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ORIGINAL PAPER

Academic Fraud and Remote Evaluation of Accounting Students: An Application of the Fraud Triangle

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Abstract

The pandemic has altered accounting education with the widespread adoption of remote evaluation platforms. We apply the lens of the fraud triangle to consider how the adoption of remote evaluation influences accounting students' ethical values by measuring the incidence of cheating behavior as well as capturing their perceptions of their opportunity to cheat and their rationalization of cheating behavior. Consistent with prior research, our results show that cheating is higher in the online environment compared to remote evaluation, although the use of proctoring software in online evaluation appears to mitigate but not eliminate students' the unethical behavior. However, cheating was not reduced when students attest to an honor code during the beginning of an exam. Nonetheless, we find that the use of both proctoring software and honor codes reduces students' perceptions of opportunity and rationalization of cheating behavior. It follows that the remote evaluation environment may unintentionally be negatively influencing the ethicality of students and future accounting professionals by promoting cheating behavior and, by so doing, negatively influencing the development of unethical values of accounting students and future accounting professionals. Educators should consider the use of appropriate educational interventions to reduce the incidence and opportunities for unethical behavior and, by so doing, help promote the development of ethical values in future accounting professionals. Further implications for teaching and the accounting profession are discussed.

Keywords Remote evaluation · Pandemic · Cheating · Academic dishonesty · Plagiarism · Honor codes · Fraud triangle

Introduction

The adoption of remote instruction in response to the COVID-19 pandemic has led to various opportunities and challenges, particularly for students and academics, with the rapid rollout of technical teaching and evaluation for which some were not entirely prepared (Doreleyers & Knighton, 2020; Ebaid, 2021; Fask et al., 2014; Sangster et al., 2020). Recent research has shared concerns that became apparent during the pandemic, including concerns about keeping students' attention and a lack of students' attendance in the remote learning environment (Neuwirth et al., 2021). In addition, another pedagogical challenge emerging from the pandemic resulted from the rapid deployment of technological assessments, which required students and faculty to transition from traditional paper and pencil exams to online remote evaluations (Bobby & Mohapatra, 2022; El Refae et al., 2021; Şenel & Şenel, 2021).

The importance of this topic has already led to research investigating the impact of remote evaluation on the delivery and absorption of technical content (e.g., Carpenter

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et al., 2002; Harding et al., 2001; Novotney, 2011; Turner & Uludag, 2013). One particularly alarming finding is the revelation that cheating behavior is rampant when remote evaluation is deployed (Bilen & Matros, 2021; Daniels et al., 2021; Fask et al., 2014). In fact, cheating in remote evaluation has been documented as being four times as high as in the in-person mode (Watson & Sottile, 2010) and has resulted in grade inflation by as much as 10% (Alan et al., 2020; Alessio et al., 2017; Gneezy, 2005; King & Case, 2014; Lederman, 2020). Still to be evaluated is the impact of remote delivery on students' ethical perceptions and values, which is particularly important as prior research shows that professional accountants' ethical behavior is a function of the ethical values developed as students (Ballantine et al., 2018; Bujaki et al., 2019). If remote evaluation alters the ethical values developed in accounting students, then there may be adverse implications for the accounting profession when these students enter the workplace (Adedoyin & Soykan, 2020; Hibschweiler et al., 2020; Newton, 2020). Consequently, the widespread use of remote instruction that occurred during the pandemic presents the opportunity to evaluate the influence of remote assessment not only on accounting students' cheating behavior but also on the ethical values they develop.

We adopt the fraud triangle (Cressey, 1953) as a lens to view cheating as a form of fraud committed by accounting students because the fraud triangle has been widely used to gain insight into dishonest and unethical acts throughout the accounting arena (Bell & Carcello, 2000; Hogan et al., 2008; Murphy, 2012; Peecher, 1996; Rezaee, 2005; Trompeter et al., 2013), and, more recently, in accounting education (Bujaki et al., 2019). Cheating by students is a form of fraud that interferes with educators' ability to assess learning, and the acceptance of widespread cheating in remote instruction can adversely influence students' development of ethical values through the normalization of unethical practices (Drye et al., 2018; Hibschweiler et al., 2020). We use Cressey's (1953) fraud triangle, which is grounded in the "differential association theory" (Sutherland, 1947), which suggests that criminal behaviors are learned. While we presume that accounting students' motivation to cheat is unaltered in a remote environment, our findings show that remote evaluation enhances their rationalization of cheating and their opportunity to cheat.

We further evaluate the efficacy of two educational interventions used in the remote environment to mitigate the incidence of cheating and measure students' perceptions related to the effectiveness of these mechanisms in reducing cheating in the online environment. By so doing, we not only evaluate the effectiveness of these educational interventions in reducing cheating but also capture the extent to which accounting students perceive that cheating is an acceptable behavior to the overall student population. We find that while online proctoring reduces students' actual incidence of cheating, the presence of an honor code did not appear to do so. Nevertheless, both educational interventions reduce students' perceptions of the rationalization related to cheating, but students' perceptions of the honor code's effectiveness appear to diminish over time.

To our knowledge, this is the first study to adopt the fraud triangle to examine accounting students' ethical behavior. Our findings support the usefulness of the fraud triangle as a lens to assess the ethical environment provided by accounting education in the development of ethical values and norms for future accounting professionals (Bujaki et al., 2019). Our paper extends Bujaki et al. (2019), which examined faculty perceptions of academic dishonesty and called for examining student perceptions of academic dishonesty. We consider the effectiveness of specific online interventions used during the pandemic on accounting students' incidence of cheating, perceptions of opportunity, and rationalization—and, in turn, the development of their ethical values (Brandon et al., 2007; Fletcher-Brown et al., 2012). Our study provides evidence that cheating increases in the online environment even in the presence of education interventions of honor code and proctoring software. In addition, students' rationalization and perceptions of effectiveness are also influenced by remote evaluation as well as the use of educational interventions. Thus, our study draws attention to how not only delivery but also the use of education interventions may not only impact cheating behavior, but also may promote the ethical values of accounting students by mitigating perceptions of opportunity, rationalization and the effectiveness of these interventions mitigating cheating.

In the following section, we review the genealogy of the fraud triangle and its applicability not only to the accounting profession but also to accounting education. We apply Cressey's (1953) framework to consider how each dimension of the fraud triangle applies in the context of online accounting education. We empirically evaluate the efficacy of two education interventions aimed at reducing the incidence of cheating and evaluate students' perceptions of their effect. The final section presents a discussion and implications for accounting education, including the role of technology in both creating opportunities for fraud and ways of deterring it.

The Genealogy of the Fraud Triangle

The fraud triangle was first introduced by Cressey (1953) with three main elements for unethical behavior, namely motivation, opportunity, and rationalization. Cressey (1953) argues that fraud is a learned behavior that reflects the values and belief systems inferred from one's environment. Cressey's (1953) fraud triangle is grounded in "differential

association theory," which suggests that criminal behaviors are learned. Differential association theory (Sutherland, 1947) proposes that individuals learn ethical values through the behavior pattern of those with whom they interact. Thus, according to the differential association perspective, one's likelihood of committing a crime reflects the social environment in which they were brought up, as individuals apply learned ethical values and norms to themselves. Social learning theory suggests that much of human behavior is learned and influenced by others' examples (Bandura, 1986). Individuals tend to change their behavior to match others in their environment, and social learning occurs by observing information about behaviors that may be approved or disapproved of by others (Bandura, 1986). In other words, cheating and fraud occur more in environments where cheating is accepted and is learned in environments where cheating is more prevalent (McCabe & Trevino, 1993, 1997).

In his interviews with convicted felons, Cressey (1950, 1953) found that those who commit fraud do not consider themselves to be criminals, nor do they consider themselves to be either unethical or dishonest. Cressey found that even convicted felons failed to admit guilt in a crime on the basis that no criminal intent was present and that the funds in question were going to be borrowed temporarily and would be eventually returned (i.e., rationalization). The felons rationalized that their dilemma was a special exception that could be justified due to extenuating circumstances, and this special exception allowed them to view themselves in a way that was not negative. Rationalization was used to sufficiently reduce any cognitive dissonance associated with committing fraud so that the fraudster could remain in their moral comfort zone (Cressey, 1950). One conclusion arrived at by Cressey (1953) is that the act of fraud perpetuated by the fraudster is selected based on whether its unethicality or criminality can be rationalized away. Individuals rationalize fraud based on learned values and the cultural ethicality of accepted organizational behaviors. A differential association perspective suggests that individuals' values are modified when they are exposed to unethical behavior patterns over a protracted period (such as continuous exposure to cheating).

Using differential association theory as a foundation, Cressey (1953) identified three dimensions of the social environment that must be present for fraud to occur: 1) rationalization, 2) opportunity, and 3) motivation. The first dimension, rationalization, is the existence of a morally defensible excuse that provides psychological justification, allowing one to excuse dysfunctional behaviors. According to Cressey (1953), rationalizations are learned from being exposed to a situation where a criminal violation of trust is deemed appropriate. Rationalization is the justification of fraud in a way that mitigates any disparity between the action and expectations for behavior. Cressey (1953) maintains that rationalization is necessary to the commission of fraud. Perpetrators of fraud use rationalization as a psychological coping mechanism to deal with the cognitive dissonance that results from their need to consider themselves to be honest people while conducting unethical acts (Festinger, 1957; Ramamoorti, 2008; Ramamoorti et al., 2009). Thus, rationalization allows individuals to justify their actions in a way that maintains their ethical self-concept and avoids any form of guilt. It follows that, at least internally, individuals justify fraud before committing the act. The differential association perspective also indicates that the ethical values of the fraudster, including honesty, deceit, respectability, and trust, are gradually modified and learned over time.

The fraud triangle has been established on those dimensions of the social environment whose presence promotes the motivation, opportunity, and rationalization for unethical behavior in accounting students and future accounting professionals. The fraud triangle has been applied to gain insight into factors associated with corporate fraud (Cohen et al., 2010). Cohen et al. (2010) provide evidence on the association between unethical managerial behavior and corporate fraud that suggests that attitude, subjective norms, perceived behavioral control, and moral obligation influence ethical values.[1] Accounting researchers also have used the fraud triangle to provide insight into the riskiness of ethical transgressions in audit clients and support for all three dimensions of the fraud triangle in affecting the occurrence of ethical transgressions (e.g., Bell & Carcello, 2000; Hogan et al., 2008; Murphy, 2012; Peecher, 1996; Rezaee, 2005; Soltani, 2014; Trompeter et al., 2013). The fraud triangle has also been adopted by accounting standard setters as a framework for risk assessment (i.e., SAS 99/AU Sec 316, AICPA, 2002) and, more recently, has been used by accounting educators to evaluate the ethicality of the educational environment of accounting students (Bujaki et al., 2019; Reinstein & Taylor, 2017; Santoso & Cahaya, 2019; Scott, 2017) our study is the first to apply it in an educational context.

Hypothesis Development

We develop our first hypothesis to consider how the different dimensions of the fraud triangle—motivation, rationalization, and opportunity—are affected by the remote evaluation environment. Students resort to using multiple aides and approaches to engage in cheating (Bilen & Matros, 2021; Daniels et al., 2021; Fask et al., 2014). Both inside and outside the classroom, using the internet fuels cheating

[1] Murphy and Dacin (2011) examine an individual's psychology as a precursor to rationalization, including: i) lack of awareness when committing fraud, ii) intuition coupled with rationalization to avoid negative affect, and iii) reasoning.

behavior, making it easier, faster, and more convenient than in the past through e-cheating (using technology to gain unauthorized information) (Bain, 2015). Furthermore, electronic devices like smartphones, tablets, and laptops contribute to cheating behaviors in new and creative ways (Bain, 2015). Berkey and Halfond (2015) examined students' cheating on online tests and exams and reported that around 84% of the 141 survey respondents identified dishonesty as a major issue.

The Fraud Triangle in Remote Evaluation

The pandemic, with its movement to the adoption of remote evaluation, presents us with the opportunity to examine its impact on remote evaluation and evaluation in accounting education due to the widescale adoption of this mode in teaching the post-secondary professional accounting curriculum. The first dimension of the fraud triangle is motivation, which is the pressure to reach a desirable goal (i.e., a high-test score). While motivation was originally defined narrowly as a non-shareable problem by Cressey (1953), Schuchter and Levi (2015) and Choo and Tan (2007) expanded the notion of motivation to suggest it includes the pressure or need to act in a certain way to fulfill self-interest. In the context of accounting education, motivation increases with the emphasis on grades and competition within the social environment. When students perceive pressure to maintain a high grade-point average to get the job they want, acquire material wealth, or for social acceptance and praise, they may feel motivated to cheat to stay ahead of their competition from other students, which can lead to cheating behavior (Carpenter et al., 2002; Harding et al., 2001; Novotney, 2011; Turner & Uludag, 2013). Accounting students' motivations reflect their internal desire to get good grades (Bujaki et al., 2019). Their pressure and motivation to excel would not be altered by the pandemic and the use of remote evaluation. Their motivation to succeed and receive good grades is high irrespective of the mode of delivery of evaluation; therefore, we consider that accounting students' motivation to cheat is not significantly affected by remote education but remains high, reflecting their intrinsic motivation to succeed, get ahead, and receive good grades (Simkin & McLeod, 2010). Thus, we do not hypothesize an effect of remote evaluation on accounting students' motivation.

The next dimension of the fraud triangle, opportunity, is the ability to engage in a transgression with little fear of detection. In the context of accounting education, an opportunity is the lack of mechanisms to detect and deter academic dishonesty. It follows that students will assume that opportunity is high when they are not likely to be caught or penalized for cheating. Similarly, if students feel there is a lack of oversight and an insufficient detection mechanism in the online environment, they may be more likely to cheat without fear of getting caught. Consequently, the pandemic and the move to remote teaching would increase the opportunity, as reflected by accounting students' perceptions of the effectiveness of institutional factors in catching and punishing cheating (Bujaki et al., 2019; Reinstein & Taylor, 2017).

Even before the pandemic, concern was growing about increased opportunities to cheat in an online environment (Sullivan, 2016). Common cheating methods resorted to by business students are copying or sharing homework, projects, exams, and assignments with other peers on independent deliverables (Birks et al., 2020; Fisher et al., 2016; Klein et al., 2007). Several studies (Alessio et al., 2018; Bilen & Matros, 2021; Harmon & Lambrinos, 2008; Newton, 2020) report that the incidence of cheating on online exams is higher, primarily due to the perception there is opportunity to cheat undetected. All the evidence alludes to online education dramatically increasing the opportunity for academic dishonesty (Deadman, 2016). Our first hypothesis specifically evaluates that remote evaluation will result in higher test scores than in-person evaluation:

H1a Students' cheating behavior will be higher on remote evaluations as compared to in-person evaluations.

Next, we consider how remote evaluation influences the perceptions of opportunity. If students believe their fellow students cheat without getting caught, cheating would be perceived to be widespread —available to all—even acceptable behavior according to both their peer group and the institution. In this regard, the opportunity to cheat is promoted by remote teaching as there is no physical observation of students during online evaluation to deter students from cheating. This gives rise to the next hypothesis:

H1b Students perceive the opportunity to cheat is higher on remote evaluation as compared to in-person evaluations.

Research using the fraud triangle suggests that when cheating is prevalent, not penalized, and rewarded through the receipt of elevated grades, students perceive that the opportunity to cheat is elevated (Drye et al., 2018). This may be exacerbated in an online evaluation, making it harder for students to understand why they should not cheat and the consequences that will follow if they do (Lederman, 2020).

Next, we turn to rationalization, which occurs when there is opportunity to cheat and when peers and the educational institution provide grounds for justification that allow students to condone its existence. Accounting students' rationalization captures the values promoted and shared within the educational experience (Bujaki et al., 2019). Thus, through the provision of the opportunity to cheat provided by the lack of detection and enforcement, as facilitated by the pandemic, remote educational evaluation made it more difficult

to promote shared ethical values in the absence of traditional mechanisms for their development (c.f., Bujaki et al., 2019; Copley & Douthett, 2020; Moten et al., 2013). Thus, rationalization of cheating would be higher when the evaluation is remote than when the evaluation is in-person. This leads to the next hypothesis:

H1c Students' rationalization to cheat is higher on remote evaluation as compared to in-person evaluations.

Interventions Used in the Remote Evaluation Environment

In this section, we discuss two widely used educational interventions to mitigate actual cheating as well as to mitigate the perceptions of the frequency and acceptability of cheating in an online environment: proctoring software and honor codes.

Proctoring Software

There are numerous approaches used to mitigate cheating in remote evaluation. The most popular and most widely known method is virtual proctoring, where a human agent (using a webcam and the internet) specifically sits and monitors one or multiple students attempting a test or an exam (Karim et al., 2014; Porter, 2015). The main objective of using online proctoring tools for online exams is to ensure a verifiable and secure mechanism that replicates in-person surveillance and reduces the opportunity for academic dishonesty (Foster, 2009). Another popular tool to mitigate the risk of academic dishonesty in an online environment is the use of proctoring software to ensure that students are evaluated equitably and effectively (Alessio et al., 2017).[2] The software tools could potentially lock down browsers, detect students' movements, keyboard clicks, and gaze to detect and flag any student with concerning behavior (Selwyn et al., 2021).

While inconclusive, some research does indicate that proctoring software may be effective in reducing cheating in online evaluations. This stream of research compares average test scores on a similar student population and attributes higher grades to the presence of cheating by students. Two studies (Karim et al., 2014; Owens, 2015) report a lower incidence of cheating in an online environment when online proctoring software is used, which suggests the effectiveness of proctoring software in remote evaluations. In another study, Ladyshewsky (2015) ran nine tests over a span of fourteen weeks and found that the test scores for eight of the online tests using proctoring software were not significantly different than for unproctored online tests. These conflicting results provide motivation for our study to examine this further.

Proctoring software may influence not only whether students cheat, as evidenced by the test scores themselves, but also students' perceptions about their opportunity to cheat, given a potentially higher risk of getting caught when proctoring software is used. Thus, we specifically evaluate the extent to which actual cheating is reduced in the presence of proctoring software, as well as whether the perception of the opportunity for cheating is reduced in the presence of proctoring software. Our second set of hypotheses is as follows:

H2a In a remote setting, students' cheating behavior will be lower in the presence of proctoring software.

H2b Students perceive the opportunity to cheat is lower in the presence of proctoring software on remote evaluation.

Honor Codes and Remote Evaluation

The fraud triangle suggests the importance of rationalization, which is specifically cultivated in an educational context when clear guidelines and norms for ethical behavior are established (Ismail & Yussof, 2016; Kassim et al., 2015). Honor codes are a clear statement that a university is committed to academic integrity (Hibschweiler et al., 2020) and may be effective when they are sufficiently detailed. Honor codes are one way to establish guidelines and norms to reinforce the actions and vision for academic honesty (BizEd, 2008). The existence of an honor code is important to the development of an ethical academic environment and is key to the reduction of rationalization of academic dishonesty (Arnold et al., 2007; McCabe & Trevino, 1993).

The use of honor codes is not new to any academic setting, whether in person or online (Jordan, 2001), and research on the effectiveness of honor codes has found mixed results. King et al. (2009) found that students plagiarized more in the absence of clear policy statements outlining ethical behavior. Nevertheless, Marsden et al. (2005) found that although students had been informed of policies regarding academic dishonesty, it did not always deter them from cheating. O'Neill and Pfeiffer (2012) found mixed results through a survey study, whereby the students' *perception* of the honor code shapes their behavior rather than the mere presence or absence of an honor code. Bing et al. (2012) examined business students at the University of Mississippi in an experimental setting to observe the potency of honor codes in affecting cheating behavior among students. They found that honor codes are marginally more effective when warnings are given to students. However, it remains to be

[2] There are numerous types of proctoring software available, including Remote Proctoring software (now called RPNow), Proctoring software, and ProctorU, to name a few.

determined how effective honor codes are in the online environment, where ethical priming can take place immediately before administering an online evaluation.

In a survey with 1000 college and university administrators of the National Association of College and University Business Officers, Rezaee et al. (2001) found support for a code of conduct or honor code to foster ethical behavior. Students at honor-code institutions exhibit an enhanced understanding of what constitutes academic dishonesty and cheating (Jordan, 2001; Schwartz et al., 2013); students are less able to rationalize cheating when presented with an honor code (Rettinger & Kramer, 2009) and are more likely to report cheating (Arnold et al., 2007; McCabe & Trevino, 1993). Further research shows that the efficacy of honor codes is increased when honor codes are presented before rather than after an evaluation (Shu & Gino, 2012).

This leads to our final set of hypotheses. From a fraud triangle perspective, we consider that honor codes will reduce online cheating due to their influence on limiting rationalization. Finally, we specifically evaluate whether students' rationalization of the acceptability of cheating will be reduced in the presence of an honor code in an online setting. Our final set of hypotheses evaluated the presence of honor codes during remote evaluation:

H3a In a remote setting, students' cheating behavior will be lower in the presence of honor codes in remote evaluation.

H3b Students' rationalization is reduced in the presence of honor codes.

Experimental Design and Methodology

Experimental Design[3]

Data for this study were collected over a period of 2 semesters (fall 2020 and fall 2021). We also use test scores from fall 2019 and fall 2022 for comparison purposes. All classes were part of the same course and taught by the same professor. In each semester, four exams were administered utilizing the same content and examination material, using different combinations of the independent variables (honor code and/or proctoring software) in different orders. By so doing, we can evaluate our hypotheses to show the extent to which cheating behavior increased in the online testing environment and the effect of the two interventions of proctoring software and honor code attestation. See Fig. 1 for the experimental design.

In 2020, we used a randomized within-subject design employing four treatment groups, as presented in Fig. 1-Panel A. All exams were administered using an online Canvas platform. Group 1 (Both Interventions versus Control) was given both proctoring software and honor code for exams 1 and 2 but was not subject to experimental interventions for exams 3 and 4. Group 2 (Honor versus Proctoring) was only subject to the honor code for exams 1 and 2 and subject only to proctoring software for exams 3 and 4 without attesting to the honor code. Group 3 (Proctoring versus honor code) is the inverse order of the treatment conditions of group 2, where they were subject to the proctoring software for exams 1 and 2 in the absence of honor code and subject only to honor code for exams 3 and 4 without proctoring software. Group 4 (Control versus Both Interventions) was not subject to experimental interventions for exams 1 and 2, but exams 3 and 4 were subject to both experimental interventions. Each group was from the same university, taking the same course with the same exam under the same instructor. Using a randomized within-subject design and randomly assigning students to these groups controls for student differences in ability and other characteristics that may be correlated with student performance, and by varying the order of the treatments, we also controlled for order effects, including learning. Furthermore, we also evaluated and failed to find significance of demographic variables between treatment groups in our analysis.

We utilized the first three exams in the 2021 semester to complement the analysis of the 2020 data and to ensure that our results held over time. The design of the 2021 exams is presented in Fig. 1—Panel B, and for each exam, students were randomly assigned to one of two treatment conditions which differed for each exam. To assess the impact of an honor code in an in-person environment, all students took exam 1 in person and either did or did not attest to an honor code prior to completing the exam. To assess the impact of proctoring software only in a remote environment, for exam 2, all the students took the exam online and did not attest to the honor code. These students either did or did not use proctoring software while completing the exam. Finally, to assess whether the honor code attestation had any incremental impact beyond proctoring software, for exam 3, all students took the exam online using proctoring software, and half the students attested to the honor code, while the other half did not.

[3] The authors worked closely with the Institutional Review Board at the host University to design this study and ensure that the study did not adversely impact students. Using mixed group designs, randomization, and appropriate grade curving ensured that students were not disadvantaged by being in a group. IRB Certificate Protocol ID: 03617e.

Fig. 1 Experimental design*

Panel A: Experimental Design for 2020 Exams

Exam 1 and Exam 2

Proctoring software	Honor code: Absent	Honor code: Present
Absent	Group 4	Group 2
Present	Group 3	Group 1

Exam 3 and Exam 4

Proctoring software	Honor code: Absent	Honor code: Present
Absent	Group 1	Group 3
Present	Group 2	Group 4

Panel B: Experimental Design for 2021 Exams

Exam 1: In-person exam proctored by the professor for all students.

Honor code: Absent	Honor code: Present

Exam 2: Online exam with the honor code attestation *absent* for all students.

Proctoring software: Absent	Proctoring software: Present

Exam 3: Online exam with Proctoring software *present* for all students

Honor code: Absent	Honor code: Present

Note: The 2019 exams 1 – 4 and the 2022 exams 1 – 3 were all administered in person, and all students attested to the honor code. The fourth exam in 2022 was administered online.

Participants

Table 1 provides information related to student demographics.[4] Statistical testing supports that there are no significant demographic differences between the treatment groups, suggesting randomization was effective, and differences between the dependent variables of interest are driven by the changes in the presence or absence of our independent variables.

Overall ($n = 138$), 18.1% of students were sophomores, 47.1% were juniors, and 29.7% were seniors. Accounting was the academic major for 39.1%, whereas 50.7% were majoring in Finance. Prior GPA for all students was 3.34 for the Introduction to Financial Accounting course and 3.25 for the Introduction to Management Accounting; 29% of students had taken an ethics course. Domestic students accounted for 88.4%, and international students for 6.5% of the sample. Our participants were of an average age of 20.5 years. There were 26.8% females and 68.1% males. In a typical week, students spent 15.6 h on academic commitments, 4.8 h fulfilling work commitments, and 5.1 h participating in extracurricular activities.

[4] Demographic information for 2019 and 2022 students is not reported as it is used only in the aggregate for control purposes. The demographic makeup for the course remained consistent for all years 2019–2022.

Table 1 Student demographics for 2020 and 2021*

Sample size (*N*)		138
Standing		
	Sophomore	18.10%
	Junior	47.10%
	Senior	29.70%
	Did not specify	5.10%
Major		
	Accounting	39.10%
	Finance	50.70%
	Other	10.20%
Prior course grades (GPA)		
	Introduction to financial accounting	3.34
	Introduction to managerial accounting	3.25
Taken ethics course(s)		29%
Student type		
	Domestic	88.40%
	International	6.50%
	Did not specify	5.10%
Gender		
	Male	68.10%
	Female	26.80%
	Did not specify	5.10%
Age		20.5
Obligation		
	Academic hours	15.62
	Work hours	4.84
	Extracurricular hours	5.1

*These demographics are for the 2020 and 2021 students. Statistical testing indicates that there are no significant demographic differences between the four student groups between the 2020 exams and the 2021 exams. This suggests randomization was effective, and differences between dependent variables of interest are driven by manipulation of the independent variables

Independent Variables

The independent variables were the two different educational interventions—honor code and proctoring software. We varied the presence/absence of our two independent variables across the four exams in each semester. The first independent variable was the presence or absence of online proctoring software. The online Proctoring software is a package that records the students and their behaviors while taking online exams. The software produces a report that faculty can review if there are concerns about academic dishonesty. The second independent variable was the presence or absence of an honor code. Students were asked to attest (true/false) to the following statement at the beginning of the applicable exam: "I agree to uphold and model the [School Name] values of integrity, respect, and responsibility." For the 2021 exams, there were only two conditions per exam, so only one of the independent variables was manipulated.

Dependent Variables

We measured three different dependent variables: 1) Cheating behavior proxied through raw exam scores, 2) perceptions of opportunity to cheat, and 3) perceptions of rationalization for cheating. Our perception measures were captured during an end of semester survey.

Cheating Behavior

Similar to prior accounting research (e.g., Alessio et al., 2017; King & Case, 2014; Varble, 2014), we compared exam scores across interventions to evaluate the degree of cheating. Because it is difficult to observe cheating behavior, we anticipated that the inflation in grade scores would appropriately proxy for the incidence of cheating in remote evaluation (Alessio et al., 2017; Varble, 2014). If the experimental condition mitigates cheating, then it is reasonable to assume that exam grades, on average, will be lower in the

experimental condition than in the control condition. Exam scores are not a perfect operationalization of academic dishonesty, even with a within-subject fully crossed design. We acknowledge that teaching modality, exam modality, and other external factors could impact exam scores; however, given the consistency we found in our results and our ability to reject alternative explanations, we consider that academic dishonesty is the primary explanation for the difference in test scores.

Perceptions of Opportunity and Rationalization

We captured perceptions of opportunity and rationalization by asking students to complete a survey after the semester. For 2020 [2021], the survey questionnaire included six [fourteen] questions designed to ascertain students' perceptions regarding the online test-taking environment, proctoring software, and attesting to the honor code.[5] The survey questionnaire is included in Appendix 2 and is used to capture students' perceptions of opportunity and rationalization. Perceptions were assessed on an 11-point Likert-type scale, with 1 = *Strongly disagree* and 11 = *Strongly agree*.

Descriptive Statistics and Results of Hypothesis Testing[6,7]

Descriptive statistics are presented in Table 2 for each exam for each experimental condition by year. The collapsed hypothesis testing of empirical results is presented in Table 3, 4, 5 and 6. Additional descriptive statistics regarding exam difference scores between conditions are shown in Appendix. Table 4 presents the results from the end-of-semester survey used to assess student perceptions of rationalization and opportunity.

Tests of Hypothesis 1: Differences between the Remote and In-Person Learning Environment.

The first set of hypotheses compares the differences in cheating and perceptions of cheating in the remote versus in the in-person evaluations. H1a posits that students will be more likely to cheat on online exams compared to in-person exams. To evaluate this hypothesis, we initially compare the raw exam scores of our online exams to that of all the exams taken in person. For all exams held online, students earned a mean score of 78.98, which is 11.74 points better than the mean score of 67.24 for students who took the exam in-person ($t_{798} = 11.716$, $p < 0.001$, two-tailed). Overall, the results in Table 3 show that students' raw exam scores were higher for online exams as compared to in-person evaluations, supporting H1a.[8]

To provide robustness to this analysis we further examined the relationship for online versus in person exams for each exam separately. For exam 1, students testing online scored 12.88 points better online than in-person exams ($t_{199} = 7.068$, $p < 0.001$); for exam 2, 14.05 points better ($t_{198} = 7.575$, $p < 0.001$); for exam 3, 14.52 points better ($t_{197} = 6.663$, $p < 0.001$); and for exam 4, 10.68 points better ($t_{198} = 3.581$, $p < 0.001$). Thus, our additional analysis, broken down by exam, shows that our results are consistent between years and show that students' raw exam scores were higher for remote exams as compared to in-person evaluations, supporting H1a.

H1b posits that students will perceive that the *opportunity* to cheat is greater for online exams than for in-person exams. To evaluate perceptions of opportunity to cheat, we administered a survey (Table 4) to all students to indicate their agreement on an 11-point Likert scale, with endpoints 1 = *Strongly disagree* and 11 = *Strongly agree*, with the following statement: (Opportunity_Online) "I believe students have higher opportunity to cheat on online exams than in-person exams." Results in total and separately for exams administered in 2020 and 2021 are presented in Table 4—Panels A, B and C, respectively.

Table 4 Panel A presents the results for the combined sample for 2020 and 2021. Panel A on Table 4 presents the overall combined findings that show that students perceived a greater opportunity to cheat in an online environment, which supports H1b ($p < 0.001$). We also present the individual results from 2020 and 2021 in Panel B and C, respectively. These findings of means of 6.53 and 7.49

[5] The questionnaire was adapted from studies capturing perceptions on elements of fraud such as opportunity, rationalization, intention, and action (Becker et al., 2006; Harrison et al., 2018; Smith et al., 2023) to align with the fraud triangle (Cressey, 1953).

[6] Two-tailed p values are reported throughout this section. As we have directional hypotheses, statistical significance is achieved when the means are in the predicted direction and $p < 0.10$.

[7] A normality test shows that the data are not normally distributed. To ensure the robustness of our analysis, we re-ran nonparametric tests, such as the Kolmogorov–Smirnov and the Mann–Whitney test, and our results are consistent to support our hypothesis.

[8] Further pairwise comparisons between treatment conditions by exam are provided in appendix showing consistent results that exams scores were higher in a remote evaluation setting compared to in-person.

Table 2 Descriptive statistics for exams

Exam 1	2019	2020				2021		2022
Condition	1	2	3	4	5	6	7	8
Remote	No	Yes	Yes	Yes	Yes	No	No	No
Proctoring Software	N/A	No	No	Yes	Yes	N/A	N/A	No
Honor Code	Yes	No	Yes	No	Yes	No	Yes	Yes
Mean	72.39	85.14	84.1	77.81	78.8	69.26	70.93	64.38
SD	9.51	9.86	12.49	12.68	13.08	12.95	14.52	13.00
N	23	21	21	21	20	27	28	40
Exam 2	2019	2020				2021		2022
Condition	9	10	11	12	13	14	15	16
Remote	No	Yes	Yes	Yes	Yes	Yes	Yes	No
Proctoring Software	No	No	No	Yes	Yes	No	Yes	No
Honor Code	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Mean	70.13	86.86	85.93	76.17	79.45	83.04	75.93	65.19
SD	9.53	8.43	14.42	9.81	10.51	12.76	13.86	11.93
N	23	21	21	21	20	26	28	40
Exam 3	2019	2020				2021		2022
Condition	17	18	19	20	21	22	23	24
Remote	No	Yes	Yes	Yes	Yes	Yes	Yes	No
Proctoring Software	No	No	No	Yes	Yes	Yes	Yes	No
Honor Code	Yes	No	Yes	No	Yes	No	Yes	Yes
Mean	70.22	84.40	86.81	78.26	77.83	77.72	79.27	63.55
SD	9.94	10.80	8.50	17.86	17.40	15.60	14.07	14.71
N	23	20	21	21	21	27	26	40

Exam 4	2019	2020				2021	2022
Condition	25	26	27	28	29	30	31
Remote	No	Yes	Yes	Yes	Yes	Yes	Yes
Proctoring Software	No	No	No	Yes	Yes	Yes	Yes
Honor Code	Yes	No	Yes	No	Yes	Yes	Yes
Mean	64.35	81.8	83.95	75.19	75.81	74.3	67.48
SD	9.41	8.99	7.22	17.94	13.06	12.97	14.04
N	23	20	21	21	21	54	40

(2020 and 2021, respectively) provide further support for H1b ($p < 0.001$).

H1c posits that students will perceive the *rationalization* to cheat to be greater for online exams than for in-person exams. To evaluate perceptions of rationalization, we administered a survey to all students to indicate their agreement on an 11-point Likert scale, with endpoints 1 = Strongly disagree and 11 = Strongly agree, with the following statement: (Rationalization_Online) "It is easier for students to rationalize cheating on online exams compared to live exams." Results for the combined sample are in Table 4 Panel A, showing a significant difference in the perceived rationalization to cheat (p value < 0.001) for the combined sample. Of particular note, results shown in Table 4 Panel B do not show a significant difference in rationalization; however, results from 2021 students show that students do agree (mean 6.49) significantly with this statement ($p = 0.007$) as presented in Table 4, Panels A and B. This difference may be a result of rationalization being learned over time, and further research is needed to explore this supposition. Therefore, H1c is partially supported.

Tests of Hypothesis 2: Proctoring Software in the Remote Environment

Our second set of hypotheses explores the effect of proctoring software in an online environment and whether, as per H2a, students' cheating will be reduced in the presence of

Table 3 Results for H1a: comparison of remote versus in-person exam scores)*. H1a: students' cheating behavior will be higher on remote evaluations as compared to in-person evaluations

H1a: Test for all exams				
	In-person	Online	*t*798	*p*
Mean	67.2416	78.9784	11.716	< 0.001
SD	12.48814	13.77682		
N	267	533		
H1a for exam 1				
	In-person	Remote	*t*199	*P*
Mean	68.61	81.49	7.068	< 0.001
SD	13.02	12.29		
N	118	83		
H1a for exam 2				
	In-person	Remote	*t*198	*P*
Mean	66.99	81.04	7.575	< .001
SD	11.29	12.56		
N	63	137		
H1a for exam 3				
	In-person	Remote	*t*197	*P*
Mean	65.98	80.50	6.663	< .001
SD	13.48	14.66		
N	63	136		
H1a for exam 4				
	In-person	Remote	*t*198	*P*
Mean	64.35	75.03	3.581	< .001
SD	9.41	13.89		
N	23	177		

*Exam scores from Table 2 were combined to evaluate the main effect of in-person versus remote delivery of examinations

proctoring software and to the extent that students' rationalization will be reduced in the presence of proctoring software as per H2b.

H2a suggests that students will cheat less when proctoring software is used compared to when it is not used. To evaluate this hypothesis, we report in Table 5 exam scores for the students that completed the exact same exam remotely, either with or without proctoring software, both reported in summary and by individual exam for each of exams 1—4. Our results in Table 5 show that overall exam scores in the absence of proctoring software were 84.64 as compared to 76.07 in the presence of proctoring software and this difference is significant ($t_{477} = 7.45$, $p < 0.001$). This significant result was reinforced by the comparisons across all four individual exam scores. On exam 1, students scored 6.33 points higher in the absence of proctoring software ($t_{81} = 7.45$, $p = 2.413$ 0.009), 8.09 points higher for exam 2 ($t_{135} = 3.967$, $p < 0.001$), 7.42 points higher for exam 3 ($t_{134} = 2.745$, $p = 0.004$), and 10.24 points higher for exam 4 ($t_{175} = 4.344$, $p < 0.001$) than in the presence of proctoring software. Therefore, H2a is supported.[9]

H2b posits that students will perceive the *opportunity* for cheating is reduced when proctoring software is used, compared to when it is not used for online exams. We evaluated H2b by evaluating students' agreement with the following two statements: (Proctoring Software_Effectiveness_Online) "Proctoring Software reduces the opportunity

[9] Further pairwise comparisons between treatment conditions by exam are provided in appendix showing consistent results that exams scores were higher in a remote evaluation when proctoring software is absent compared to when it is present.

Table 4 Results of students perception of remote evaluation, proctoring software, and honor codes. H1a: Students' cheating behavior will be higher on remote evaluations as compared to in-person evaluations

Survey items		Mean	SD	*N*	*t*	df	*p* value (2-tailed)
Panel A: Overall findings combined for both 2020 and 2021 surveys							
H1b	Opportunity_Online	6.91	2.44	130	32.218	129	< 0.001
H1c	Rationalization_Online	6.12	2.67	130	26.142	129	< 0.001
H2b	Proctoring Software_Opportunity_Online	8.22	2.37	130	39.616	129	< 0.001
H2b	Proctoring Software_Effectiveness_Online	7.94	2.39	130	37.863	129	< 0.001
H3b	HC_Rationalization_Online	6.63	2.75	131	27.591	130	< 0.001
H3b	HC_Effectiveness_Online	6.12	2.70	131	25.975	130	< 0.001
Panel B: 2020 survey							
H1b	Opportunity_Online	6.53	2.41	79	3.810	78	0.000
H1c	Rationalization_Online	5.89	2.75	79	1.250	78	0.215
H2b	Proctoring Software_Opportunity_Online	7.88	2.51	78	8.401	77	0.000
H2b	Proctoring Software_Effectiveness_Online	7.81	2.50	78	8.145	77	0.000
H3b	HC_Rationalization_Online	6.87	2.72	79	4.489	78	0.000
H3b	HC_Effectiveness_Online	6.23	2.68	79	2.415	78	0.018
Panel C: 2021 survey							
H1b	Opportunity_Online	7.49	2.41	51	5.894	50	0.000
H1c	Rationalization_Online	6.49	2.53	51	2.792	50	0.007
H2b	Proctoring software_Opportunity_Online	8.73	2.06	52	11.314	51	0.000
H2b	Proctoring Software_Effectiveness_Online	8.15	2.23	52	8.596	51	0.000
H3b	HC_Rationalization_Online	6.27	2.79	52	1.990	51	0.052
H3b	HC_Effectiveness_Online	5.97	2.74	52	1.213	51	0.231

See variable definitions in Appendix 2

for student cheating on online exams," and (Proctoring Software_Effectiveness_Online) "Proctoring Software is effective at reducing student cheating on online exams." Table 4 reports the results for the total sample (Panel A), the 2020 sample (Panel B), and the 2021 sample (Panel C). As shown in Table 4, all results were significant at (p values < 0.001). Therefore, H2b is supported that student cheating behavior is reduced in the online test-taking environment when proctoring software is used because students perceive there is less opportunity to cheat.

Hypothesis 3: Honor Code in the Remote Environment

The third set of hypotheses examines whether attesting to an honor code can be an effective mechanism to mitigate academic dishonesty. From a fraud triangle perspective, we posit that honor codes will reduce online cheating due to their influence on rationalization. Thus, we specifically evaluate the extent to which actual cheating is reduced in the presence of an honor code and explore whether this change in behavior is a result of students having a lowered ability to rationalize cheating behavior after attesting to an honor code.

H3a posits that students will cheat less when attesting to an honor code before completing exams compared to not attesting to an honor code before completing exams. To evaluate this hypothesis, first, we look at the exam scores presented in Table 6 Panel A in the presence versus the absence of the honor code and do not find a significant difference in exam scores. In addition, we consider the difference in exam scores for each of the four exams individually and fail to find a significant difference that exam scores are lower based on the presence or absence of an honor code (p values > 0.05). Therefore, H3a is not supported as we fail to find statistical support for the effect of the honor code on exam scores.[10]

H3b posits that students will perceive the *rationalization* for cheating is reduced when they attest to an honor code in a remote setting. On the same end-of-semester survey discussed above and presented in Table 4, Panels A, B and C, online students were asked to indicate their agreement with the following two statements to capture their evaluation of the rationalization and effectiveness of the honor code: "Being reminded of the [SCHOOL NAME] Honor Code 'I agree to uphold and model the [SCHOOL NAME] values of integrity, respect and responsibility' reduces students' ability to rationalize cheating on online exams"

[10] Further pairwise comparisons between treatment conditions by exam are provided in appendix showing consistent results that exams scores were not significantly different remote evaluation when honor code attestation is absent compared to when it is present.

Table 5 Results for H2a: proctoring software exam scores. H2a: In a remote setting, students' cheating behavior will be lower in the presence of proctoring software

H2a: overall test for all exams				
	Present	Absent	*t*477	*p*
Mean	76.07	84.64	7.45	< 0.001
SD	14.59	10.60		
N	287	192		
H2a for exam 1				
	Present	Absent	*t*81	*P*
Mean	78.29	84.62	2.413	0.009
SD	12.72	11.12		
N	41	42		
H2a for exam 2				
	Present	Absent	*t*135	*P*
Mean	77.02	85.11	3.967	< 0.001
SD	11.74	12.12		
N	68	69		
H2a for exam 3				
	Present	Absent	*t*134	*P*
Mean	78.29	85.63	2.745	0.004
SD	15.89	9.65		
N	95	41		
H2a for exam 4				
	Present	Absent	*t*175	*P*
Mean	72.66	82.90	4.344	< 0.001
SD	14.40	8.10		
N	136	41		

(HC_Rationalization_Online), and "Being reminded of the [SCHOOL NAME] Honor Code is an effective way to reduce cheating behavior on online exams" (HC_Effectiveness_Online). Results are reported in Table 4 Panel A, which shows when the sample for 2020 and 2021 is combined, students' agreement with these statements is higher in the presence versus the absence of an honor code. However, Panels B and C show that Rationalization for both 2020 and 2021 holds but that the effectiveness statement does not in 2021.[11] Thus, these findings may suggest that students' perceptions of the effectiveness of honor codes may fade over time. Further research is needed to explore whether the effectiveness of the honor code intervention is maintained over time.

[11] We attribute any statistical differences between the combined sample and the two sub-samples, are due to sample size.

Additional Analysis

Although not specifically presented, we also re-ran our hypotheses of exam scores (H1a, H2a and H3a) to include the following four demographic variables as potential covariates: 1) students' prior course grade in Introduction to Financial Accounting; 2) students' prior course grade in Introduction to managerial accounting; 3) gender; and 4) age. When each of these variables is included in the analysis of variance, the effect of remote versus in-person assessment (H1a) and the effect of enabling proctoring software increase in significance (H2a) and the effect of the honor code remains nonsignificant (H3a). Taking a conservative approach to reporting and for simplicity in analysis, the analysis of variances reported in the tables does not include the covariates. In addition, we evaluated whether there was a significant interaction between the covariates and the two educational interventions, and there was not.

Table 6 Results for H3a: honor codes. H3a: in a remote setting, students' test scores will be lower in the presence of honor codes

H3a: overall test for all exams (2020–2021-2022)				
	Present	Absent	*t*477	*p*
Mean	78.91	80.06	0.912	0.362
SD	14.13	13.44		
N	232	247		
H3a: Exam 1				
	Present	Absent	*t*81	*P*
Mean	81.52	81.48	0.013	0.989
SD	12.90	11.81		
N	41	42		
H3a: Exam 2				
	Present	Absent	*t*135	*P*
Mean	82.77	80.30	1.055	0.293
SD	12.93	12.40		
N	41	96		
H3a: Exam 3				
	Present	Absent	*t*134	*P*
Mean	81.15	79.85	0.516	0.607
SD	14.16	15.22		
N	68	68		
H3a: Exam 4				
	Present	Absent	*t*175	*P*
Mean	74.01	78.41	1.789	0.075
SD	13.58	14.51		
N	136	41		

p values 2 tailed

Discussion, Implications, and Limitations

The pedagogical response to the COVID-19 pandemic of the increased and rapid rollout of technical teaching and evaluation led to increased concerns not only for educators but also for the workplace in terms of the spillover effects on students who have been educated in an environment in which traditional means and mechanism for ethical development have been disrupted (Doreleyers & Knighton, 2020; Ebaid, 2021; Sangster et al., 2020). Nonetheless, the widespread adoption of remote evaluation resulting from the pandemic presents the opportunity to evaluate its effect on accounting students' ethical behaviors and perceptions, which form the basis for the development of the ethical values that they carry into the workplace as accounting professionals (Adedoyin & Soykan, 2020; Hibschweiler et al., 2020; Newton, 2020). Of particular concern is that prior research (Newton, 2020; Newton & Essex, 2023) suggests that cheating is prevalent in remote evaluation because as many as 75% of students cheat in remote environments because they perceive they will not get caught. This is of particular concern as the pandemic has entrenched remote evaluation in higher education. For example, in a recent report on higher education trends, KPMG and PwC predict a continued demand for online education and evaluation as students have achieved a comfort level with the online environment, and its logistical and cost benefits have now been realized by academic institutions (KPMG Australia, 2020; PwC, 2021).

We employ the fraud triangle (Cressey, 1953) to consider how remote assessment influences the cheating behavior of accounting students as well as their perceptions of opportunity and rationalization of cheating in accounting evaluation. We also assess the effectiveness

of two widely used mechanisms to mitigate cheating (as well as perceptions of rationalization and opportunity) in remote evaluation, proctoring software, and honor codes. Consistent with prior research (Newton, 2020), our results show that cheating is higher in the online environment compared to live classroom evaluation, although proctoring software appeared to mitigate but not eliminate students' opportunity for cheating, and cheating was not reduced in the presence of honor codes. In terms of students' perceptions, we found that students perceived a greater opportunity to cheat and rationalized cheating more under remote evaluation compared to in-person exams, which were both reduced in the presence of proctoring software. Honor codes mitigated the rationalization of cheating behavior—although it did not appear to translate into reduced cheating, and also appeared to grow weaker with time.

Limitations and Future Research

All research methods possess inherent limitations, and we recognize several limitations associated with our method. We acknowledge that while consistent with prior research (e.g., Alessio et al., 2017; Newton, 2020; Varble, 2014), the use of test scores from different time periods is an imperfect measure of capturing academic dishonesty. We also acknowledge that teaching modality, exam modality, and other external factors could impact exam scores. To attempt to control for consistency between the conditions, we employed our research using a single university, the same instructor, the same course, similar student populations (accounting and finance) and the same course content and using the same exams across years and sections. Admittedly, there could be other differences that may account for exam performance differences, including differences attributable to live instruction versus online instruction and decreased non-academic distractions on students' time and attention during the pandemic. However, our results were consistent over multiple semesters including live instruction and online, during and post-pandemic, and the pattern of results is extremely consistent and not as easily explained with alternative explanations. While we acknowledge these are all limitations of our study, they suggest opportunities for future research to explore if our findings are robust across a wider variety of other disciplines, majors, courses, settings, and national contexts. Furthermore, future research is needed to identify and investigate other measures of academic performance that may be used as proxies for academic dishonesty.

Of particular interest is that our research that took place during the pandemic has provided us with the ability to consider the impact of remote teaching and evaluation in the delivery of the professional accounting curriculum. Our findings suggest that there may be a learning effect that occurs with prolonged levels of remote evaluation, which, in fact, appears to facilitate the rationalization of academic dishonesty. Thus, future research is needed to explore this phenomenon further and consider how prolonged use of remote evaluation, in the absence of education interventions such as lockdown browsers, may influence the rationalization and incidence of academic dishonesty.

From a theoretical perspective, our analysis suggests that online remote evaluation differentially influences two key dimensions of the fraud triangle—rationalization and opportunity to cheat—while the third dimension, motivation to cheat, remains high irrespective of the mode of learning, reflecting accounting students' motivation to succeed, get ahead, and receive good grades (Simkin & McLeod, 2010). Nevertheless, our research does acknowledge the benefits associated with remote evaluation; it also identifies that its use is associated with higher levels of cheating due to the difficulty of direct monitoring students' behavior. While our findings indicate the effectiveness of proctoring software in mitigating online cheating, some institutions have banned the use of proctoring software due to privacy concerns and alternative mechanisms to ensure honesty is reinforced in the online environment are needed in its absence (Bain, 2015; Bedford et al., 2011). For example, research by Okougbo et al. (2021) finds that using ethical vignettes in the curriculum raised students' ethical awareness. Similarly, Billiot et al. (2012) found that exposing Intermediate Accounting students to ethical contexts rather than technical contexts enhanced accounting students' ethical sensitivity and moral reasoning. These present another opportunity for future research to investigate if such ethical interventions in the curriculum would successfully reduce academic dishonesty.

Our research is particularly relevant given the growing menace and opportunity that Artificial intelligence (AI) as typified by products such as ChatGPT poses to the ethics of future accounting professionals. AI is available to both faculty and accounting students and can be used by students to increase the difficulty of detection of dishonesty as well, and notably, it can also be used by faculty for evaluation. For example, AI can be used by faculty to develop unique exams that hold the degree of difficulty constant. Future research using an approach similar to the one utilized in this study can evaluate the effectiveness of these unique AI generated exams for not only suppressing cheating by also on their ethical perceptions and the development of their ethical values.

Implications for practice

The relevance of examining the influence of remote evaluation and the ways to mitigate its adverse impacts is of interest and importance not only to accounting educators but also to the accounting profession. Without advancing our understanding of the influence of remote evaluation on accounting students' technical and ethical development (Bain, 2015), we may inadvertently be harming the accounting profession by educating our students in an environment that promotes the development of unethical values that will be carried into their professional lives. For example, Brandon et al. (2007) found that accounting students' cognitive moral development was related to their willingness to accept earnings management from a hypothetical audit client. In addition, Fletcher-Brown et al. (2012) found that students with lower moral reasoning scores are more likely to accept inside information in a stock trading simulation.

Accordingly, the goal of our study was to increase our understanding of how remote evaluation influences the development of accounting students' ethical values, which is important not only to accounting educators but also to the profession and for individuals. Our findings suggest that by creating an environment that fails to prevent, detect and/or punish cheating, the remote evaluation environment may unintentionally be influencing the ethicality of future accounting professionals by involuntarily promoting the development of unethical values inconsistent with those demanded by the accounting profession and society (Ballantine et al., 2018; Sorensen et al., 2017). Future research is needed to explore the unintended consequences of the remote evaluation environment beyond the direct ethical concerns raised in this study, which may extend to professional implications as well as individual considerations such as privacy, health, and isolation concerns. Furthermore, additional research could specifically consider effective remedies both in terms of the direct, immediate implications of the impact of increased levels of cheating in the educational setting and also for the longer-term implications on the development of the values in accounting professionals in the longer run. For example, in terms of educational implications, Guangul et al. (2020) suggest that in response to academic integrity issues raised by remote testing, faculty could create individual exams for each student. However, this would pose a greater workload on faculty and also potentially create fairness issues across students if the level of difficulty of the exams is not held constant. Future research could explore the potential for artificial intelligence to assist faculty in creating unique exams for each student while holding the degree of difficulty of each exam constant. Moreover, in terms of professional implications, future research is needed to evaluate which remedies (which may consider how ethical systems and ethical training) may be used by firms and the profession to strengthen the values and ethical norms of the profession.

Appendix 1: Average exam difference scores for H1a, H2a, H3a by exam

See Table 7, 8 and 9

Table 7 H1a: students' cheating behavior will be higher on remote evaluations as compared to in-person evaluations

Exam 1						
	Remote					
In-person	2	3	4	5		
1	12.75	11.71	5.42	6.41		
	< 0.001	0.001	0.077	0.048		
6	15.88	14.84	8.55	9.54		
	< 0.001	< 0.001	0.010	0.005		
7	14.21	13.17	6.88	7.87		
	< 0.001	< 0.001	0.029	0.017		
8	20.76	19.72	13.43	14.42		
	< 0.001	< 0.001	< 0.001	< 0.001		
Exam 2						
	Remote					
In-person	10	11	12	13	14	15
9	16.73	15.80	6.04	9.32	12.91	5.80
	< 0.001	< 0.001	0.045	0.005	< 0.001	0.041
16	21.67	20.74	10.98	14.26	17.85	10.74
	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Exam 3						
	Remote					
In-person	18	19	20	21	22	23
17	14.18	16.59	8.04	7.61	7.50	9.05
	< 0.001	< 0.001	0.030	0.038	0.031	0.013
24	20.85	23.26	14.71	14.28	14.17	15.72
	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Exam 4						
	Remote					
In-person	26	27	28	29	30	31
25	17.45	19.60	10.84	11.46	9.95	3.13
	< 0.001	< 0.001	0.003	0.002	0.001	0.174

Table 8 H2a: In a remote setting, students' cheating behavior will be lower in the presence of proctoring software

Exam 1				
	Present			
Absent	4	5		
2	−7.33	−6.34		
	0.027	0.049		
3	−6.29	−5.3		
	0.048	0.0825		
Exam 2				
	Present			
Absent	12	13	15	
10	−10.69	−7.41	−10.93	
	0.003	0.025	0.001	
11	−9.76	−6.48	−10.00	
	0.005	0.043	0.003	
14	−6.87	−3.59	−7.11	
	0.027	0.159	0.016	
Exam 3				
	Present			
Absent	20	21	22	23
18	−6.14	−6.57	−6.68	−5.13
	0.089	0.075	0.061	0.119
19	−8.55	−8.98	−9.09	−7.54
	0.030	0.235	0.017	0.040
Exam 4				
	Present			
Absent	28	29	30	31
26	−6.61	−5.99	−7.50	−14.32
	0.053	0.0715	0.015	< 0.001
27	−8.76	−8.14	−9.65	−16.47
	0.016	0.022	0.002	< 0.001

Table 9 H3a: In a remote setting, students' cheating behavior will be lower in the presence of honor codes in remote evaluation

Exam 1				
	Present			
Absent	3	5		
2	− 1.04	− 6.34		
	0.779	0.097		
4	6.29	0.99		
	0.096	0.794		
Exam 2				
	Present			
Absent	11	13	14	15
10	− 0.93	− 7.41	− 3.82	− 10.93
	0.802	0.050	0.28	0.002
12	9.76	3.28	6.87	− 0.24
	0.009	0.383	0.053	0.945
Exam 3				
	Present			
Absent	19	21	23	
18	2.41	− 6.57	− 5.13	
	0.596	0.150	0.237	
20	8.55	− 0.43	1.01	
	0.059	0.924	0.813	
22	9.09	0.11	1.55	
	0.033	0.979	0.699	
Exam 4				
	Present			
Absent	27	29	30	31
26	2.15	− 5.99	− 7.50	− 14.32
	0.598	0.143	0.029	< 0.001
28	8.76	0.62	− 0.89	− 7.71
	0.031	0.878	0.790	0.029

p values 2 tailed for H3a hypothesis

Appendix 2: Students perceptions of Opportunity, Rationalization and Effectiveness of the Educational Interventions: Proctoring Software and Honor Codes

The following presents the survey questions used to capture Students perceptions of Opportunity, Rationalization and Effectiveness of the Educational Interventions: Proctoring Software and Honor Codes as used in Table 4.

Panel A and B Key Students rated the following items from 1 (*Strongly disagree*) to 11 (*Strongly agree*):

Opportunity_Online = I believe students have higher opportunity to cheat on online exams than in-person exams.

Proctoring software_Opportunity_Online = Proctoring Software reduces the opportunity for student cheating on online exams.

Proctoring Software_Effectivness_Online Online = Proctoring Software is effective at reducing student cheating on online exams.

Rationalization_Online = It is easier for students to rationalize cheating on online exams compared to live exams.

HC_Rationalization_Online = Being reminded of the [SCHOOL NAME] Honor Code "I agree to uphold and model the [SCHOOL NAME] values of integrity, respect, and responsibility" reduces students' ability to rationalize cheating on online exams.

HC_Effectiveness_Online = Being reminded of the [SCHOOL NAME] Honor Code is an effective way to reduce cheating behavior on online exams.

Panel B Key Students rated the following items from 1 (*Strongly disagree*) to 11 (*Strongly agree*):

Opportunity_Online = I believe students have higher opportunity to cheat on online exams than in-person exams.

Proctoring software_Opportunity_Online = Proctoring Software reduces the opportunity for student cheating on online exams.

Proctoring Software_Effectiveness_Online = Proctoring Software is effective at reducing student cheating on online exams.

Rationalization_Online = It is easier for students to rationalize cheating on online exams compared to live exams.

HC_Rationalization_Online = Being reminded of the [SCHOOL NAME] Honor Code "I agree to uphold and model the [SCHOOL NAME] values of integrity, respect, and responsibility" reduces students' ability to rationalize cheating on online exams.

HC_Effectiveness_Online = Being reminded of the [SCHOOL NAME] Honor Code is an effective way to reduce cheating behavior on online exams.

HC_Rationalization_InPerson = Being reminded of the [SCHOOL NAME] Honor Code "I agree to uphold and model the [SCHOOL NAME] value of integrity, respect, and responsibility" reduces students' ability to rationalize cheating on in-person exams.

HC_Effectiveness_InPerson = Being reminded of the [SCHOOL NAME] Honor Code is an effective way to reduce cheating behavior on in-person exams.

Proctor_Opportunity_InPerson = Being observed by a proctor (e.g., teacher) reduces the opportunity for student cheating on in-person exams.

Proctor_Effective_InPerson = Being observed by a proctor (e.g., teacher) is effective at reducing student cheating on in-person exams.

Motivation_Compare = I believe students are more motivated to cheat on online exams than on in-person exams.

Students_Cheat = I believe students will find a way to cheat regardless of the way an exam is delivered.

HC_Motivation_Online = Being reminded of the [SCHOOL NAME] Honor Code "I agree to uphold and model the [SCHOOL NAME} values of integrity, respect, and responsibility" reduces students' motivation to cheat on online exams.

HC_Rationalization_Compare = Being reminded of the [SCHOOL NAME] Honor Code "I agree to uphold and model the [SCHOOL NAME} values of integrity, respect, and responsibility" reduces students' ability to rationalize cheating on more online exams than on in-person exams.

HC_Effectiveness Compare = Being reminded of the [SCHOOL NAME] Honor Code is an effective way to reduce cheating behavior more on online exams than on in-person exams.

Declarations

Conflict of interest The authors have no relevant financial or non-financial interests to disclose.

Human and animal rights The authors worked closely with the Institutional Review Board at the host University to design this study and ensure that students were not adversely impacted by the study. IRB Certificate Protocol ID: 03617e.

Informed consent Informed consent was obtained from all individual participants included in the study after the collection of data.

References

Adedoyin, O. B., & Soykan, E. (2020). Covid-19 pandemic and online learning: The challenges and opportunities. *Interactive Learning Environments, 31*, 1–13.

American Institute of Certified Public Accountants (AICPA) (2002). AU Section 316, consideration of fraud in a financial statement audit. Statement on auditing standard no. 99. New York, AICPA

Alan, S., Ertac, S., & Gumren, M. (2020). Cheating and incentives in a performance context: Evidence from a field experiment on children. *Journal of Economic Behavior & Organization, 179*, 681–701.

Alessio, H. M., Malay, N., Maurer, K., Bailer, A. J., & Rubin, B. (2017). Examining the effect of proctoring on online test scores. *Online Learning, 21*(1), 146–161.

Alessio, H. M., Malay, N., Maurer, K., Bailer, A. J., & Rubin, B. (2018). Interaction of proctoring and student major on online test performance. *International Review of Research in Open and Distributed Learning, 19*, 1.

Arnold, R., Martin, B. N., & Bigby, L. (2007). Is there a relationship between honor codes and academic dishonesty? *Journal of College & Character., 8*(2), 1–18.

Bain, L. Z. (2015). How students use technology to cheat and what faculty can do about it. *Information Systems Education Journal, 13*(5), 92.

Ballantine, J. A., Guo, X., & Larres, P. (2018). Can future managers and business executives be influenced to behave more ethically in the workplace? The impact of approaches to learning on business students' cheating behavior. *Journal of Business Ethics, 149*(1), 245–258.

Bandura, A. (1986). *Social foundations of thought and action*. Prentice Hall.

Becker, D., Connolly, J., Lentz, P., & Morrison, J. (2006). Using the business fraud triangle to predict academic dishonesty among business students. *The Academy of Educational Leadership Journal, 10*, 37.

Bedford, D. W., Gregg, J. R., & Clinton, M. S. (2011). Preventing online cheating with technology: A pilot study of remote proctor and an update of its use. *Journal of Higher Education Theory and Practice, 11*(2), 41–59.

Bell, T. B., & Carcello, J. V. (2000). A decision aid for assessing the likelihood of fraudulent financial reporting. *Auditing: A Journal of Practice & Theory, 19*(1), 169–184.

Berkey, D., & Halfond, J. (2015). Cheating, student authentication, and proctoring in online programs. *New England Journal of Higher Education* (July 20). https://nebhe.org/journal/cheating-student-authentication-and-proctoring-in-online-programs/

Bilen, E., & Matros, A. (2021). Online cheating amid COVID-19. *Journal of Economic Behavior & Organization, 182*, 196–211.

Billiot, M. J., Daniel, D., Glandon, S., & Glandon, T. (2012). Educational context: Preparing accounting students to identify ethical dilemmas. *American Journal of Business Education, 5*(3), 277–286.

Bing, M. N., Davison, H. K., Vitell, S. J., Ammeter, A. P., Garner, B. L., & Novićević, M. M. (2012). An experimental investigation of an interactive model of academic cheating among business school students. *Academy of Management Learning & Education, 11*(1), 28–48.

Birks, M., Mills, J., Allen, S., & Tee, S. (2020). Managing the mutations: Academic misconduct Australia, New Zealand, and the UK. *International Journal for Educational Integrity, 16*, 6. https://doi.org/10.1007/s40979-020-00055-5

BizEd. (2008). On my honor. https://bized.aacsb.edu/articles/2008/03/on-my-honor

Bobby, Z., & Mohapatra, D. P. (2022). Remote assessment strategies in the post-COVID era of blended learning: Do they have a role? *Online Submission, 9*(1), 26–28.

Brandon, D. M., Kerler, W. A., III., Killough, L. N., & Mueller, J. M. (2007). The joint influence of client attributes and cognitive moral development on students' ethical judgments. *Journal of Accounting Education, 25*(1–2), 59–73.

Bujaki, M., Lento, C., & Sayed, N. (2019). Utilizing professional accounting concepts to understand and respond to academic dishonesty in accounting programs. *Journal of Accounting Education, 47*, 28–47.

Carpenter, D., Harding, T., Montgomery, S., and Steneck, N. (2002, June). PACES: A study on academic integrity among engineering undergraduates (preliminary conclusions). *In 2002 Annual Conference of the American Society for Engineering Education* (pp. 7–9081–7–90816). Montreal, Canada. https://peer.asee.org/10591

Choo, F., & Tan, K. (2007). An "American dream" theory of corporate executive fraud. *Accounting Forum, 31*(2), 203–215.

Cohen, J., Ding, Y., & Lesage, C. (2010). Corporate fraud and managers' behavior: Evidence from the press. *Journal of Business Ethics, 95*, 271–315.

Copley, P., & Douthett, E. (2020). The enrollment cliff, mega-universities, COVID-19, and the changing landscape of US colleges. *The CPA Journal, 90*(9), 22–27.

Cressey, D. R. (1950). The criminal violation of financial trust. *American Sociological Review, 15*(6), 738–743.

Cressey, D. R. (1953). *Other people's money; a study of the social psychology of embezzlement*. Free Press.

Daniels, L. M., Goegan, L. D., & Parker, P. C. (2021). The impact of COVID-19 triggered changes to instruction and evaluation on university students' self-reported motivation, engagement, and perceptions. *Social Psychology of Education, 24*(1), 299–318.

Deadman, R. C. (2016). Methods of academic dishonesty in online distance education: The technology arms race. Ph.D. Dissertation, Indiana State University, Terre Haute, IN

Doreleyers, A. and Knighton, T. (2020). COVID-19 pandemic: Academic impacts on postsecondary students in Canada. Stat Can COVID-19: Data to Insights for a Better Canada. Statistics Canada.

Drye, S. L., Lomo-David, E., & Snyder, L. G. (2018). Normal deviance: An analysis of university policies and student perceptions of academic dishonesty. *Southern Journal of Business & Ethics, 10*(6), 71–84.

Ebaid, I. E. S. (2021). Cheating among accounting students in online exams during Covid-19 pandemic: Exploratory evidence from Saudi Arabia. *Asian Journal of Economics, Finance, and Management, 4*(1), 9–19.

El Refae, G. A., Kaba, A., & Eletter, S. (2021). Distance learning during COVID-19 pandemic: Satisfaction, opportunities and challenges as perceived by faculty members and students. *Interactive Technology and Smart Education, 18*(3), 298–318.

Fask, A., Englander, F., & Wang, Z. (2014). Do online exams facilitate cheating? An experiment designed to separate possible cheating from the effect of the online test taking environment. *Journal of Academic Ethics, 12*(2), 101–112.

Festinger, L. (1957). *Cognitive dissonance theory. 1989) Primary prevention of HIV/AIDS: psychological approaches*. Sage Publications.

Fisher, E., McLeod, A. J., Savage, A., & Simkin, M. G. (2016). Ghostwriters in the cloud. *Journal of Accounting Education, 34*, 59–71.

Fletcher-Brown, D., Buono, A. F., Frederick, R., Hall, G., & Sultan, J. (2012). A longitudinal study of the effectiveness of business ethics education: Establishing the baseline. *Journal of Academic Ethics, 10*, 45–56.

Foster, D. (2009). Secure, online, high-stakes testing: science fiction or business reality? *Industrial and Organizational Psychology, 2*(1), 31–34.

Gneezy, U. (2005). Deception: The role of consequences. *American Economic Review, 95*(1), 384–394.

Guangul, F. M., Suhail, A. H., Khalit, M. I., & Khidhir, B. A. (2020). Challenges of remote assessment in higher education in the context of COVID-19: A case study of Middle East College. *Educational Assessment, Evaluation, and Accountability, 32*, 519–535.

Harding, T. S., Carpenter, D. D., Montgomery, S. M., & Steneck, N. H. (2001). The current state of research on academic dishonesty among engineering students. In 31st Annual Frontiers in Education Conference. Impact on Engineering and Science Education. Conference Proceedings (Cat. No. 01CH37193) (Vol. 3, pp. F4A-13). IEEE

Harmon, O. R., & Lambrinos, J. (2008). Are online exams an invitation to cheat? *The Journal of Economic Education, 39*(2), 116–125.

Harrison, A., Summers, J., & Mennecke, B. (2018). The effects of the dark triad on unethical behavior. *Journal of Business Ethics, 153*, 53–77.

Hibschweiler, A., K. Nesper, & M. Salzman. (2020). Promoting integrity in the classroom. The tax adviser, https://www.thetaxadviser.com/issues/2020/may/promoting-integrity-in-class.html?utm_source=mnl:extracredit&utm_medium=email&utm_campaign=09Jun2020&SubscriberID=133368891&SendID=285469.

Hogan, C. E., Rezaee, Z., Riley, R. A., Jr., & Velury, U. K. (2008). Financial statement fraud: In management education. *British Journal of Management, 13*(3), 209–219.

Ismail, S., & Yussof, S. (2016). Cheating behavior among accounting students: Some Malaysian evidence. *Accounting Research Journal, 29*(1), 20–33.

Jordan, A. E. (2001). College student cheating: The role of motivation, perceived norms, attitudes, and knowledge of institutional policy. *Ethics & Behavior, 11*(3), 233–247.

Karim, M. N., Kaminsky, S. E., & Behrend, T. S. (2014). Cheating, reactions, and performance in remotely proctored testing: An

exploratory experimental study. *Journal of Business Psychology, 29*, 555–572.
Kassim, C. K. H. C. K., Nasir, N. E. M., & Ahmad, S. (2015). Academic dishonesty of accounting students at higher learning institutions. *Mediterranean Journal of Social Sciences, 6*(4), 702.
King, D. L. & Case, C. J. (2014). E-cheating: incidence and trends among college students. Issues in Information Systems 15(1), 20–27. https://iacis.org/iis/2014/4_iis_2014_20-27.pdf
King, C. G., Guyette, R. W., Jr., & Piotrowski, C. (2009). Online exams and cheating: An empirical analysis of business students' views. *The Journal of Educators Online, 6*(1), 1–11.
Klein, H. A., Levenburg, N. M., McKendall, M., & Mothersell, W. (2007). Cheating during the college years: How do business school students compare? *Journal of Business Ethics, 72*(2), 197–206.
KPMG Australia (2020). The future of higher education in a disruptive world. https://assets.kpmg/content/dam/kpmg/xx/pdf/2020/10/future-of-higher-education.pdf
Ladyshewsky, R. K. (2015). Post-graduate student performance in 'supervised in-class' vs. 'unsupervised online' multiple choice tests: Implications for cheating and test security. *Assessment & Evaluation in Higher Education, 40*(7), 883–897.
Lederman, D. (2020). Best way to stop cheating in online courses? Teach better. Inside Higher Ed (July 22). https://www.insidehighered.com/digital-learning/article/2020/07/22/technology-best-way-stop-online-cheating-no-experts-say-better?utm_source=Inside+Higher+Ed&utm_campaign=711d98996c-DNU_2020_COPY_03&utm_medium=email&utm_term=0_1fcbc04421-711d98996c-197800013&mc_cid=711d98996c&mc_eid=dbdcee20ba
Marsden, H., Carroll, M., & Neill, J. T. (2005). Who cheats at university? A self-report study of dishonest academic behaviours in a sample of Australian university students. *Australian Journal of Psychology, 57*(1), 1–10.
McCabe, D. L., & Trevino, L. K. (1993). Academic dishonesty: Honor codes and other contextual influences. *The Journal of Higher Education, 64*(5), 522–538.
McCabe, D. L., & Trevino, L. K. (1997). Individual and contextual influences on academic misreporting. *Accounting, Organizations and Society, 37*(4), 242–259.
Moten, J., Jr., Fitterer, A., Brazier, E., Leonard, J., & Brown, A. (2013). Examining online college cyber cheating methods and prevention measures. *Electronic Journal of E-Learning, 11*(2), 139–146.
Murphy, P. R. (2012). Attitude, machiavellianism, and the rationalization of misreporting. *Accounting, Organizations and Society, 37*(4), 242–259.
Murphy, P. R., & Dacin, M. T. (2011). Psychological pathways to fraud: Understanding and preventing fraud in organizations. *Journal of Business Ethics, 101*(4), 601–618.
Neuwirth, L. S., Jović, S., & Mukherji, B. R. (2021). Reimagining higher education during and post-COVID-19: Challenges and opportunities. *Journal of Adult and Continuing Education, 27*(2), 141–156.
Newton, D. (2020). Another problem with shifting education online: a rise in cheating. *Washington Post* (August 7). https://www.washingtonpost.com/local/education/another-problem-with-shifting-education-online-a-rise-in-cheating/2020/08/07/1284c9f6-d762-11ea-aff6-220dd3a14741_story.html.
Newton, P. M., & Essex, K. (2023). How common is cheating in online exams and did it increase during the COVID-19 pandemic? A Systematic Review. *Journal of Academic Ethics*. https://doi.org/10.1007/s10805-023-09485-5
Novotney, A. (2011). Beat the cheat: Psychologists are providing insight into why students cheat and what faculty, schools and even students can do about it. *American Psychological Association, 42*(6), 54.
Okougbo, P. O., Okike, E. N., & Alao, A. (2021). Accounting ethics education and the ethical awareness of undergraduates: An experimental study. *Accounting Education, 30*(3), 258–276.
O'Neill, H. M., & Pfeiffer, C. A. (2012). The impact of honour codes and perceptions of cheating on academic cheating behaviours, especially for MBA bound undergraduates. *Accounting Education, 21*(3), 231–245.
Owens, H. S. (2015). *Cheating within online assessments: A comparison of cheating behaviors in proctored and unproctored environments*. Ph.D. Dissertation, Mississippi State University
Peecher, M. E. (1996). The influence of auditors' justification processes on their decisions: A cognitive model and experimental evidence. *Journal of Accounting Research, 34*(1), 125–140.
Porter, B. (2015). How software helps keep online learners honest. *TechCrunch, 15*, 1–4.
PwC. (2021). Perspectives in Higher Education. https://www.pwc.com/us/en/industries/health-industries/library/assets/pwc-perspectives-in-higher-education-final.pdf
Ramamoorti, S. (2008). The psychology and sociology of fraud: Integrating the behavioral sciences component into fraud and forensic accounting curricula. *Issues in Accounting Education, 23*(4), 521–533.
Ramamoorti, S., Morrison, D., & Koletar, J. W. (2009). Bringing Freud to fraud: Understanding rationalization. *Journal of Business Ethics, 141*(3), 477–488.
Reinstein, A., & Taylor, E. Z. (2017). Fences as controls to reduce accountants' rationalization. *Journal of Business Ethics, 141*(3), 477–488.
Rettinger, D. A., & Kramer, Y. (2009). Situational and personal causes of student cheating. *Research in Higher Education, 50*(3), 293–313.
Rezaee, Z. (2005). Causes, consequences, and deterrence of financial statement fraud. *Critical Perspectives on Accounting, 16*(3), 277–298.
Rezaee, Z., Elmore, R. C., & Szendi, J. Z. (2001). Ethical behavior in higher educational institutions: The role of the code of conduct. *Journal of Business Ethics, 30*(2), 171–183.
Sangster, A., Stoner, G., & Flood, B. (2020). Insights into accounting education in a COVID-19 world. *Accounting Education, 29*(5), 431–562.
Santoso, A., & Cahaya, F. R. (2019). Factors influencing plagiarism by accounting lecturers. *Accounting Education, 28*(4), 401–425.
Schuchter, A., & Levi, M. (2015). Beyond the fraud triangle: Swiss and Austrian elite fraudsters. *Accounting Forum, 39*(3), 176–187.
Schwartz, B., Tatum, H., & Hageman, M. (2013). Undergraduate perceptions of and responses to academic dishonesty: The impact of honor codes. *Ethics & Behavior, 23*, 463–476.
Scott, S. (2017). From plagiarism-plagued to plagiarism-proof: Using anonymized case assignments in intermediate accounting. *Accounting Perspective, 16*(4), 247–268.
Selwyn, N., O'Neill, C., Smith, G., Andrejevic, M.,& Gu, X. (2021). A necessary evil? The rise of online exam proctoring in Australian universities. Media International Australia, 1329878X211005862
Şenel, S., & Şenel, H. C. (2021). Remote assessment in higher education during COVID-19 pandemic. *International Journal of Assessment Tools in Education, 8*(2), 181–199.
Shu, L. L., & Gino, F. (2012). Sweeping dishonesty under the rug: How unethical actions lead to forgetting of moral rules. *Journal of Personality and Social Psychology, 102*(6), 1164.
Simkin, M. G., & McLeod, A. (2010). Why do college students cheat? *Journal of Business Ethics, 94*(3), 441–453.
Smith, K., Emerson, D., Haight, T., & Wood, B. (2023). An examination of online cheating among business students through the lens

of the dark triad and fraud diamond. *Ethics & Behavior, 33*(6), 433–460.

Soltani, B. (2014). The anatomy of corporate fraud: A comparative analysis of high profile American and European corporate scandals. *Journal of Business Ethics, 120*(2), 251–274.

Sorensen, D. P., Miller, S. E., & Cabe, K. L. (2017). Developing and measuring the impact of an accounting ethics course that is based on the moral philosophy of Adam Smith. *Journal of Business Ethics, 140*(1), 175–191.

Sullivan, D. P. (2016). An integrated approach to pre-empt cheating on asynchronous, objective, online assessments in graduate business classes. *Online Learning, 20*(3), 195–209.

Sutherland, E. H. (1947). *Principles of Criminology* (4th ed.). Lippincott.

Trompeter, G. M., Carpenter, T. D., Desai, N., Jones, K. L., & Riley, R. A. (2013). A synthesis of fraud-related research. *Auditing: A Journal of Practice, 32*(1), 287–321.

Turner, S. W. & Uludag, S. (2013). Student perceptions of cheating in online and traditional classes. In *2013 IEEE Frontiers in Education Conference (FIE)* (pp. 1131–1137). IEEE

Varble, D. (2014). Reducing cheating opportunities in online test. *Atlantic Marketing Journal, 3*, 9.

Watson, G. R. & Sottile, J. (2010). Cheating in the digital age: Do students cheat more in online courses? Online Journal of Distance Learning Administration 13(1). https://mds.marshall.edu/cgi/viewcontent.cgi?article=1000&context=eft_faculty