has previously concluded that males are more likely than females to cheat (Kremmer et al. 2007; Marsden et al. 2005; McCabe 2016; Bertram Gallant, Binkin and Donohue 2015). Studies have also pointed to higher cheating rates among particular student cohorts, including International students (Bertram Gallant et al. 2015; Bretag et al. 2014), Business students (McCabe and Trevino 1993), and Engineering students (Marsden et al. 2005; McCabe and Trevino 1993). The preliminary analysis of the descriptive statistics did indicate an over-representation in the Cheating group of students from certain groups: specifically, males, International students, Engineering students, and students from more 'elite' Group of Eight universities. However, in the multivariate analysis (Appendix 1) many of these seemingly significant variables fell away due to their conflation with the key contributing variables.

Contract cheating was primarily influenced by dissatisfaction with the teaching and learning environment, and perceptions that there were lots of opportunities to cheat in subjects, with the teaching and learning environment having the strongest effect (odds ratios ranging from 1.27 to 1.63, with opportunities to cheat ranging from 0.6 to 0.85). For two of the cheating behaviours (receiving exam assistance and arranging for another to take an exam), the LOTE variable also had a particularly strong effect (odds ratios of 4.41 and 2.10). This confirms numerous studies which have highlighted that breaches such as plagiarism are a particular concern for LOTE students (Marshall and Garry 2006; Pecorari 2003; Vieyra, Strickland and Timmerman 2013). For the two exam impersonation behaviours, the Domestic student variable also had a strong effect, implying much reduced probabilities of undertaking this behaviour if a domestic student (OR of 0.41 and 0.33). The perception among the Cheating Group that there are 'lots of opportunities to cheat' could be interpreted in a range of ways. One hypothesis is that students who are engaging in cheating are looking for opportunities to cheat, and so see opportunities where more engaged learners do not. Or it may be that some students are exposed to opportunities (such as sharing work with peers) that other students are not. It appears, then, that while the Engineering discipline contains around one quarter of all the students in the Cheating group, it is not Engineering *per se* that influences cheating behaviour. It is rather that students who are LOTE, and/or particularly dissatisfied with the teaching and learning environment, and perceive there to be 'lots of opportunities to cheat' are concentrated within the discipline of Engineering.

Most studies have previously concluded that international students are particularly vulnerable to engaging in breaches of academic integrity. Numerous authors have offered explanations for this, including English language proficiency (Devlin and Gray 2007), academic pressures (Egan 2008) and the unique difficulties of studying in a foreign country (Ehrich, Howard, Mu and Bokosmaty 2016). In addition to these, there is a commonly held view that international students bring differing cultural views about cheating to university (Denisova-Schmidt 2016; Hayes and Introna 2005; Introna et al. 2003).

Our findings, while not disputing the critical role of students' previous educational and learning experiences, contradict the simplistic view that International students cheat more due to culturally-based values and attitudes towards cheating. This research suggests that the categories of LOTE and International should not be conflated. Although LOTE and International status both increase the probability of having others take an exam, this is the only overlap of influence: LOTE increases the probability of receiving exam assistance, while International status increases the probability of taking an exam for others. Nor did the cultural and linguistic diversity of our sample lead to a diversity of attitudes towards outsourcing behaviours, a finding also reported by Maxwell, Curtis and Vardonega (2008). The only difference here was that both International and LOTE students were more likely to report that buying, selling or trading notes is 'wrong', which perhaps indicates that among these groups, there is greater confusion and a tendency to err on the side of caution with regard to the boundaries between acceptable and unacceptable academic practice. It appears to be the case, then, that both Domestic and LOTE students are more likely to engage in certain cheating behaviours *despite* thinking that they are wrong, not because they believe these practices are acceptable. Understanding what leads students to cheat requires the examination of a range of complex, and overlapping factors, but 'culture' alone does not explain the phenomenon.

The sharing behaviours were influenced by a variety of variables, but for both, younger students were more likely to be involved. This perhaps indicates that engagement in a 'sharing economy' is to some extent related to generational factors. The sharing behaviours were also more prevalent in certain discipline areas, indicating the presence of certain discipline-based cultures of sharing, collaboration and possibly collusion. Although collusion was not included in this research, due in part to the complexities of defining it (for example, see McGowan 2016), it is an important area of further research to explore the ways in which learning might be 'outsourced' through inappropriate collaboration.

Although Group of Eight students were more likely to engage in buying, selling and trading notes, they were no more or less likely to engage in other outsourcing behaviours. This finding is at odds with a prevailing assumption that contract cheating is more likely to occur in higher education providers of 'lower quality'. In response to an exam cheating scandal, a senior manager at one of Australia's most prestigious universities described the incident as a '"freakish" singular event', and suggested that elite universities are 'far less exposed to the integrity pressures faced by other education providers' (McKenzie and Baker 2016). Our research indicates that this is not the case.

There are some limitations to this study which require consideration when interpreting the findings. First, the survey was based on a convenience rather than random sample, with the potential for self-selection bias. Second, while the numbers of responses gathered was very large, it represents a relatively small response rate (4.38%) from the total numbers of students enrolled at the participating institutions. However, the response rate was comparable to other large surveys on students' cheating behaviour and with McCabe (2005) we maintain that 'while response rates and response bias are of concern, clearly this is still a very rich database' (McCabe 2005). Third, as Walker (2010) has previously noted, there are potential limitations of self-reporting of behaviour, particularly dishonest behaviour. Finally, the study is based on responses from Australian university students, with a particular demographic profile, and the findings may therefore not be generalisable to other educational sectors or countries.

Conclusion

In the context of widespread concerns about the proliferation of online file-sharing sites and commercial assignment writing services, this large-scale study of Australian students sought to investigate the prevalence and nature of contract cheating and other outsourcing behaviours, and understand the individual, contextual and institutional factors that may influence these behaviours. Contract cheating behaviours were primarily influenced by high levels of dissatisfaction with the teaching and learning environment, perceptions that there are lots of opportunities to cheat in subjects, and students' LOTE status. Sharing behaviours were influenced by a range of variables, but particularly age (students 25 and younger), and discipline of study.

It is of particular concern that LOTE students continue to be over-represented in cheating surveys, and that despite two decades of research which has pointed to the need to direct resources toward more systematic approaches to students' language and learning development, little progress

appears to have been made (Arkoudis 2016). The long-held myth that International students have different, culturally-based attitudes towards cheating has perhaps contributed to the general failure of universities to take responsibility for this issue. Our findings contribute to debunking that myth.

Perhaps more important is the finding that outsourcing behaviours – including serious forms of cheating – are more commonly influenced by dissatisfaction with the teaching and learning environment, and a perception that there are lots of opportunities to cheat in subjects. This places responsibility squarely with universities, and should prompt serious considerations of approaches to curriculum and assessment design. We concur with other researchers (Newton and Lang 2016; Walker and Townley 2012) that simplistic remedies, such as a return to high-stakes, invigilated examinations, are likely to be counter-productive in addressing a problem as complex as contract cheating. If indeed contract cheating is symptomatic of a 'perfect storm' of global and local factors, it demands a multi-pronged and holistic approach. Teaching and learning environments that focus on developing strong student-teacher relationships should be a key component of any institutional approach. Such environments reduce opportunities for students to cheat, because educators are more familiar with each student's capabilities[7]. They also allow for the early identification of students who may be vulnerable to cheating. As a starting point, we recommend that universities focus on two aspects of the teaching and learning environment where students who have engaged in cheating report a markedly more negative experience than other students: ensuring that students understand what is required in assignments, and that they receive sufficient feedback to learn from that work.

It is also important that universities respond to the ways in which the 'sharing economy' is shaping students' approaches to life and learning. Curriculum and pedagogy could better reflect the realities of working in a highly connected and networked world, in which sharing and collaboration are an increasing part of professional practice. Educators need to support students in learning to navigate this world, both as learners who must demonstrate their own individual capabilities through assessment, and as emerging professionals who need to learn to work ethically.

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[7] Despite concerns about 'unconscious bias' during marking, and the fact that some countries (e.g. UK) insist on anonymous marking to ameliorate this, recent research has shown that anonymous marking has a negligible effect in reducing bias in relation to ethnic group, gender and socio-environmental background (Hinton & Higson 2017).

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Appendix 1: Multivariate analysis results

For each outsourcing behaviour, the individual, contextual and institutional factors investigated are listed, including t[...]
cells indicate significant relationships. The notation 'na' indicates a sample size too small for analyses.

		Buying, selling & trading notes	Providing completed assignment	Obtaining assignment, to submit	Providing exam assistance	Receiving exam assistance
Individual factors	Age	0.928 p<0.001	0.967 p<0.001	0.979 p=0.153	0.915 p=0.129	0.985 p=0.490
	Gender (male)	1.207 p=0.025	1.192 p=0.009	1.837 p<0.001	1.306 p=0.519	1.655 p=0.262
	Domestic (domestic)	1.418 p=0.008	1.215 p=0.086	0.562 p=0.016	0.587 p=0.319	0.566 p=0.143
	Language at home (language other than English)	0.946 p=0.530	1.088 p=0.517	1.423 p=0.133	3.593 p=0.025	4.406 p<0.001
Contextual factors	Study load (full time)	1.373 p=0.059	1.390 p=0.002	0.718 p=0.156	0.508 p=0.296	0.516 p=0.122
	Employment (part-time work)	1.224 p=0.050	1.311 p<0.001	1.201 p=0.230	0.712 p=0.444	1.290 p=0.429
	Employment (full-time work)	0.891 p=0.407	1.499 p=0.001	1.075 p=0.788	0.458 p=0.343	0.882 p=0.808
	Study mode (fully online)	0.666 p=0.381	0.678 p=0.012	0.455 p=0.516	3.083 p=0.185	1.236 p=0.728
	Study mode (blended)	1.009 p=0.905	0.914 p=0.134	0.819 p=0.212	1.328 p=0.528	0.905 p=0.766
	Years enrolled in current program	1.100 p=0.001	1.275 p<0.001	1.127 p=0.096	1.130 p=0.457	1.433 p=0.006
	Program level (undergraduate)	1.165 p=0.626	0.982 p=0.938	0.515 p=0.188	0.313 p=0.217	0.104 p=0.005
	Program level (postgraduate)	1.012 p=0.971	1.429 p=0.126	0.676 p=0.447	0.427 p=0.380	0.128 p=0.028
	Program level (postgraduate research)	0.791 p=0.497	1.240 p=0.382	0.598 p=0.355	0.418 p=0.464	0.082 p=0.026
	Discipline 1 (Arch & Bldg; Creative Arts)	0.570 p=0.218	0.951 p=0.744	1.121 p=0.785	3.673 p=0.162	1.782 p=0.459
	Discipline 2 (Arts & Hum; Media & Comm)	base	base	base	base	base
	Discipline 3 (Business & Commerce)	1.699 p<0.001	1.462 p<0.001	1.106 p=0.737	0.797 p=0.803	0.843 p=0.796

		Buying, selling & trading notes	Providing completed assignment	Obtaining assignment, to submit	Providing exam assistance	Receiving exam assistance
Contextual factors (cont.)	Discipline 4 (Education)	0.918 p=0.625	1.730 p<0.001	0.934 p=0.869	2.119 p=0.475	2.898 p=0.124
	Discipline 5 (Engineering)	0.977 p=0.860	1.916 p<0.001	2.206 p=0.320	0.572 p=0.568	0.540 p=0.392
	Discipline 6 (Health Sciences)	1.069 p=0.585	1.455 p<0.001	1.024 p=0.939	1.537 p=0.615	0.745 p=0.665
	Discipline 7 (Law)	5.490 p<0.001	1.011 p=0.937	0.602 p=0.304	1.377 p=0.800	1.701 p=0.513
	Discipline 8 (Earth/Env; IT; Maths; Science)	0.933 p=0.573	1.250 p=0.598	1.379 p=0.276	1.116 p=0.900	2.907 p=0.731
	Discipline 9 (Other)	1.012 p=0.952	1.095 p=0.566	1.565 p=0.278	1.105 p=0.937	na
Institutional factors	Institution (Group of Eight)	2.147 p<0.001	0.902 p=0.392	0.927 p=0.596	0.923 p=0.850	0.711 p=0.255
	Factor 1: Lots of opportunities to cheat	0.907 p=0.002	0.850 p<0.001	0.787 p=0.001	0.553 p=0.005	0.597 p=0.001
	Factor 2: Dissatisfaction with the T&L environment	1.338 p<0.001	1.241 p<0.001	1.626 p<0.001	1.461 p=0.116	1.297 p=0.075

Error Variance parameters		
σ	1.256	0.032
rho	0.324	0.011

individuals	13,138
observations	91452
LL	-16471.7

Appendix 2: Discipline groupings used in multivariate analysis

Disciplines included in the survey instrument are listed on the left. For the purpose of multivariate analysis, cognate discipline areas that had small numbers of respondents were clustered together, resulting in 9 discipline groupings. Response rates for each discipline and resultant discipline grouping are indicated below.

Discipline code for multivariate analysis

	1	2	3	4	5	6	7	8	9	
Architecture and Building	293									293
Arts and Humanities		1352								1352
Business and Commerce			2223							2223
Creative Arts/Performing Arts	262									262
Earth & Environmental Sciences								232		232
Education				889						889
Engineering					1680					1680
Health Sciences						2745				2745
Information Technology								416		416
Law							670			670
Mathematics								133		133
Media and Communications		233								233
Science								1496		1496
Other									514	514
Total	555	1585	2223	889	1680	2745	670	2277	514	13138