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RUNNING HEAD: PREVALENCE OF CONTRACT CHEATING

How prevalent is contract cheating and to what extent are students repeat offenders?

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Abstract

Contract cheating, or plagiarism via paid ghostwriting, is a significant academic ethical issue, especially as reliable methods for its prevention and detection in students' assignments remain elusive. Contract cheating in academic assessment has been the subject of much recent debate and concern. Although some scandals have attracted substantial media attention, little is known about the likely prevalence of contract cheating by students for their university assignments. Although rates of contract cheating tend to be low, criminological theories suggest that people who employ ghostwriters for their assignments are likely to re-offend, and little is known about re-offence rates in this form of academic misconduct. We combined previously-collected datasets ($N = 1378$) and conducted additional, and previously-unreported, analyses on self-report measures of contract cheating prevalence. We found that few students (3.5%), on aggregate, ever engaged in contract cheating but this varied substantially among samples (from 0.3% to 7.9%). Of those who ever engaged in contract cheating, 62.5% did so more than once. The data also suggested that engagement in contract cheating is influenced by opportunity. These figures may help policy makers, and researchers who are creating contract cheating detection methods, to estimate base rates of contract cheating and the likelihood of re-offence.

Keywords: contract cheating, ghostwriting, prevalence, plagiarism, academic integrity

Contract cheating is a breach of academic ethics in which students enter into an agreement to pay another person to complete assessments on their behalf (Clarke and Lancaster 2006; Walker and Townley 2012). Typically, this involves paying the other person to write an unsupervised assessment such as an essay, report, or computer code (Clarke and Lancaster 2006; Walker and Townley 2012). Contract cheating appears to be a subset of the form of plagiarism defined by Walker (1998) as “ghostwriting”. Walker defined plagiarism via ghostwriting as occurring when students submit work written by another person as if it was their own, but this definition is silent on the issue of payment, which is an inherent feature of contract cheating. Contract cheating has been a particularly hot topic of late, both in the academy and in the media.

A recent headline-grabbing scandal in Australia was the discovery of a custom-writing website called MyMaster (Visentin 2015). The numbers of students involved appeared to be high, with reports of nearly 1000 students using the site (McNeilage and Visentin 2014). However, such reports of the prevalence of contract cheating may be misleading when framed in terms of the number of students doing it, because these figures do not take into account the size of the group from which the students are drawn. The university identified as having the most potential student users of the MyMaster contract cheating website had 128 requests to the site for assignments (McNeilage and Visentin 2014). Although the raw number of 128 requests appears to be shocking, this would represent only 0.3% of students at that university if each request was from a unique student. Unfortunately, the prevalence of contact cheating can appear to be overblown with the media’s focus on raw numbers; one thousand students cheating makes a better headline than 3 in every 1000 students cheating. And, such media reports may cause the kind of panic over contract cheating that academic authors on the topic suggest is unwarranted (Walker and Townley 2012).

Walker and Townley have stated that “the prevalence of contract cheating is unknown” (2012: 27). This statement seems to be too definitive. From our assessment of the literature, we would, instead, contend that *little* is known about the prevalence of contract cheating. The aim of our report is simple; we wish to contribute some new information to the literature on the prevalence of contract cheating. This aim is consistent with the recent plea of Wallace and Newton, who state, in relation to contract cheating: “[T]he single greatest need is for more high-profile research in this area, to educate educators about the existence and detail of the problem” (2014: 236).

There are some important reasons why estimating the prevalence of contract cheating among university students may be worthwhile. First, it may be helpful to policy makers to have some guidance as to likely the extent of the problem. Second, some potential avenues for automated detection of contract cheating may rely on estimates of its prevalence.

Busy academics in massified higher education systems have limited time to investigate suspected academic misconduct, and often rely on text-matching software to assist in the detection of plagiarism (Walker and Townley 2012). However, automated methods for detecting contract cheating are not well-formed or in widespread use, partly because these require, but lack, data on the prevalence of contract cheating. For example, textual analysis methods can estimate the probability that two documents (e.g., an exam where the student’s identity is verified and an unsupervised essay) were penned by the same author (Afroz et al. 2014; Koppel and Winter 2014; Stamatatos et al. 2015). But, should an academic trust a computer-generated estimate that 75% of his or her students have engaged in contract cheating? Similarly, persistent discrepancies in marks between unsupervised and supervised assessments may act as red flags for potential contract cheating (Clare 2016). But, should an academic trust a computer-generated finding that students who have never before been accused of using ghostwriters have done so? Such methods use probabilistic decision rules

that estimate the likelihood that contract cheating may have occurred, and these decision rules can be informed by reasonable estimates of base rates of contract cheating. Without some estimate of the prevalence of contract cheating, academics have no way of knowing whether the results produced by an automated detection method are within the bounds of reality.

Borrowing from what is known about other types of unethical behaviour, repeat offending is a known pattern within criminological research, whereby a small number of offenders are responsible for a very large amount of crime. This was clearly identified by the 2003 Home Office study that randomly sampled about 12000 UK residents (aged 10 to 65 years) and identified that 2% of the sample were responsible for 82% of all reported offences (Budd, Sharp and Mayhew 2005). In addition to this, crime problems are non-randomly distributed, clustering across time and space (e.g., Curman, Andresen and Brantingham 2015) as well as with respect to victims (e.g., Farrell, Phillips and Pease 1995), and targets (e.g., Townsley, Homel and Chaseling 2003).

Two criminological theories combine to explain these non-random patterns. The first, routine activity theory (Cohen and Felson 1979), posits that for a predatory crime to occur a motivated offender must co-occur in time and space with a suitable target and the absence of a capable guardian. This opportunity structure is not always present, explaining why eager offenders do not constantly offend. Second, the rational choice perspective (Cornish and Clarke 1986) explains that offenders make crime-specific 'rational' choices (in a bounded sense, constrained by factors such as time, cognitive ability, and available information) that are influenced by the perceived costs and benefits of their actions. The rational choice perspective makes the crucial assumption that crime decisions can be made by anyone, provided they perceive the hedonistic calculus to favour the reward over the risk and effort. Together, these theories contribute to an opportunity-based explanation for crime (discussed fully by Felson and Clarke 1998) that can account for variations in offending behaviour

across contexts, with offenders acting selectively about where, when, and against whom to offend.

In relation to the prevalence of contract cheating, building on the empirical findings relating to offending patterns, it is possible to make two predictions: (a) only a small proportion of the student population will engage in this type of serious unethical behaviour, and (b) those who do choose to use ghostwriters for their assignments will do so on multiple occasions. Looking at the two theories discussed, above, it would be expected that the frequency of contract cheating will be influenced by the individual's motivation *and* the suitability of the opportunity they are presented with. As a result, in relation to the prevalence of contract cheating, these theories suggest that contract cheating may be more frequent among students who have completed more academic studies: where more studies means more assignments and more assignments means more chances that the student's motivation coincides with an assignment that could be purchased (a suitable target). Moreover, with evidence of increasing numbers of online paper mills and contract cheating websites (Wallace and Newton 2014), contract cheating might be expected to be more prevalent in more recent samples of students than in older samples.

In considering the prevalence of contract cheating, we are interested in three questions arising from the existing empirical literature and theory. First, what is a reasonable estimate of the base rate of contract cheating by students? In other words, what percentages of students do it? Second, are some students likely to repeatedly engage in contract cheating? Third, is engagement in contract cheating influenced by opportunity?

Existing Estimates of the Prevalence of Contract Cheating

There are several studies in the literature that begin to provide some guidance as to the likely prevalence of contract cheating. Some studies also contain evidence of the likelihood that some students are serial users of contract cheating services.

In large-scale ($N \sim 64,000$) North American surveys, McCabe (2005) found that 7% of undergraduates and 3% of postgraduates reported turning in work done by another person in the past year, but it is unclear as to the extent to which these figures represent contract cheating. The “work done by others” may have been collusion or unpaid ghostwriting, but it is not clear whether the students surveyed paid another person for the work they submitted as their own. McCabe also reported that 3% of undergraduates and 2% of postgraduates had turned in papers from paper mills in the previous year, which would constitute contract cheating. Similarly, Bailey, Tomar, and Chu (2012) asked nearly 2000 students in a self-report survey to indicate whether they had purchased essays to turn in as their own in the past year. They found that 3.7% admitted doing so one or two times and a further 3.2% admitted doing so three times or more.

In a study designed to assess cultural differences in plagiarism, Maxwell, Curtis and Vardanega (2006) asked students to report on their engagement in several different forms of plagiarism identified by Walker (1998). They found that 1% of local Australian students and 4% of Asian international students studying at the same Australian university reported having purchased an assignment that they submitted as their own at least once – an action this study classified as ghostwriting rather than contract cheating. Using the same measure five years later, Curtis and Popal (2011) reported that 3.5% of their sample had purchased an assignment that they submitted as their own. These studies were followed up by Curtis and Vardanega (2016), with data collected in 2014. Curtis and Vardanega (2016) found that rates of plagiarism had fallen for methods that were detectable via text-matching software, such as verbatim copying of published texts. However, contract cheating remained at a persistent, albeit low, rate of 2.8% of students. Although these studies provide helpful estimates of the prevalence of contract cheating, they did not report the full details of the results that they collected. Specifically, their survey instrument contained a measure of frequency of

engagement in contract cheating that the authors collapsed to simply report the overall percentage of students who had *ever* employed contract cheating. We obtained the raw data from these surveys for re-analysis of the full frequency measure, which we report in this paper.

One other study used the same survey instrument as Maxwell et al. (2006), that reported by Zafarghandi, Khoshroo and Barkat (2012). Zafarghandi et al. surveyed masters-level Iranian (EFL) English as Foreign Language students and reported the full frequency results of the measure of contract cheating. They found that 3.1% of students in their sample reported purchasing an assignment to turn in as their own once, and 4.8% had done so multiple times. This made a total of 7.9% of the sample who had ever engaged in contract cheating.

Clarke and Lancaster (2006) provide additional evidence that some people who engage in contract cheating are likely to do so repeatedly. They analyzed students' requests made to a site that would write computer code. Only 8.1% of the students using the site for contract cheating made one request, whereas some students made scores of requests for people to complete computer coding work on their behalf (Clarke and Lancaster 2006).

In summary, the studies reviewed above provide estimates ranging from around 1% (Maxwell et al. 2006) to 7.9% (Zafarghandi et al. 2012) of students ever having engaged in contract cheating during their studies. Importantly, some studies (e.g., Bailey et al. 2012; Clarke and Lancaster 2006) also indicate that many students who engage in contract cheating do so repeatedly.

Method

We aggregated data from five studies that had previously used a (nearly) identical measure of frequency of contract cheating. These studies used a survey instrument, published by Maxwell, Curtis and Vardanega (2008), that was designed to measure understanding,

perceived seriousness, and engagement in seven forms of plagiarism identified by Walker (1998). For our study, we were only interested in responses to the item measuring engagement in contract cheating. The measure used in these studies employed a scenario-based approach. For contract cheating, students were presented with the following scenario: “A student has to write an essay for her economics class. She finds a website on the internet where she can pay someone to write it for her. She pays the money and is emailed the essay. She hands the essay in as her own.” (Maxwell et al. 2008: 35). After this scenario the students were asked “Have you ever done a similar thing?” and were given the following 5 response options: 1 = never, 2 = Only once, 3 = 2-3 times, 4 = 4-7 times, and 5 = more than 7 times.

We obtained the raw dataset from one study, conducted at Murdoch University, that had previously used the measure described above but had not reported the data that the authors collected on contract cheating prevalence (Curtis, Gouldthorp, Thomas, O’Brien and Correia 2013). We also obtained the raw dataset from three studies, conducted at Western Sydney University (Curtis and Popal 2011; Curtis and Vardanega 2016; Maxwell et al. 2006), that had previously only reported the results of the 5-point scale as means on that scale and as percentages of students who gave an answer other than “never”. We aggregated these data with that from Zafarghandi et al. (2012), who reported percentages for all 5 points of the scale used to measure the frequency of engagement in contract cheating. Key demographics and other information for the samples from these studies are presented in Table 1.

There are two differences between the study of Zafarghandi et al. (2012) and the others that are important to note. First, Zafarghandi et al. modified the contract cheating scenario to read as follows: “A student has to write an essay. She finds someone whom she can pay to write it for her. She pays the money and buys the essay. She hands the essay in as her own.” (2012: 80). This differs from the other studies by omitting any references to the subject of study and internet communications technologies. Second, Zafarghandi et al.’s

sample was drawn from 28 Iranian universities and was composed entirely of EFL postgraduate students. The other studies were conducted at Australian universities with all, or most, participants being drawn from the home institutions of the studies' authors and the samples were predominantly native English-speaking undergraduates.

INSERT TABLE 1 ABOUT HERE

Results

We combined the raw datasets from the four studies that we obtained from those studies' corresponding author, into a single dataset for analysis. We converted the percentages reported by Zafarghandi et al. (2012) to frequencies based on the total sample size for that study. This allowed us to undertake a simple meta-analysis of the results of these studies in relation to contract cheating prevalence. The frequencies and percentages of student engagement in contract cheating, broken down by study, and in aggregate, are reported in Table 2.

INSERT TABLE 2 ABOUT HERE

The aggregation of the data from these studies provides results that speak to the prevalence, re-offence rates, and relationship between contract cheating and opportunity. As can be seen in Table 2, the vast majority of students in the samples that we combined reported never engaging in contract cheating, with only 3.5% reporting ever having done so. Forty-eight students in total reported ever engaging in contract cheating, of these, most ($N = 26$, 54.2%) were from the Zafarghandi et al. study, a rate of 7.9% in that study compared with 2.1% in the other studies combined.

The characteristics of the students who did engage in contract cheating suggest that re-offence is common. Of the 48 students who reported ever engaging in contract cheating, 30

(62.5%) reported doing so more than once. Indeed, in four of the five studies the students who were repeat offenders outnumbered one-off offenders. The proportion of repeat offenders among students reporting that they had engaged in contract cheating was similar when comparing Zafarghandi et al.'s study ($N = 16$, 61.5%) and the other studies combined ($N = 14$, 63.6%).

Some results suggest that engagement in contract cheating may be related to opportunity. Of the students who reported ever engaging in contract cheating, 30 (62.5%) were postgraduate students, but this was disproportionality influenced by Zafarghandi et al.'s sample, who were all postgraduate students. Among the other studies, there was a tendency for higher-year students to have been more likely to have engaged in contract cheating. Specifically, excluding Zafarghandi et al.'s data, the combined sample was composed of 46.5% 1st-year students and 8.6% postgraduate students, but of those who had engaged in contract cheating only 36.4% were 1st-year students and 18.2% were postgraduate students.

While opportunity related to year level seems to be connected to engagement in contract cheating, the data do not paint a convincing picture of an increase in contract cheating in more recent studies. The four Australian studies, which were spread over a decade, reported very similar rates of contract cheating. In fact, the second-most recent study (Curtis et al. 2013) had the lowest reported rate of contract cheating.

Discussion

In this paper, we have reported the previously-unpublished full data breakdown from four studies that used an identical self-report measure of contract cheating and combined these with the published results of another study that used a nearly-identical measure. Together, these studies provide a good-sized sample of students from across a range of year levels, majors, and locations from which we can make an estimate of the prevalence of contract cheating and re-offence rates among contract cheaters. Of course, the overall

contract cheating rate of 3.5% from the dataset we analyzed was comparable to the overall rates previously reported for these studies. Importantly, but for Zafarghandi et al. (2012), the other studies have not previously reported whether students said that they had engaged in contract cheating on multiple occasions.

The studies that we analyzed used a measure of contract cheating that asked students whether they had *ever* done a similar thing to behaviour described in the contract cheating scenario that was presented to them. Because of this, the data represent the rate of contract cheating for students across their entire period of study. This should be considered in contrast to the results of the studies where students reported their rates of contract cheating in the past year. McCabe (2005) and Bailey et al. (2012) reported rates of contract cheating of between 2% and 6.9% of students in the past year. These are in a similar range to the rates students who report *ever* engaging in contract cheating in our analysis. So, why would the percentage of students who *ever* engage in contract cheating and the rate of students who engage in contract cheating *in the past year* be quite similar? The answer, we suspect, is re-offence.

As the data we presented indicates, most of the students who reported engaging in contract cheating said that they did so more than once. This is consistent the small amounts of previously-reported data that suggests contract cheaters tend to re-offend (e.g., Bailey et al. 2012; Clarke and Lancaster 2006) and also aligns well with the opportunity-based explanations for offending discussed at the start of this paper. As far as we can find in the published literature, our analysis gives the most comprehensive picture to date of self-reported re-offence patterns among contract cheaters.

Among the studies that we aggregated, there were some clear differences between the results of Zafarghandi et al. (2012) and the other studies about which we should comment. There are three obvious reasons that may explain why contract cheating was higher in the students surveyed by Zafarghandi et al. (2012). First, Zafarghandi et al.'s data were

collected in Iran and the other studies analyzed were from Australia. There may be cultural and educational practice differences that contributed to the difference in rates of contract cheating. Chief amongst these issues, we suspect, is that all students in Zafarghandi et al.'s sample had the added challenge of studying in a foreign language, with the challenges that this presents potentially providing a motivation for students to seek the help of ghostwriters. Second, Zafarghandi et al.'s was the only study to use the slightly-modified scenario that did not mention the students' major or the use of internet communications technology. It might be that students in other studies did not respond affirmatively if they had, for example, bought a ghostwritten assignment from somewhere other than an online source. Third, Zafarghandi et al.'s sample was entirely composed of postgraduate students, and the measure asked students if they had *ever* engaged in the behaviour described. As more senior students have completed more years of study, and therefore more assignments, they have had more opportunities to have ever engaged in contract cheating.

The seniority of the students in Zafarghandi et al. (2012) study seems, to us, to be the most plausible explanation of the difference between their results and the other studies' results for two reasons. First, the analysis of the contract cheaters who were not from Zafarghandi et al.'s study indicated a tendency for them also to be higher-year students. Second, it is consistent with the expectations of routine activity theory (Cohen and Felson 1979) and the rational choice perspective (Cornish and Clarke 1986) that opportunity is an important determinate of possible engagement in unethical behavior.

Limitations and Future Directions

The studies we analysed, much like many previous studies (e.g., McCabe 2005), reported the results of anonymous self-report surveys. Although anonymity should provide some confidence for students that they can respond honestly, people may still err against reporting undesirable behaviours even in anonymous surveys (MacDonald and Nail 2005).

Because of this, we think it would be reasonable to assume that the aggregated survey results we analyzed represent a low-end estimate of the true prevalence of contract cheating.

A second limitation is that, as we have discussed above, it is not possible to provide a definitive explanation for the differences between the results of Zafarghandi et al.'s (2012) study and the four Australian studies. We suggest that larger-scale simultaneously-administered surveys are needed with: identical measures, students of comparable year levels, and a wider range of majors and university systems. Such research would help to disentangle the possible explanations for different rates of contract cheating in different studies.

Returning briefly to the opportunity accounts for offending, it is also likely the case that individual student's motivations to engage in contract cheating are influenced across assignments by the assessment task. It is probably the case that some assignments are more suitable for this behavior, and the likelihood of a motivated offender coinciding with one of these suitable targets would increase with study time. An examination this issue would require information about the types of assessment items that have motivated students to engage in contract cheating. This is beyond the scope of the current paper but is worthy of future research.

Conclusion

In presenting some never-before published data, this paper adds to the literature on what is known about the likely rates of contract cheating among university students. The data suggest that a small percentage of students ever engage in contract cheating, but that those who do are likely to do so repeatedly. Our analysis suggested that contract cheating was related to opportunity, inasmuch as later-year students are more likely to have ever engaged in contract cheating. However, we did not find any clear evidence of a historical trend for contract cheating to be more prevalent in the more recently-collected datasets. We hope that these data will help researchers who are seeking to create automated contract cheating detection methods to estimate base rates of contract cheating and re-offence rates.

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Table 1.

Demographics of Samples in the Data Sources Analyzed.

Data source	Year collected	Survey Method	Total <i>N</i>	Gender		Major Fields of Study (<i>N</i>)	Student Year of Study (<i>N</i>)
				Male	Female		
Maxwell et al. (2006)	2004	Online and hardcopy	425	231	188	Arts, Education, or Psychology (62), Business (312), Other (38)	1 st (139), 2 nd (83), 3 rd (102), 4 th (25), Postgraduate (76)
Curtis and Popal (2011)	2009	Online and hardcopy	120	49	71	Arts, Education, or Psychology (41), Business (79)	1 st (76), 2 nd (38), 3 rd (5), 4 th (1)
Zafarghandi et al. (2012)	Not reported	Hardcopy only	327	120	207	English, Teaching, and International Studies	Postgraduate (327)
Curtis et al. (2013)	2011	Hardcopy only	359	104	255	Arts, Education, or Psychology (326), Other (30)	1 st (218), 2 nd (110), 3 rd (26), 4 th (3), Postgraduate (2)
Curtis and Vardanega (2016)	2014	Online only	147	36	111	Arts, Education, or Psychology (120), Business (3), Other (22)	1 st (56), 2 nd (29), 3 rd (35), 4 th (11), Postgraduate (16)
Total			1378	540	832		

Note: Gender, Major, and Year do not always sum to the Total *N* for the same data source because of small numbers of missing responses to demographic items in the original studies.

Table 2.

Frequency and percentage of engagement in contract cheating by sample.

Data source	Frequency of engagement in contract cheating									
	never		once		2-3times		4-7 times		>7 times	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Maxwell et al. (2006)	413	97.2	4	0.9	6	1.4	2	0.5	0	0.0
Curtis and Popal (2011)	116	96.7	1	0.8	3	2.5	0	0.0	0	0.0
Zafarghandi et al. (2012)	301	92.0	10	3.1	7	2.1	7	2.1	2	0.6
Curtis et al. (2013)	358	99.7	1	0.3	0	0.0	0	0.0	0	0.0
Curtis and Vardanega (2016)	142	96.6	2	1.4	3	2.0	0	0.0	0	0.0
Total	1330	96.5	18	1.3	19	1.4	9	0.7	2	0.1

Note: Total *N* = 1378