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Detecting and prosecuting contract cheating with evidence – a “Doping Test” approach

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Abstract

Contract cheating – outsourcing student assignments for a fee – presents a growing threat to the integrity of higher education. As contract cheating is based on students purchasing assignments that are original (albeit not created by the student), traditional plagiarism detection tools remain insufficient to detect contract cheating. Part of the problem is that proving contract cheating is difficult. As a result, instructors may find it hard to prosecute students (i.e. put them through university academic dishonesty proceedings). To help address the problem, this conceptual paper builds upon extant scholarship on contract cheating and argues that a novel evidence-based approach is needed. Such an approach should allow instructors to detect and prosecute cases of contract cheating effectively and efficiently. The paper then presents an outline of such an approach and calls it the “Doping Test” approach as it mimics some aspects of doping testing in professional sport.

Keywords: Contract cheating, Plagiarism, Academic dishonesty, Cheating company

Introduction

Online-based learning management systems (like Blackboard or Canvas) are increasingly popular in higher education – some studies have reported that 99% of universities use them (Dahlstrom et al. 2014). While the learning management systems help faculty and instructors better manage the courses they teach (Mershad and Wakim 2018), they also allow 100% online submission of student work. As a result, these systems make it difficult to reliably identify academic dishonesty: when student work is submitted only online, the instructor may not be able to verify who really did it (Dawson and Sutherland-Smith 2018; Malesky et al. 2016). The purpose of this paper is to provide a conceptual model for identifying academic dishonesty. The model is intended to help instructors and advance academic literature on academic dishonesty.

Building on extant scholarship on contract cheating, this conceptual paper suggests a novel evidence-based approach of identifying and prosecuting cheating company using students in face-to-face courses. As the approach mimics some aspects of doping



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testing in professional sports, I will call it the “Doping Test” approach. As presented in this paper, the Doping Test approach should be viewed as conceptual model that suggests some potentially useful avenues for individual instructors. As well, the model should be further developed and tested in subsequent empirical research. I acknowledge that some aspects of the model may not be applicable to instructors in different institutional settings and jurisdictions; yet, the overall approach and the logic behind it – collection and analysis of evidence – should be applicable. Also, as presented here, the Doping Test model does not address legal aspects of its use in any detail, and empirically validating the model remains outside of the scope of this paper. In developing and presenting the Doping Test model in its conceptual form, however, this paper builds on and advances the idea that “detection of contract cheating is not the same as successful prosecution of contract cheating” (Dawson and Sutherland-Smith 2018:292).

Cheating by cheating companies

In line with the broader trends of outsourcing knowledge work to off-site locations, university and college students have been able to outsource assignments to off-site service providers for some time (Bretag et al. 2019; Clarke and Lancaster 2006; Walker and Townley 2012). Students can now even outsource an entire course’s worth of coursework to these providers (Malesky et al. 2016). Like with other types of outsourcing services, coursework outsourcing services are provided by companies that may reside in any part of the world (Rigby et al. 2015). These companies are typically called essay mills (Clarke and Lancaster 2007; Lines 2016) or cheating companies (Clarke and Lancaster 2006; Lancaster and Clarke 2007; Sutherland-Smith and Dullaghan 2019). In this paper I will call them *cheating companies*.

The cheating companies advertise their services openly as such services are currently legal in many, if not most, jurisdictions (Sutherland-Smith and Dullaghan 2019). In addition to advertising, students can learn about the cheating companies by word-of-mouth from friends and other students. The cheating company services are widely available to students across all disciplines and levels of study (Rowland et al. 2018) and many students find them easy to use (Walker and Townley 2012). The cheating company websites are designed to be persuasive and easy to navigate, with customer service features such as live chats and 24/7 customer service via email (Ellis et al. 2018; Rowland et al. 2018; Sutherland-Smith and Dullaghan 2019).

Scholars have described that cheating company services are often used by students who feel that their English skills are insufficient, a group that may include international students (Walker and Townley 2012; Taylor 2014). The process of using a cheating company is simple: a student navigates to a cheating company website, specifies what he or she wants to purchase (e.g. an essay), the level of study (e.g. undergraduate) and gives additional details requires (e.g. assignment question, word count) and places the order, all while operating anonymously (Dawson and Sutherland-Smith 2018; Lines 2016). In addition to purchasing individual assignments, students can even outsource a greater portion of their homework production for cheating companies (Rowland et al. 2018; Fisher et al. 2016).

Typically the contract cheating websites are just fronts for sophisticated businesses behind them (Ellis et al. 2018), which acts as middlemen mediating the interaction

between students and the ghostwriters doing the students' assignment work (Clarke and Lancaster 2006; Rowland et al. 2018).

Extant approaches to address cheating by cheating companies

Institutional approaches

Some authors trace the rise and growth of the cheating companies to universities' and colleges' practices and policies, as well as their deficiencies. Taylor (2014,52) argued that universities and instructors' grading policies, for example, can lead to student pressures which, in turn, make some students turn to cheating companies:

“Professors contribute to the pressure by implementing grading policies that focus on competition for the highest score rather than ensuring students master the subject matter. And schools are co-conspirators when they place undue emphasis on grades when evaluating applicants.”

If this argument has merit, one could make the additional argument that cheating company use could be diminished if professors implemented different grading policies and if universities evaluated applicants using less grade-based methods. However, it seems unlikely that such changes, if plausible in the first place for various other reasons, would eradicate contract cheating.

In addition to instructors being too harsh with their grading, Taylor (2014) places at least part of the blame on instructors who do not confront the students. Confronting students to reduce contract cheating has been recommended by other scholars as well (Rogerson 2017; Lancaster and Clarke 2008). However, it may not be realistic to expect that instructors, who are often under time constraints (Rogerson 2017), could systematically confront students, at least not without having tools to do so. Other scholars have also noted that confronting students suspected to be using such companies is a task that demands time and energy from the instructors (Draper and Newton 2017). Others have argued that it can be difficult to prove that a student has purchased an assignment, and accusing students without proof can be a legal liability for universities (Ison 2020; Taylor 2014). It is therefore conceivable that such risk might in some instances add to the instructors' reluctance to investigate contract cheating and confronting of students.

Some authors have recommended that informing the students about the academic dishonesty policies of their institutions might help prevent cheating by cheating companies. The rationale behind this recommendation is that if the students were informed about the gravity of the issue, at least some of them would be less likely to use cheating companies. Yet others have recommended that the universities' academic dishonesty policies be revisited and re-written if needed so that they would better address the changing landscape of cheating, including the threat posed by the cheating companies (Culwin and Lancaster 2001; Rowland et al. 2018).

While a more thorough review on the relationship between academic integrity policies and contract cheating remains outside the scope of this manuscript, the argument I am making here is that as long as instructors lack tools with which they can efficiently address the use of cheating companies in a way that does not increase the risk of

unduly lawsuits, it is unlikely that instructors will significantly change their cheating company use enforcement. To counter this phenomenon, some scholars have recommended that student assessments should be designed so that it becomes difficult to cheat in them using cheating companies (Walker and Townley 2012:39).

Assessment design-based approaches

First, some authors have recommended that instructors incorporate authentic, real-world tasks in student assessments to prevent cheating. One rationale behind this recommendation is that if students are asked to relate the material they are learning to their own lives, they “might see the value in genuinely engaging with such tasks” as opposed to cheating (Dawson and Sutherland-Smith 2018:287). Presumably, the better the students see the value of engaging with the assignment, the less inclined they are to cheat in it. One way such real-world task incorporation can occur is to ask the students to apply their recently acquired knowledge to an “unseen scenario” (Slade et al. 2019: 53). In such an assignment, the assumption would also be that it is more difficult to outsource work to cheating companies when the assignment incorporates elements from the student’s life. An assignment can also ask students to reflect on already-completed tasks in the course, a strategy that might prevent cheating for similar reasons (Slade et al. 2019). For example, an assignment could ask the students to improve on their previously submitted work, and even use the Cloze test method which asks students to fill in the blanks on their own previously submitted assignments (Lancaster and Clarke 2008). This approach would presumably make the use of cheating companies less likely, or at the very least make the students to study the cheating company-provided materials to be able to successfully complete the fill-in-the blanks exercise in their “own” submission. Lancaster and Clarke (2008) even entertain the idea that such a test could function as a final examination that would feature predominantly in the students’ final course grade – a potentially useful idea in addressing contract cheating when applicable.

Second, some authors have recommended that the assignments are designed so that they are personalised to each student: depending on the type of the assignment, each student could be given a different data set to work with (Lancaster and Clarke 2008), or asked to write personalised reports instead of generic ones (Slade et al. 2019). The downside of the personalised assignment approach is that designing personalised assignments can be time consuming, and moreover, personalised assignments may not actually decrease the likelihood of using cheating companies as students can purchase assignments that appear personalised (Walker and Townley 2012).

Third, some authors have recommended that the instructor divides the assignments into smaller parts which are then submitted over time, thus requiring more coordination between the cheating student and the cheating company (Slade et al. 2019). The rationale behind this recommendation is that more coordination would make the outsourcing process more cumbersome, and therefore less likely to occur, as well as allow the instructor more visibility to the student’s process.

While possibly highly useful, all assignment re-designs, no matter how careful, may not be able to fully prevent contract cheating. It seems plausible that Walker and Townley’s (2012:40) assessment is still valid: “with regard to contract cheating ---

[assessment design measures] are more likely to be discouragement measures than prevention measures.” Partly for this reason, some scholars have recommended technological tools like Turnitin and PlagScan to control cheating by cheating companies (Johnson and Davies 2020; Malesky et al. 2016; Nutanong et al. 2016). These tools detect plagiarism by comparing submitted assignments to extant texts such as websites and previously submitted assignments in a database. If a student’s submission is sufficiently similar to an extant text, the tools then alert the instructor about it for further possible action.

Technology-based approaches

Because the cheating companies create *original* content (i.e. not plagiarised content in the strict sense of the term), and because the cheating company-created assignments are typically created by only one person, traditional digital forensics anti-plagiarism tools like Turnitin may be unable to address cheating by cheating companies (Clarke and Lancaster 2006; Johnson and Davies 2020; Walker and Townley 2012). More broadly, these tools may not allow the instructor to identify instances of cheating when students submit written assignments only online (Malesky et al. 2016). Indeed, a recent study found that Turnitin did not help instructors detect cheating company use in 23 out of 26 cheating company-created assignments (Dawson and Sutherland-Smith 2018). Some authors have even argued that *because* tools like Turnitin are so effective in detecting direct copying and pasting from the internet, they have pushed students who want to cheat to the cheating companies (Rigby et al. 2015).

To address these concerns, some of the newest technological tools – like Unicheck’s Emma – are beginning to include features that alert instructors when an assignment’s textual style does not match with the student’s previously submitted assignments (Nyzova 2019). Computerised collection and comparison of data on writing styles presents a potentially useful new direction for the technology-based approaches to detecting cheating by cheating companies. However, even such tools are not fool-proof as they require at least a few writing samples whose authorship can be verified: the instructor must collect some samples of student writing that are actually from the student, not the cheating company. What is more, even the latest technological tools do not address the important question of how instructors should actually address the cheating by cheating companies when detected.

Toward an integrative methodology of cheating detection and student confrontation

While useful in focusing our attention to the issue of contract cheating, the three approaches described above (the institutional, the assessment design, and the technological) may not always give specific advice on how to best and efficiently confront (Rogerson 2017; Lancaster and Clarke 2008) or prosecute (Lancaster and Clarke 2008: 151) students when cheating is detected. Prosecution in this sense refers to the instructor making an informed judgment that a cheating has occurred so that the student should be put through formal academic proceedings (Dawson and Sutherland-Smith 2018). Ideally, such prosecution would require minimal use of the instructor’s time and energy, as well as stop the student’s use of the cheating companies in the future.

Despite all the university policies and technologies available, such confrontation presents a difficult problem, which may explain why instructors may choose to do nothing even when they suspect that a cheating company has been used (Harper et al. 2019). Part of the problem is that the instructors are actually faced with a two-stage problem: firstly, how to reliably justify the suspicion that cheating by cheating company may have occurred, and secondly, how to make a document-based case that this is so.

This observation brings up an important point: any method – institutional, assessment design, or technological – with which instructors are expected to address the cheating company use should include a sound methodology to substantiate the instructor's claim that cheating company use has occurred while being efficient (i.e. not time-consuming) and effective (i.e. lead to disciplinary action when warranted) (Harper et al. 2019). Such a sound methodology should include criteria by which an instructor can open an investigation into a particular students' conduct: in many jurisdictions, including many in the U.S., opening an investigation of this sort in an ad-hoc or random manner can be considered unethical and possibly a violation of civil and other rights. This puts instructors in an even more difficult position: while sometimes it may be quite obvious to an instructor that a research paper submitted by a student has been created by a cheating company, the instructor may not be able to prove the cheating. This would result in no action, and possible loss or instructor morale (Slade et al. 2019).

In line with the three approaches presented above, Taylor (2014) recommends that the instructors tackle the problem with a combination of ethics (hold students accountable, reward good behavior, punish bad behavior), appropriate instruction (inform students about academic dishonesty), and creative learning strategies (e.g. make students excited about a topic). While these measures are commendable, they are likely to be insufficient in many cases of cheating company use. Perhaps for that reason, and echoing many of the cheating company use reduction strategies discussed elsewhere in this paper, Taylor (2014) recommends a more specific process, including obtaining baseline samples of student writing (to establish the writing style of each student), requiring students to submit several progress reports of each paper (to break up an assignment into parts, making it harder to out-source), and requiring part of the paper assignment writing to occur in class (to at least partially monitor the student work).

“Doping test” approach

Drawing from the three approaches presented above, I next develop a conceptual framework to address cheating by cheating companies. I call the conceptual framework a “Doping Test” as it mimics some key aspects of anti-doping procedures in professional sport (World Anti-Doping Agency 2019); it entails the systematic collecting and comparison of student work samples with which the instructor can potentially determine cheating by cheating company use. The conceptual Doping Test approach, as described here, is intended primarily to address cheating company use in written assignments (e.g. research papers, term papers), but its basic idea should be applicable to other types of assignments as well.

Step 1: substantiating the initial suspicion via sampling

Often the instructor's first problem when faced with a suspicious assignment (i.e. an assignment that she or he thinks may have been created by a cheating company) is substantiating the suspicion (Harper et al. 2019). While the initial suspicion can arise from the observation that *something* about a submission (e.g. its style, quality professionalism, formatting, use of references, etc.) does not quite match with the instructor's prior explicit or tacit observations of the student's performance (Harper et al. 2019), the instructor may find it difficult to prove *even to herself or himself* that cheating has occurred. With no proof, the logical – and even ethical – thing for the instructor to do is nothing. In other cases, the instructor's suspicion may arise because an assignment “looks too good” (Malesky et al. 2016): something about the assignment does not match the general expectations of an assignment of its kind. Similarly, it is difficult to prove cheating in such cases. In yet another types of cases, the instructor may observe a group of students submitting assignments that are professionally made and similar to each other, yet somehow different from submissions from other students: certainly a plausible cause of suspicion. What is common with all of these categories of suspicions is that the instructor has only an intuition of cheating, no evidence or data. While in some cases the intuition may be quite strong – human graders have been shown to be able to detect cheating company-created papers with reasonable accuracy (Dawson and Sutherland-Smith 2018) – it still leaves open the question of how exactly to hold the student “accountable for their actions and coursework” at this point (Taylor 2014:54).

Sometimes it may be possible for the instructor to confront the student at this point (Taylor 2014). Yet, if the confronted student does not confess or otherwise co-operate with the instructor (almost always a perfectly legal move), the confrontation may lead to nothing. When this occurs, it can have a negative effect on the instructor's morale (Slade et al. 2019) – what is the point of spending time and effort on detecting cheating and confronting students if it leads nowhere? What is more, while in some instances the instructor's mere suspicion may be sufficient to fail the student(s) in question in the particular assignment it is also possible that armed with only an intuition and no actual evidence, the instructor's case would not prevail in possible further investigations by the college or university (Dawson and Sutherland-Smith 2018). What is more, the risk of legal action against an instructor or a university – e.g. based on anti-discrimination laws – is often perceived as real, further adding to instructors' reluctance to confront students suspected of cheating company use when no evidence of such cheating is available. Importantly, this is probably how it should be – any approach designed to address student cheating in an ethically and legally sound manner should treat the students fairly, including presume the innocence until proven guilty (Clarke and Lancaster 2007).

Therefore, the first step of any ethically and legally sound approach that addresses the use of cheating companies is to provide evidence to substantiate the instructor's *initial suspicion*. Such evidence would reduce the risk of lawsuits by providing early “documentation of the dishonesty” (Taylor, 2014, 54). According to the Doping Test approach, not only *student dishonesty*, but also the *suspicion of student dishonesty* have to be substantiated with evidence. Without such evidence, the instructor and the university may indeed risk lawsuits or other legal action. Substantiating the suspicion is a task that is difficult (Slade et al. 2019). A process I call “Sampling” could be used to

provide such evidence. Sampling refers to the instructor's collection and analysis of at least two writing samples.

Sample 1

The first sample could be simply called "Sample 1." Sample 1 would be the "clean" sample, a sample of a student's work that the instructor could verify was actually created by the student. There should be multiple ways to obtain such a Sample 1. The instructor could ask students to write a *portion of an assignment* under monitored circumstances (e.g. in class when the instructor is present), thus producing a verified sample of a student's writing style. Alternatively, the instructor could ask students to write *anything* of sufficient length in class, such as a reflection piece, informal course feedback, or a daily journal entry on weather, thus also producing a verified sample. If in-class writing is not an option, the instructor could ask students to write a brief document about something peculiar and preferably non-academic about a given lesson, then ask this brief document to be submitted via an learning management system. This option echoes the calls for personalised assessments in contract cheating literature (Ellis et al. 2019; Walker and Townley 2012). While this option may not appear to yield sufficiently strong evidence of actual student-created writing, if the document is kept brief, it may reduce the student's incentive to outsource it. And if the document is kept personal and related to an event in class, outsourcing may become even more difficult. An assignment like this could yield a student submission that looks *very different* from the student's other submissions. It is the *observed difference* in student submissions that would then be sufficient grounds for a warranted suspicion of contract cheating, especially if the other submissions look highly professional – the cheating companies, after all, are known for producing professional-looking reports (Malesky et al. 2016; Walker and Townley 2012). One of the other submissions that looks different is then analytically treated as Sample 2.

Sample 2

Sample 2 would be a sample of the student's work that the instructor initially suspects might have been created by a cheating company. Whereas many aspects of a student's submitted work can raise the instructor's initial suspicions, it is the instructor's deliberate act of selecting one such a submission to function as a Sample 2 and setting it aside for a systematic comparison that will form *the necessary evidence* with which the instructor can substantiate her or his suspicion. Deliberately taking such a Sample 2 and putting it aside for further comparison and analysis would allow the instructor to produce a paper trail with time stamps and other documentation of the process. If the instructor's actions were investigated later by an internal or external entity, the paper trail, if carefully constructed by the instructor, would function as useful evidence for instructor's actions and their justification.

Importantly, such a sampling process would also allow the instructor to disconfirm the initial suspicion: the instructor's initial suspicion may be incorrect and no cheating has occurred. This is important from the student rights' perspective (according to the Doping Test approach, every student should always be presumed innocent until proven guilty), as well as from the instructor's perspective (the instructor has done her or his

due diligence, the suspicion was not substantiated, the instructor can move on – a potentially important move from the viewpoint of instructor morale).

Sample comparison: determining whether the suspicion is justified

The sample comparison could be done in various ways. A systematic way of comparing the samples would take advantage of a refined analytical literary framework that would quantify things like word length, sentence length, vocabulary richness, diction, detail, and sentence structure (Holmes 1985). Quantitatively analyzing such things in Sample 1 would yield a useful stylistic “fingerprint” (Holmes 1985:338) of the student, which could then be compared to the similarly generated “fingerprint” of Sample 2. Quantitatively comparing the two fingerprints could yield compelling evidence for a justified suspicion of contract cheating. Some novel anti-plagiarism software packages are beginning to move to this “stylometrics” direction (Nutanong et al. 2016), although we currently lack studies of their effectiveness (Nyzova 2019).

However, using of an overly refined quantitative analytical framework may not be warranted: it may be sufficient to have something, anything, in writing that looks sufficiently different to an educated observer. For example, it might be sufficient to have one page of Sample 1, with some instructor notes, and one page of Sample 2, similarly with instructor notes, to justify an initial suspicion and hence allow further investigative action free of the fear of lawsuits. To generate such a comparison, the instructor could make quick notes using some of Holmes’ (1985) concepts described above on the margins of both samples, and then write a quick summary of the comparison. Even in the absence of a more fully refined software package that would automate such a process, a comparison conducted in such a way manually should be quick to conduct. It should also function as sufficient justification for the instructor’s further investigative action.

If the evidence provided by comparing the two Samples suggests that the student’s submission in question was not created by the student who submitted it, the instructor could then move to the next stage in the investigation: obtaining evidence for prosecuting contract cheating.

Step 2: obtaining evidence for prosecuting contract cheating via a Sample-2 based monitored test

In some cases the sampling procedure described above could be sufficient for the instructor to take disciplinary action. However, in many instances the comparison of Samples 1 and 2 may not be sufficient to do so. As Dawson and Sutherland-Smith (2018:292) put it, the “detection of contract cheating is not the same as successful prosecution of contract cheating.”

This presents a problem: while in many cases the instructors’ intuition may be justified as evidenced by the sampling process, even this may not allow the instructor to *take any disciplinary action*. Instead, in many cases, instructors need more evidence. For example, in the context of New Zealand, even graders whose intuitions were correct about contract cheating “were not in a position to provide the level of evidence for their judgements that would be required for many formal academic hearing processes” (Dawson and Sutherland-Smith 2018:292). Therefore, while confronting students (Taylor 2014) to ask them questions to explain their submission (Lancaster and Clarke

2008) are commendable steps, without any paper-based documentation such confrontation may not yield any additional evidence with which the instructor could successfully prosecute the student, i.e. put her or him through the “university disciplinary procedures” (Lancaster and Clarke 2008:151).

The second part of the Doping Test, called Sample 2-based monitored test, is designed to provide evidence with which cheating students can be successfully prosecuted (and non-cheating students cleared of suspicion). The Sample 2-based monitored test is just that, a monitored test based on the Sample 2 of a student whose Sample 1 and Sample 2 were observed as sufficiently different by the instructor. To administer the test, the instructor would meet with the student in an office or other suitable location and present the student with an examination sheet based on the student’s Sample 2. The instructor could, for instance, redact some or all of the content in Sample 2. The student could be then asked to use a pen to fill-in-the-blanks, or write down Sample 2’s key concepts, or its main argument – anything deemed appropriate by the instructor to assess whether the student had submitted contract-cheated work. This activity is somewhat similar to the Cloze approach, in which “the student’s work is presented back to them with words removed for them to replace” (Lancaster and Clarke 2008:154). This aspect of the Doping Test differentiates it from more structured viva voce oral examinations in which the students are asked to “discuss the work that they claim to have produced” (Lancaster and Clarke 2008:154). Such viva voce oral examinations can be useful in assessing the student’s mastery of the assignment content, but without explicitly linking the examination to a student’s actual suspicious assignment submission, the oral examination might not yield sufficient evidence for prosecuting the student, or even be allowed by university policies (Lancaster and Clarke 2008).

That the test is based on a modified Sample 2 makes it amenable to following the Cloze approach closely, which is useful in producing documented evidence of cheating (or not cheating). As the Sample 2-based monitored test follows the Cloze approach, its “premise is that a student who wrote the work themselves should be able to replace most words successfully” (Lancaster and Clarke 2008:154).

The student-produced output of the written examination will form Sample 3, which, when presented with Samples 1 and 2, should have a sufficiently high likelihood of counting as evidence of student cheating (or not cheating) for the student prosecution purposes. In short, to determine whether cheating has occurred, the instructor would simply compare Sample 3 to Sample 2 (which was submitted online and roused the instructor’s initial suspicion) and determines whether cheating has occurred. When comparing Samples 3 and 2, the instructor can even develop refined quantitative stylometric scales to assess the degree of difference between the samples, or simply write down observations of difference on the margins.

To conclude, whereas the observed difference between Samples 1 and 2 in the sampling process justified the instructor’s initial suspicion and allowed her or him to take further action, the observed difference between Samples 2 and 3 justifies the instructor to determine whether a cheating has occurred and prosecute the student. At this point, it should not matter whether the cheating in question is contract cheating or help from “friend or family member” (Bretag et al. 2019: 131) – cheating has been determined to have occurred with sufficient evidence, and action could now be taken (Dawson and Sutherland-Smith 2018).

Discussion

This paper presented a conceptual “Doping Test” model of identifying and prosecuting contract cheating. The Doping Test approach was developed based on extant contract cheating literature (Bretag et al. 2019; Ellis et al. 2018; Harper et al. 2019; Lancaster and Clarke 2008; Lancaster & Clarke 2012; Lancaster 2019; Rowland et al. 2018; Slade et al. 2019; Taylor 2014). The conceptual Doping Test model intends to advance the contract cheating literature toward more actionable models that would allow university instructors address contract cheating efficiently and effectively.

Efficiency

As dealing with cheating students in general can be time-consuming (Walker and Townley 2012), a key requirement for any working approach should be efficient and not time-consuming for the instructor. Doping Test approach is designed with these requirements in mind: it asks educators to spend only minimal amount of time and energy in detecting and prosecuting students who cheat by purchasing assignments from cheating companies. The Doping Test model presents the instructor as a process that could be rehearsed and ready-to-go document templates for its activities (e.g. summoning students to a face-to-face meeting; documenting the results of comparisons between samples) could be developed. Following the Doping Test model with appropriate document templates to record actions at each stage, the instructor could also be freed from the constant thinking about the possibility of contract cheating and how to best approach each potential case, possibly in more or less ad hoc fashion each time. By following the Doping Test model, the instructor would have a good idea of what to do from the initial instance of suspected contract cheating.

Effectiveness

The previous specific process models of addressing contract cheating originated in the early stages of contract cheating in the early 2000s: the four-stage plagiarism detection model by Culwin and Lancaster (2001), and the six-stage process contract cheating detection model by Clarke and Lancaster (2007). While useful at the time, these models have become outdated as tools for instructors as the world of contract cheating has changed. While the Doping Test model (and most of contemporary contract cheating literature) differs from the older models in that it deliberately ignores interaction between students and the cheating company, both these earlier models and the Doping Test model share an interest in collecting evidence to build a case.

Others have noted that detecting and prosecuting contract cheating are two distinct phenomena (Dawson and Sutherland-Smith 2018) and that it can be difficult to prove contract cheating even when it is quite obvious to the instructor (Harper et al. 2019). Disciplining or possibly even accusing a student without proper evidence carries the risk of legal action against the university or the instructor. The Doping Test model is based on the idea of collecting sufficient evidence with which the student who has engaged in contract cheating can be prosecuted. The focus on evidence at two separate stages of the instructor’s overall investigation – first justifying the suspicion, then determining whether cheating has occurred – is designed to be effective in detecting & prosecuting cheaters with high accuracy, as well as protecting the instructor and the

university from lawsuits related to violation of students' civil and other rights. Like doping testing in sports, the Doping Test model is designed to catch and punish the cheaters while protecting the rights of the innocent and the integrity of the entire endeavor.

Limitations and future research

This research only touched upon the issue of academic integrity policies in higher education. Future research should investigate more thoroughly the relationship between academic integrity policies and contract cheating, a topic that remained outside the scope of this manuscript. Such research should investigate which policies are most likely to reduce contract cheating, as well as which tools would most help instructors to identify and prosecute contract cheating.

Also, the Doping Test model proposed in this manuscript is conceptual in nature. While I have personally used it successfully in my own teaching, future research should further test and refine it, perhaps by collecting empirical data on its use, for example via interviewing instructors and university administrators. Meanwhile, I hope the model would give instructors useful ideas to think about their practice of approaching contract cheating. I acknowledge the model as a whole may not be fully applicable to all instructional settings; however, I hope it, and its components, can provide a useful framework for thinking about addressing contract cheating even before additional empirical analyses can be conducted.

Conclusion

The conceptual Doping Test model presented in this paper is intended to be a source of inspiration and hope for instructors who are desperately trying to deal with contract cheating. While it is widely recognized that the old approaches to traditional forms of academic dishonesty are not effective, we lack new approaches that would be. While some novel technological developments such as the stylometric tools of PlagScan, Turnitin and Unicheck are promising, they alone are unlikely to solve the problem of contract cheating. This paper argues that we need novel approaches that integrate old approaches such as institutional policies of academic integrity, assessment design, and technological solutions. The conceptual Doping Test model is intended to be an initial step toward such approach development.

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I confirm that this manuscript presents original work that is not published or being considered for publication elsewhere.

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I am solely responsible for the entire manuscript. The author(s) read and approved the final manuscript.

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