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## **Cheating within Online Assessments: A Comparison of Cheating Behaviors in Proctored and Unproctored Environment**

Hannah Street Owens

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Cheating within online assessments: A comparison of cheating behaviors in proctored  
and unproctored environments

By

Hannah Street Owens

A Dissertation  
Submitted to the Faculty of  
Mississippi State University  
in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Philosophy  
in Instructional Systems & Workforce Development  
in the Department of Instructional Systems & Workforce Development

Mississippi State, Mississippi

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2015

Cheating within online assessments: A comparison of cheating behaviors in proctored  
and unproctored environments

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The purpose of this study was to describe the frequencies and types of cheating behaviors occurring within proctored and unproctored testing environments for students enrolled in online courses and taking assessments through an online format. In addition, this study sought to examine relationships between demographic variables of gender, age, GPA, discipline of study, undergraduate/graduate status and knowledge of the institutional honor code and online cheating behaviors for students who had taken online assessments through proctored methods.

Participants in this study included students enrolled as distance learning campus students who took online courses and online assessments through a large, 4-year, public, degree-granting institution located in the southeastern region of the United States during the spring 2015 semester. Participants were asked to report their frequency in engaging in online cheating behaviors through the Online Assessment Cheating Behaviors Survey (OACBS).

The study found that distance students who took unproctored exams reported more frequently engaging in overall cheating behaviors than proctored students. No

differences were found in overall cheating behaviors for those taking exams through face to face and remotely proctored methods. Individual item analyses revealed that those taking unproctored exams reported more frequently using web searches during online exams to search for answers than those taking proctored exams.

The study also found differences in overall cheating behaviors for those taking proctored online exams based on gender, with female distance students more frequently reporting engaging in cheating behaviors than male distance students. Individual level item analyses revealed females, those with a “C” GPA, and undergraduate distance students more frequently utilized web searches during an online proctored exam and used brain dump sites to obtain test questions and answers.

## DEDICATION

I dedicate my dissertation to my loving family. To my son, Max, thank you for your patience with your mother as I have completed the research and writing of this dissertation. You are the light of my world and the reason I wish to pursue excellence in hopes that you may have a better life. To my husband, Chain, thank you for your support of my educational pursuits and for your understanding. To my mother and late father, thank you for instilling in me a love of learning and for your example of relentless work ethic and dedication. To my siblings, thank you for your emotional support and encouragement. I love you all.

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## TABLE OF CONTENTS

DEDICATION .....	ii
ACKNOWLEDGEMENTS .....	iii
LIST OF TABLES .....	viii
CHAPTER	
I. INTRODUCTION .....	1
Statement of the Problem.....	4
Purpose of the Study .....	6
Research Questions.....	6
Significance of the Study .....	6
Conceptual Framework.....	7
Ethical Considerations .....	8
Limitations .....	9
Delimitations.....	10
Definition of Terms.....	11
II. REVIEW OF RELATED LITERATURE .....	13
Cheating Prevalence.....	13
Age .....	17
Gender .....	19
GPA .....	21
Discipline of Study .....	23
Honor Code.....	24
Cheating Studies: Online vs Face-to-face Courses.....	28
Examination Cheating Studies.....	30
Proctoring Studies.....	33
Remote Proctoring Studies .....	40
Social Desirability Scale.....	45
III. METHODOLOGY .....	48
Research Design.....	48
Sample.....	49
Instrumentation .....	53

Development of the Online Assessment Cheating Behavior Survey.....	53
Review of Online Assessment Cheating Behavior Survey.....	55
Pilot Study.....	56
Final Online Assessment Cheating Behavior Survey.....	57
Background variables.....	58
Reliability.....	58
Social Desirability Scale-17.....	58
Procedures.....	59
IRB Certification.....	60
Data Collection.....	60
Ethical Considerations.....	62
Data Analysis.....	62
 IV. RESULTS.....	 66
Demographics.....	67
Social Desirability Scale-17.....	73
Research Question 1.....	74
Research Question 2.....	82
Gender.....	83
Age.....	84
GPA.....	85
Discipline of Study.....	87
Undergraduate/Graduate Status.....	88
Knowledge of Honor Code.....	89
Summary.....	89
 V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....	 92
Summary.....	92
Conclusions.....	96
Recommendations.....	104
 REFERENCES.....	 110
 APPENDIX	
A. INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL LETTER.....	123
B. FINAL ONLINE ASSESSMENT CHEATING BEHAVIORS INSTRUMENT.....	127
C. INITIAL ONLINE ASSESSMENT CHEATING BEHAVIORS INSTRUMENT.....	132
D. RECOMMENDED CHANGES TO INSTRUMENT.....	139

E.	ADDITIONAL PILOT QUESTIONS .....	141
F.	INITIAL RECRUITMENT EMAIL.....	143
G.	REMINDER RECRUITMENT EMAIL.....	145
H.	PERMISSION TO USE SDS-17 .....	147
I.	PERMISSION TO SURVEY DISTANCE STUDENTS .....	149
J.	RESOURCES USED TO FORM OACBS .....	151

## LIST OF TABLES

1	Demographic Characteristics of Distance Students .....	51
2	Data Analysis Summary by Research Question.....	64
3	Demographic Characteristics of Distance Students by Proctored/Unproctored Status .....	69
4	Demographic Characteristics of Distance Students by Proctoring Type .....	71
5	OACBS Descriptive Statistics for Distance Students .....	75
6	OACBS Descriptive Statistics for Distance Students by Proctoring Status .....	77
7	OACBS Individual Items Mann-Whitney U test, Proctored vs. Unproctored.....	79
8	OACBS Descriptive Statistics for Distance Students by Proctoring Type .....	80
9	OACBS Individual Items Mann-Whitney U test, Face to Face vs Remotely Proctored.....	82
10	OACBS Individual Items Mann-Whitney U test, Male vs. Female.....	84

## CHAPTER I

### INTRODUCTION

Cheating is defined by Merriam-Webster dictionary (n.d.) as “to deprive of something valuable by the use of deceit or fraud.” In its most basic form, within the academic sector, cheating deprives a student of true and meaningful learning opportunities and instructors of meaningful assessments of students’ learning. Cheating in this sense is commonly referred to as academic dishonesty, and has been a cause for concern amongst educators for centuries within traditional, face to face classrooms. As technology has evolved, students have found new and innovative methods for cheating, forcing educators to constantly re-evaluate teaching and assessment practices.

During the past decade, the number of universities offering courses or even entire degree programs online has grown exponentially. According to a report by The Online Learning Consortium (OLC, formerly the Sloan Consortium), there were over 6.7 million students taking at least one online course at a postsecondary institution in the year 2011, compared to 1.6 million in the year 2002 (Allen & Seaman, 2013). Within this same report, over 69% of higher education leaders indicated that online learning was an essential part of the institution’s long-term and overall strategy (2013). As more students began taking online courses, the validity of these courses have come into question, with a general overall perception among both faculty and students that cheating is easier in online courses, and the belief that students are less likely to be caught cheating in an

online environment (Ad Hoc Committee on Academic Integrity, 2011; Grijalva, Nowell, & Kerkvliet, 2006; Kennedy, Nowak, Raghuraman, Thomas, & Davis, 2000; Miller & Young-Jones, 2012; Stueber-McEwen, Wiseley, & Hoggat, 2009). In light of these concerns, educational stakeholders have become increasingly aware of a need to understand cheating in an online environment. Current research on the prevalence of online cheating varies as the phenomena is often conceptualized as a singular construct, including diverse behaviors such as plagiarism, examination cheating, falsification, and data fabrication (Hensley, Kirkpatrick, & Burgoon, 2013). However, as a generalization, research has indicated that cheating in all academic contexts has increased over the years (McCabe, Trevino, & Butterfield, 2001), with some estimates reporting over 70% of students having engaged in some form of academic dishonesty (Whitley, 1998).

The reasons for university educators to actively prevent cheating within online environments vary from the theoretical and foundational implications of cheating, to complying with the sanctions imposed by legislative and accrediting agencies. By its very definition, an assessment is intended to serve as a means of providing an educator and the student with information on how well a learning outcome was mastered. As such, an assessment serves as a course's and an instructor's gauge of students' learning and is an integral part of determining whether or not the course (and instructor) was successful in conveying meaningful learning. However, if cheating occurs, the assessment no longer serves as a valid measure of a student's mastery and an ill-designed course may carry on without modifications as the invalid assessment measures indicate that the course is indeed effective.

In addition to the foundational impacts of online cheating, institutions which offer online courses must comply with the federal requirements for ensuring and validating the integrity of online courses. Legislation such as the Higher Education Opportunity Act of 2008 (HEOA) requires online providers to produce evidence of ways that the institution reduces cheating opportunities and also ways in which students' identification is validated (McGee, 2013). Regional accrediting institutions, such as the Southern Association of Colleges and Schools (SACS), influence an institution's reputation through inclusion within its organizational approval and to obtain this inclusion status, institutions must comply with the accrediting institution's mandates. Accrediting agencies frequently have mandates for maintaining academic integrity, with SACS policy statements for distance education requiring the assurance of "integrity of student work and the credibility of degrees and credits" (McGee, 2013, p. 1).

Finally, academic integrity is crucial towards fostering a continued growth of online courses. According to a report by the OLC, in fall 2012, only 30.2% of faculty agreed that other faculty at their institutions believed that online education was a legitimate and valuable opportunity (Allen & Seaman, 2013). Historically, faculty have perceived online courses to be of a lesser quality than traditional courses (Whitley, 1998), with this perception leading to a reluctance to offer online courses due to concerns over low quality (Ward, Peters, & Shelley, 2010) and a belief that students are less likely to be caught cheating in an online environment. For these reasons, preventing cheating on online assessments is critical to the success of online education.

Although academic dishonesty can take on many forms, the two most common types of cheating in an online environment include plagiarism, or the copying or



wrongful use of another's work as one's own without proper attribution, and cheating on examinations. Within this research study, the focus will center on the latter, as existing research on cheating within online environments has typically emphasized plagiarism.

In response to concerns of cheating on online assessments, online educators began examining ways to prevent cheating on online assessments, including the use of proctoring. Proctoring of online assessments has primarily taken on two forms, including obtaining a face-to-face proctor, where students take an examination physically in the presence of a live proctor, and through remote proctoring, where students take an examination in the presence of a virtual proctor or through video recording, typically through a webcam device. Although proctoring is commonly used as a deterrent against cheating behaviors on online assessments, there has been a limited amount of research conducted on cheating in relation to proctoring of online assessments. In addition, existing research and measures of online cheating are typically broad, covering a wide range of cheating behaviors. Limited research exists which focuses on cheating behaviors specific to online assessments.

### **Statement of the Problem**

Online courses are continuing to grow in popularity. As the perceived risk for cheating in these courses is greater than for courses taken in a face-to-face context, measures to prevent cheating in online courses have been put in place to deter cheating behavior, including the use of proctoring for online assessments. As the trend towards conducting online assessments through a proctored environment becomes more commonplace, a need exists to validate the utility of these efforts beyond the issue of student validation, as conducting online examinations through a proctoring service

typically comes at an additional cost to the student and testing institution. Proctoring costs to students include monetary payment in the form of fees to take an online examination either in the presence of a face-to-face proctor or through purchasing equipment or session time to take an online examination through a remote proctoring service. These fees may cost over \$40 per exam to take the assessment at an approved institution outside of the university's testing center. In addition, students must coordinate scheduling of times and exert effort into finding an approved proctor. Additional travel time to an approved testing center may also be required as testing centers may be geographically inaccessible to some online students. Institutions incur costs related to proctoring as well, including the payment of individuals to serve as a proctor at university testing centers, for the processing and approval of student proctoring request forms, and may incur startup and technology integration costs associated with implementing remote proctoring for online assessments (Cluskey, Ehlen, & Raiborn, 2011).

However, as will be evidenced within the literature review, limited research exists on the influence of conducting online assessments within a proctored environment in deterring or preventing cheating behaviors. In addition, research that exists on the topic of online assessment cheating tends to either compare traditional, face-to-face courses with online courses, or combines the topic with an overall generalized view of cheating behaviors, including plagiarism. As such, a need exists to measure cheating behaviors specifically related to taking an online assessment within proctored and unproctored environments.

### **Purpose of the Study**

The purpose of this study is to describe the frequencies and types of cheating behaviors occurring within proctored or unproctored testing environments for students enrolled in online courses and taking assessments through an online format. In addition, the study adds to the existing, conflicting literature on both individual and contextual variables that influence cheating in an online environment, while adding a new dimension to the existing literature by factoring in testing environment related to behaviors that are specific to cheating on online assessments.

### **Research Questions**

As described within the purpose of study, specific questions addressed in this study include:

1. How often and what types of cheating behaviors occur within online assessments for online students taking assessments through proctored and unproctored environments?
2. Is there a relationship between students' cheating behaviors on online assessments taken in a proctored environment and the following factors:  
Age; Gender; GPA; Discipline of Study; Undergraduate/Graduate Status;  
Knowledge of the presence of an institutional honor code?

### **Significance of the Study**

As decisions are often made relative to the cost-benefit ratio of a product or service, the study conducted provides valuable insight to educators regarding the overall utility of conducting online assessments through a proctored environment. In addition,

the study provides the educational community with greater knowledge of higher risk factors contributing to an individual's cheating behavior on online assessments. Likewise, if higher rates of any specific cheating behaviors on online assessments are indicated, educators may be made aware of a need to implement targeted interventions aimed specifically toward mitigating these cheating behaviors. The research presented also benefits the institution's Honor Code office in considering policies and procedures related to academic dishonesty.

With regards to the scholarly significance of the study, the findings presented contribute to the limited research on the influence of proctoring on online assessment cheating behaviors and add a new dimension to the existing research on individual and contextual factors that contribute to online cheating. The current research on the newly popular remote proctoring services have typically been explored by the devices' sponsoring company and mainly paint an overview of the features of these services. In this study, cheating behaviors within online assessments conducted through remotely proctored devices or services are also explored through unsponsored research, adding to the scant research collection on this topic.

### **Conceptual Framework**

This study operates under an overall conceptual framework following principles found within a typical cost-benefit analysis. In the context of this study, the cost-benefit analysis may be viewed as the assumption that the perceived benefit from cheating (grade increase) declines as the fear of being caught or punished for cheating (perceived cost) acts as a cheating deterrent, driving students away from engaging in cheating behaviors. Hutton (2006) suggested that college students cheat because the cost-benefit ratio is

slanted in favor of cheating. In particular, taking online exams that are unproctored lowers a student's chance of being caught cheating, with the ultimate pay off for cheating frequently resulting in higher grades, leading to more prestigious options for school admissions, optimal employment opportunities, and the attainment and retention of scholarships (Hutton, 2006). In order to change the cost-benefit ratio, an institution must increase enforcement of cheating policies, along with increasing the likelihood of detecting cheating. The act of proctoring exams increases the risk of being caught cheating, reducing the attractiveness of the action.

Although the proctoring of examinations has been widely utilized as a deterrent to cheating and as an assurance to academic integrity based upon these founding principles, a significant lack of research has been conducted on the cheating behaviors occurring in proctored and unproctored settings, specifically on online assessments. In addition, although proctored exams may provide monitoring during the examinations, the act of proctoring itself does not cover cheating behaviors that occur a priori, such as obtaining answers from an online test bank or collusion with other students. A possibility also exists that some cheating behaviors may not be detected during the proctored session. As such, a need exists to analyze and compare cheating behaviors within proctored or unproctored testing environment for students enrolled in online courses and taking assessments through an online format.

### **Ethical Considerations**

As conducting research and reporting on cheating behavior is an especially sensitive topic with potential repercussions should a student be identified, the study in question required extra precautionary measures to ensure the anonymity and

confidentiality of participants. A survey was sent out through a link to an online, third party provider. Once responses were submitted, students were assigned a unique, numerical identifier from the third party, which served as the only source of identification to protect the participant's privacy. In addition, the survey did not ask for any information specific to a particular class or instructor, and only aggregate data were reported. Specific steps to ensure anonymity of participants is included within the procedures section in chapter three.

### **Limitations**

Within this study, data were collected from a convenience sample consisting of students enrolled in online courses at a single, large, 4-year, public, degree-granting institution located in the Southeastern region of the United States. As random sampling methods were not utilized, generalizability may be limited. In addition, randomization of the participants into treatment groups was not possible as the participants' inclusion into a proctored or unproctored testing environment was conducted a priori.

In order to further ensure the confidentiality and anonymity of participants' responses, information on individual courses for which the student took an online assessment was not available. As such, differences in online course structure, course content, and factors relating to instruction may not be accounted for within this research.

The data collected within this research study relied on self-report measures on a topic that is sensitive in nature. As an attempt to encourage participants to respond honestly, the recruitment letter contained precautionary measures taken in order protect the respondent's identity, including the deletion of any identifiable information, such as the respondent's IP address and email address, from the survey data. As an attempt to

provide an additional measure of the participants' willingness to provide honest responses regarding their cheating behavior, a social desirability scale that measures an individual's desire to answer a question in manner that will be received favorably by others was included within the survey instrument. Results from the social desirability measure were correlated with the frequency of reported cheating behaviors, as suggested by research by Yardley, Rodríguez, Bates, and Nelson (2009).

### **Delimitations**

Delimitations are intended to set the boundaries for a particular research study. The study conducted collected data from students who enrolled at one or more online courses through a single, large, public, 4-year, degree-granting institution located within the Southeastern region of the United States during the spring 2015 semester. Students' cheating behaviors were limited to those specific to taking online assessments and did not include cheating behaviors such as plagiarism and research fabrication. These specific, online assessment cheating behaviors were defined and identified from a review of web sources, scholarly research, and through practical experiences. These identified behaviors were formed into a survey, the Online Assessment Cheating Behaviors Survey (OACBS), which contained items asking participants to indicate the frequency in which they have engaged in the behavior listed while taking an online assessment. Students who have taken an online examination through a proctored environment were limited to one of three options: a face-to-face examination taken in the presence of a proctor at the official testing center for the institution's distance students, a face-to-face examination taken through an approved proctor off-site, and an examination taken in the presence of a

remote proctor, such as through Software Secure's Remote Proctor Pro system, described in further detail within the literature review.

Although a number of individual variables have been presented as factors which may contribute to student cheating, conflicting research is presented for demographic variables of age, gender, GPA, and an individual's discipline of study for students in online environments. As such, the review of literature and the study conducted only included the above mentioned individual variables. In addition, the inclusion in this study of the contextual research variable of knowledge of an institutional honor code occurs as the variable has been widely studied in face-to-face contexts and in some online studies, with the fear of "getting caught" and subsequently being punished serving as part of a student's cost-benefit analysis in deciding whether or not to cheat.

### **Definition of Terms**

The following definition of terms will guide the study:

*Cheating:* Cheating is defined as either giving or receiving unauthorized assistance for the purposes of gaining an advantage for one's self or for others on an online examination. Specific cheating behaviors are outlined in the online assessment cheating behavior survey developed by the researcher.

*Face-to-face proctoring:* The monitoring of an online assessment occurs within the physical presence of a proctor at either the official testing center for the institution's distance students or through an approved, off-site proctor.



*Institutional honor code:* The institution's written statement on the expectations of student and faculty conduct with respect to upholding academic integrity. Included within this statement are the policies and procedures that govern incidences of academic dishonesty, particularly cheating.

*Online assessment:* An online assessment is defined as an examination taken by students enrolled in a distance-based, online course, where the examination is delivered through a computer.

*Proctored online test:* An online assessment in which students are monitored by an approved individual or object while taking the examination. Within this study, proctoring can occur through two mediums, defined in more detail below.

*Remote proctoring:* The monitoring of an online assessment occurs through a web camera via a remote proctoring service, with Software Secure's Remote Proctor Pro system being the most commonly used service at the institution being investigated, described in further detail within the literature review.

*Social desirability:* An individual's desire to answer a question in manner that will be received favorably by others, sometimes seen in self-report surveys that are controversial in nature. Within this study, social desirability is defined by an individual's score on the Social Desirability Scale-17 (SDS-17; Stöber, 2001).

*Unproctored online test:* An online assessment in which students are not monitored by an approved individual or object while taking the examination. As such, the possibility of settings in which students take the exam are endless, extending to wherever a computer and Internet connection may exist.

## CHAPTER II

### REVIEW OF RELATED LITERATURE

The literature review begins with a brief overview of the prevalence of cheating in academic contexts and progresses to a review of studies conducted on cheating in online environments, focusing on studies containing pertinent demographic variables and contextual factors that may influence students' cheating behaviors. Next, the literature review moves to a discussion of studies that focus on the proctoring of online assessments, divided into subgroups of face-to-face proctoring and remote proctoring studies. Finally, a brief overview of the social desirability framework is discussed in relation to its accompaniment with self-report measures that are controversial in nature.

#### **Cheating Prevalence**

Although academic cheating may be framed in many contexts, the most simplistic definition of cheating can be viewed as depriving one “of something valuable by the use of deceit or fraud” (“Cheating”, n.d.). Cheating in educational contexts is commonly referred to as “academic dishonesty” and is certainly not a new phenomenon, with some of the earliest educational research studies on academic cheating dating back to the late 1920's and early 1930's (Campbell, 1931; Hartshore & May, 1928). The first large scale study of cheating within higher education institutions was conducted by Bowers in 1964, where Bowers found that an astounding 75% of college students admitted to cheating in

at least one form (Bowers, 1964). Davis, Grover, Becker, and McGregor (1992) found that at least 90% of students indicated that it was “wrong” to cheat. McCabe et al. (2001) conducted a replication study of Bowers work in 1994, and found cheating on exams alone increased from 39% to 64%. In a meta-analysis of 46 studies conducted on cheating within face-to-face college classrooms, Whitley (1998) found an overall cheating rate of 70%. Of these studies, 37 studies examined cheating on examinations, with cheating rates ranging from 4% to 82%, averaging 43% overall for face-to-face examinations. Indeed, since Whitley’s analysis, a large focus of studies examining collegiate cheating have reported a relatively high level of cheating, with overall cheating rates ranging from a low of 45.6% (Smyth & Davis, 2004) to a high of 81.7% (Yardley, Rodríguez, & Bates, 2009), with other studies reporting overall cheating rates within the continuum of these rates (Diekhoff, LaBeff, Clark, Williams, Francis & Haines, 1996; Hensley et al., 2013; Jordan, 2001; Kidwell & Kent, 2008). However, after conducting a mass review of studies on cheating, Crown and Spiller (1998) indicated that practitioners should view overall cheating prevalence rates with caution as cheating prevalence studies assess and compare multiple types of cheating through various methods. Brown and Emmett (2001) echo this concern, stating that the level of cheating has not actually increased significantly over time as students may simply be more willing to admit to cheating in present day as cheating has become more acceptable in the current culture. Brown and Emmett also note that there were varying types of cheating measured in past studies. Indeed, studies have often mixed varying cheating types (plagiarism, fabrication of research results, exam cheating) into a singular construct of cheating. The rates of cheating on examinations given for traditional classroom courses seems to be lower than

the overall average rate of cheating, with Ward and Beck (1990) reporting that 28% of college students admitted to cheating on mid-term exams, Tang and Zuo (1997) reporting that 39% of the college students in their study admitted to cheating on any exam while in college, and Jordan (2001) indicating that 31.4% of the students admitted to cheating at least once on an examination or paper during the semester the study was conducted.

Ashworth, Bannister, and Thorne (1997) indicate that students assign varying levels of seriousness to cheating offenses, having more reverence overall for examinations.

However, when cheating exam behaviors are broken down into sub-categories, the prevalence of cheating varies. Moberg, Sojka, and Gupta (2008) studied cheating in traditional, college classrooms and found that 72.5% of students had received exam questions from students in a previous section of the class, 72.4% had tried to save or retain exam questions to share with another section, and 46.3% obtained answers from another person during an exam. Roig and Casio (2005) found that 72% of students admitted to using a false excuse, primarily to gain more time on an exam or assignment. Levy and Rakovski (2006) found that students reported more “passive” forms of cheating (allowing copying or copying work from the Internet) than “direct” cheating (stealing an exam or copying an exam). Hutton (2006) examines cheating in the framework of a cost-benefit analysis, where cheating on exams is considered to be more “high risk” behavior, where the reward for cheating must also be high, such as a high grade, and conducted through minimization of detection.

As online courses became more popular, research began focusing on either the prevalence of cheating in online courses or attempting to compare cheating in face-to-face and online contexts. Kennedy, Nowak, Raghuraman, Thomas, and Davis (2000)

found that the majority of faculty and students believed cheating would be easier in online classes than in traditional, face-to-face classes. King, Guyette, and Piotrowski (2009) found that 73.8% of students felt that it was easier to cheat in an online context. Harmon, Lambrinos, and Buffolino (2008) found that 59% of those surveyed felt cheating was equivalent in online and face-to-face classes. Miller and Young-Jones (2012) found that 57.2% felt it was easier to cheat in an online course. However, these studies have been criticized for focusing solely on the perceptions of individuals regarding online cheating and based largely on anecdotal evidence. Harmon et al. (2008) note that a large portion for the concern regarding cheating in online courses is due to the lack of oversight and control of examinations similar to the control that can be exerted in face-to-face courses. Studies comparing face-to-face and online cheating rates based on self-reported behaviors have produced mixed results. Lanier (2006) found that 41.1% reported cheating online and 21.3% admitted to cheating in face-to-face contexts. Watson and Sottile (2010), however, reported that 32.1% of students cheated in face-to-face courses and 32.7% of students cheated online. A study by Sheets and Waddill (2009) found that 40% of online business students had participated in “e-cheating,” yet a study by Grijalva, Nowell, and Kerkvliet (2006) found that only 3% of students admitted to cheating in an online class. Charlesworth, Charlesworth, and Vician (2006) reported that 83% indicated that they had not cheated on an online assignment. The wide variance in cheating rates have been attributed to a number of factors, among them, the variables discussed below.

## Age

According to an article by Kolowich (2012), the average age of an online student pursuing degrees completely online is 33. As of 2012, the average age range of students pursuing degrees in a traditional, face-to-face class format spans from 18 to 24, with this range encompassing 79% of the enrollments within the U.S. (United States Census Bureau, 2012). As such, the factor of age for traditional and online programs have received a great deal of attention in analyzing both the prevalence of cheating and factors contributing to cheating in higher education institutions. The research on the influence of age on cheating within face-to-face contexts typically supports that younger students are more likely to cheat than older (Diekhoff et al., 1996; Kisamore, Stone, & Jawahar, 2007; Marsden, Carroll, & Neill, 2005; McCabe & Trevino, 1997; Newstead, Franklyn-Stokes, & Armstead, 1996; Whitley, 1998). However, at least one study found that older students were more likely to cheat in a face-to-face environment (Tang & Zuo, 1997) and other studies found no differences related to age and college cheating in a traditional environment (Passow, Mayhew, Finelli, Harding, & Carpenter, 2006; Saulsbury, Brown, Heyliger, & Beale, 2011). In a study which compiled results from multiple collegiate cheating research articles, Crown and Spiller (1998) concluded that there were mixed results on the impact of age on cheating in a face-to-face environment, which was often dependent upon the measure used within the study. In finding age to be a significant factor in cheating, with younger students cheating more than older students, McCabe and Trevino (1997) suggested that age-specific cheating may relate to a student's year in school, with freshmen taking more general courses that are less interesting and relevant than one's desired major courses, allowing the students to more easily rationalize

cheating in these courses. In support of this view, Jordan (2001) found that cheating occurred more for first year students than juniors or seniors. However, although Passow et al. (2006) found no difference in overall age for cheating behaviors, the researchers did find that fifth year students were more likely to report cheating than first year students. In terms of grades, the fifth year students may have had more to gain from engaging in risky behavior than first year students, who had more years to increase their overall GPA before applying for competitive jobs or more prestigious schools.

Although online and traditional students are known to differ, limited research exists on the relationship between age and cheating behaviors within an online context. In a study comparing online and face-to-face cheating, Lanier (2006) found that sophomores and juniors were most likely to cheat in an online environment and sophomores were most likely to cheat in a traditional environment. Charlesworth et al. (2006) found that age could not predict cheating in online contexts. However, King et al. (2009) found that age was a significant predictor of cheating for students, grouped as those under the age of 26 and over the age of 26. Sheets and Waddill (2009) found that age could predict cheating within an online environment, with cheaters more likely to be younger. Specifically, younger students reported more cheating on online exams. Miller and Young-Jones (2012) found that although cheating occurred more frequently in online courses, those who reported taking online only courses tended to be older and cheated less frequently than those students who took solely face-to-face courses. Likewise, older students assumed more responsibility for their role in maintaining academic integrity in coursework.

The majority of literature on the relationship between age and cheating in traditional, face-to-face courses supports that younger students tend to cheat more than older students. However, research conducted on the relationship between age and cheating in an online environment is scarce, with the existing research producing conflicting results. As online and traditional students are known to differ, a need exists to examine online cheating with respect to an individual's age.

## **Gender**

The impact of gender as a characteristic of interest relative to cheating behavior has been well-documented in the literature pertaining to collegiate, face-to-face contexts. Although numerous studies exist, the literature is conflicting. Ward and Beck (1990) found that women were less likely to cheat than men, with a later study conducted by the same pair of researchers finding the same (1990). Whitley (1998) conducted a meta-analysis on cheating in face-to-face context and found that men cheated more overall. Additional research conducted on cheating also found that men were more likely to cheat than women in face-to-face contexts (Atmeh & Al-Khadash, 2008; Becker & Ulstad, 2007; Marsden et al., 2005; McCabe & Trevino, 1997; Newstead et al., 1996; Roig & Caso, 2005; Saulsbury et al., 2011; Tang & Zuo, 1997; Williams, Nathanson, & Paulhus, 2010). According to a study by Simon et al. (2004), women were also more likely to report a suspected case of academic dishonesty. However, one study found that women cheat more than men in traditional classrooms (Kisamore et al., 2007). Several studies reported finding no differences for the influence of gender on the decision to cheat (Hensley et al., 2013; Jordan, 2001; King et al., 2009; Moberg et al., 2008; Passow et al., 2006; Smyth & Davis, 2004; Yardley et al., 2009). In a meta-analysis, Brown and Spiller



(1998) summarized prior gender difference studies in collegiate, face-to-face cheating. The review found that of the 18 studies examined, the majority of the studies found no differences in cheating based on gender. Six of the studies indicated that males cheated more than females and two of the studies indicated that females cheated more than males.

One common theory that has been used to explain historic differences in reporting the finding that women tend to cheat less is the sex socialization theory, where women are more prone to follow the rules due to societal influences (Ward & Beck, 1986). The sex socialization theory could also be used as an explanation as to why differences in cheating rates appear to have become more balanced for men in women in current times, as societal views in America have shifted towards an equalization in the roles of men and women. Becker and Ulstad (2007) note there is an overall tendency for women to avoid risk and for males to be more prone toward engaging in risk-taking behavior. Other researchers who found significant differences by gender also noted that the gender differences might, in part, be due to differences in other variables, such as the individual's academic major, with women engineers having a higher propensity to cheat than other disciplines (McCabe & Trevino, 1997). When accounting for discipline of study, Yardley et al. (2009) found that males did cheat more than females in non-major courses. Additionally, although Moberg et al. (2008) found no overall difference in cheating by gender, when behaviors were analyzed separately, the researchers found that men were more likely to report obtaining the answers to an exam.

In 2007, of those students electing to take their entire college coursework through distance education, 61% were women and 39% were men (United States Department of Education, 2011). Although the relationship between gender and cheating has been

widely studied in traditional collegiate settings, the amount of research conducted on the influence of gender on a student's cheating behavior in online courses is scant. Lanier (2006) and Gurung, Wilhelm, and Filz (2012) found that men tended to report that they cheated more so than women in online courses. Watson and Sottile (2010) found that women reported cheating more in online courses than men. However, other studies found no differences in cheating within online courses due to gender (Bailey & Bailey, 2011; Charlesworth et al., 2006; Miller & Young-Jones, 2012; Sheets & Waddill, 2009). However, Sheets and Waddill (2009) also found that when an online student's age was considered, younger males were more likely to engage in e-cheating than any other group.

Historically, research on the influence of one's gender in cheating behaviors has noted more cheating overall for males than females, or has shown no difference in cheating related to gender. Research that specifically examines gender differences in online cheating is limited. As such, a need exists to conduct research on the relationship between gender and online cheating.

## **GPA**

The factor of one's GPA relative toward their decision to cheat in a college course has been widely studied in face-to-face contexts. Although several theories abound as to why an individual's GPA would influence his cheating decision, the basic premise following the cost-benefit analysis with respect towards one's decision to cheat is that an individual will cheat if the reward is greater than the risk involved. Following this theory, generally those with a higher GPA will receive less of a reward from cheating than those with a lower GPA. However, those students under extreme pressure to achieve, such as

those receiving a scholarship or those who must compete for desired jobs or college admissions, may be more likely to cheat as their need for higher grades may exceed the risk taken by cheating to obtain these grades.

The research conducted on the influence of GPA in traditional, face-to-face environments tends to support an inverse relationship between GPA and cheating rates. Those with a lower GPA or less mental ability tend to report cheating more than those with a higher GPA, who tend to report cheating less (Atmeh & Al-Khadash, 2008; Burrus, McGoldrick, & Schuhmann, 2010; Hensley et al., 2013; McCabe & Trevino, 1997; Moberg et al., 2008; Newstead et al., 1996; Roig & Caso, 2005; Tang & Zuo, 1997; Whitley, 1998; Williams et al., 2010; Yardley et al., 2009). However, a report by International Business Times (2011) found cheating at all GPA levels. Other studies have found cheating rates to be greater for high-achievers (Perry, Kane, Bernesser, & Spicker, 1990) and scholarship recipients (Passow et al., 2006). Yet other studies conducted have found no relation between GPA and cheating rates (Jordan, 2001; Kisamore et al., 2007; Saulsbury et al., 2011).

Research conducted on the influence of GPA in online environments has also found conflicting results. Some studies support the inverse relationship between GPA and cheating (Grijalva et al., 2006; Lanier, 2006; Sheets & Waddill, 2009). Another found that cheating was most likely to occur when students had a GPA between 2.4 and 3.0 (Charlesworth et al., 2006). Additionally, Beck (2014) found that GPA was not a predictor of a student's decision to enroll in an online course.

Overall, research on the relationship between GPA and cheating in traditional, face-to-face contexts has shown an inverse relationship between cheating and one's GPA.

The scarce literature on the relationship between GPA and cheating in online environments has produced conflicting results. As such, a need exists to conduct research on the relationship between GPA and cheating in online environments.

### **Discipline of Study**

Acts of collegiate academic misconduct seem to be more prevalent in particular disciplines of study, particularly in business and engineering. However, in recent studies of cheating, fewer studies have directly examined the relationship between one's discipline of study and cheating behaviors. In 1993, McCabe and Trevino found that business students cheat more than non-business students. Both Smyth and Davis (2004) and Kisamore et al. (2007) echoed these findings. In 1997, the researchers found that business and engineering students reported the highest levels of cheating. Marsden et al. (2005) found engineers were most likely to report cheating. Another research study conducted on engineering students found that factors contributing to cheating varied by assessment type, homework or examinations (Passow et al., 2006). Newstead et al. (1996) found that cheating occurred more in science and technology-based disciplines. In an observational study examining discarded cheat sheets, Pullen, Ortloff, Casey, and Payne (2000) found that the majority of cheat sheets collected were from business and science disciplines. Ashworth et al. (1997) suggested that science disciplines may be more conducive to cheating as assessments typically are seeking factual information or one correct answer, instead of a range of possibilities as is required in humanities courses. However, Lanier (2006) found that education majors, followed by science majors, had the highest rates of cheating.

Other studies have found that a student's discipline of study or course enrollment did not make a difference in cheating (Hensley et al., 2013; Jordan, 2001). Research findings by Atmeh and Al-Khadash (2006) indicated an overall low cheating likelihood for accounting students, contradicting prior research conventions. However, the results may be influenced by cultural differences, as the study was conducted on Jordanian university students.

Limited research has been conducted on one's discipline of study in relation to online, collegiate, academic cheating. Lanier (2006) found that business disciplines, followed by the sciences, had the highest cheating rates. In a study of online business students, 40% reported cheating (Sheets & Waddill, 2009). Carpenter et al. (2006) examined engineers' attitudes towards cheating. In this study, only 40.7% felt that group-work while taking an online test was cheating. Watson and Sottile (2010) desired to examine students' discipline of study relative to both traditional classroom and online cheating, but was unable due to IRB restrictions.

Research conducted on cheating in traditional, face-to-face classes has shown overall higher cheating incidences within fields of business, sciences, and engineering. However, studies conducted across a wide range of disciplines are scant, with existing literature on online cheating typically focusing on one specific discipline. As such, a need exists to survey online students from multiple disciplines and to examine one's selected discipline of study in relation to cheating occurrences.

### **Honor Code**

An institutional honor code is a set of rules and principles of ethics that outlines and governs behaviors related to academic integrity. Institutional honor codes were put in

place in part to provide an overview of an institution's stance towards academic integrity through a formalized statement and are used primarily to deter academic dishonesty. Merriam Webster defines an honor system as: "a system (as at a college) whereby persons are trusted to abide by the regulations (as for a code of conduct) without supervision or surveillance" (n.d.).

Although the provisions found within this definition may vary from institution to institution, most colleges provide some form of honor code system with regulations from which its students are expected to abide. However, supervision and surveillance are often conducted along with the institution's overall effort to deter cheating. Utilizing the rationale behind the cost-benefit theory, a student's decision to cheat is filtered through perceived normative behavior and perceived risk of being caught or being punished if caught (Burrus et al., 2007). As such, the influence of an institution's honor code and its associated policies and procedures on cheating behavior has become an important variable of study.

The majority of studies examining honor codes as a factor of cheating occurs in face-to-face collegiate settings. In one of the earliest studies of the impact of honor codes on cheating, in a comparison of works by Bowers (1964) and McCabe and Trevino (1993), McCabe et al., (2001) found that honor codes were correlated with lower rates of cheating. In a meta-analysis review of cheating studies, Whitley (1998) indicated more cheating occurred by students attending colleges without honor codes. Burrus et al. (2007) found that students who believed punishment for cheating at an institution would be less severe were more likely to cheat. An overall knowledge of the honor code did

reduce the likelihood of cheating, but researchers noted it may not reduce the frequency of cheating for those who will cheat regardless.

In addition, the language of honor code statements may influence cheating. Gurung et al. (2012) found that honor codes containing formal language and direct statements of consequences of academic misconduct were perceived by students as promoting less cheating. Jordan (2001) found that having an understanding of the institutional policy on cheating behavior could significantly predict cheating, with non-cheaters having a “greater understanding” of the institutional honor code. However, the difference may not have been related to exposure to the honor code, as almost 95% of those surveyed indicated they had received information on the honor code. As such, simply exposing students to honor code policies may not be sufficient to deter cheating. Research by Carpenter et al. (2006) support this conclusion, finding that 57.1% of students felt that both students and faculty only “somewhat” understood the academic integrity policies at their school. McCabe et al. (2001) also mirrored the concern of Jordan (2001), finding an overall culture of academic integrity must be instilled at the institution within individual course levels, a feat that is difficult in both traditional and online classroom environments. Further complicating research on honor codes, a study by Coalter, Lim, and Wan (2007) found that only 53.6% of faculty stated they would abide by institutional policies governing academic integrity, with 82.9% noting that compiling evidence for cases of suggested academic misconduct was difficult. 57.5% of faculty in the study also indicated they had not pursued at least one case of suspected academic dishonesty.

Other studies of traditional classroom college students have found no difference in cheating for various honor code conditions. Marsden et al. (2005) found that there were no differences in cheating among students who acknowledged receipt of rules regarding cheating and those who had not received rules regarding cheating. Kisamore et al. (2007) found that although students perceived less cheating in institutions with a strong academic integrity culture, perception of a strong academic culture was not a significant factor listed in influencing their own likelihood of cheating. Passow et al. (2006) found that the perceived effectiveness of an institution's academic integrity policies weren't significant in predicting cheating on exams. Likewise, Yardley et al. (2009) found no difference in cheating due to knowledge of institutional policy. Carpenter et al. (2006) found that only 45.9% of students perceived the academic dishonesty policies at their institution "somewhat" deterred cheating. In a study by Mastin, Peskza, and Lilly (2009), students were given a direct opportunity to cheat. The researchers found no differences in cheating between various conditions of honor code knowledge.

Research on the impact of honor codes on cheating in online environments is important, as creating an overall culture of academic integrity may be difficult in online settings. In addition, many institutions have utilized online unproctored tests, relying heavily on honor code systems and their underlying principles to guide student behavior, without much research to support the effect of such honor systems on cheating in online environments. To mitigate cheating on online tests, Moten, Fitterer, Brazier, Leonard, and Brown (2013) suggested requiring confirmation of reading the honor code through clicking a button before students are even allowed to enter an online course room. For



testing situations, having the students attest to or virtually sign off on an honor code statement prior to submission may deter cheating. However, a study by Sheets and Waddill (2009) found that cheating online was unrelated to a student's knowledge of the institutional or faculty policies on cheating for both tests and assignments.

The existing literature on the effectiveness of honor codes has generally shown that institutions with honor codes have overall lower rates of cheating than those without honor codes. Although online courses often rely on one's principles of personal and institutional ethics in guiding submission of online work, there has been limited research on the impact of an honor code in deterring online cheating. As such, a need exists to examine the relationship between cheating and knowledge of an institutional honor code in online environments.

### **Cheating Studies: Online vs Face-to-face Courses**

A great deal of research on collegiate online courses has sought to equivocate traditional, face-to-face courses with courses taught online. As the overall purpose of an educational institution is to validate a student's knowledge through awarded degrees (McNabb & Olmstead, 2009), a growing concern regarding the validity of online courses spurred research on the cheating prevalence rates within online courses.

Research by Miller and Young-Jones (2012) and Lanier (2006) found that cheating occurred more frequently in online courses. However, Miller and Young-Jones (2012) noted that students who took only online courses, instead of a mixture of traditional and online courses actually cheated less than those taking online face-to-face courses or a mixture of the two course delivery methods. Lanier (2006) noted that only 6% reported "routinely" cheating in online contexts. However, the majority of studies

found that there were either no or negligible differences in the overall cheating prevalence between online and face-to-face courses (Charlesworth et al., 2006; Cole, Swartz, & Shelley, 2014; Grijalva et al., 2006; Harmon et al., 2008; Hollister & Berenson, 2009; King et al., 2009). Some studies even concluded that when viewing cheating as an overall construct, those in traditional, face-to-face courses cheated more than online students (Kidwell & Kent, 2008; Stuber-McEwen, Wiseley, & Hoggart, 2009; Watson & Sottile, 2010).

In spite of these findings, the majority of research conducted on perceptions of cheating in online courses have found that both faculty and students still perceive it is easier to cheat in online courses (Harmon et al., 2008; Kennedy et al., 2000; King et al., 2009; Stuber-McEwen et al., 2009; Weimer, 2014; Yates & Beaudrie, 2009). Reasons for this perception include a feeling of alienation among online students, which provides more of a rationale for cheating (Ashworth et al., 1997); a lack of faculty control over the test environment (Rodchua, Yiadom-Boakye, & Woolsey, 2011); and a perception that the opportunity to cheat is greater in online contexts as assessments are frequently unproctored and behaviors are unmonitored, allowing for access to outside resources (Cole et al., 2014; Fask, Englander, & Wang, 2014; Harmon et al., 2008). Indeed, more students report being caught cheating in face-to-face than in online course environments (Watson & Sottile, 2010). However, Hollister and Berenson (2009) contend that differences in opportunity to cheat in online environments may be offset by a lack of direct teacher contact if a question arises while taking a test, potential noise and distractions that occur during online examinations, and a lack of immediate technical help. Kidwell and Kent (2008) also feel that online students may be less likely to

collaborate with fellow classmates during online exams as there is a greater risk of exposing one's intentions to cheat to a stranger.

Actual differences that occur between online and face-to-face cheating are primarily during testing (Beck, 2014). Online students reported being more likely to use unauthorized notes during unmonitored exams (Stephens, Young, & Calabrese, 2007), get answers from each other during an online exam (Watson & Sottile, 2010), help one another during exams (Lanier, 2006), and give false excuses to avoid an exam or to extend the time to take one's exam (Roig & Caso, 2005) than those in traditional, face-to-face courses. Surprisingly, research by Cole et al. (2014) indicated that some students felt that the nature of online courses "implied consent" to share, collaborate, and access available resources. In this study, 39% of students admitted to using notes or the textbook without the instructor's explicit consent and felt it was an acceptable behavior. Of the students surveyed, 27% stated that "googling or accessing" resources during online exams was considered an acceptable behavior. Protecting the integrity of online assessments is crucial, as these assessments are often the only means an online instructor utilizes to validate a student's knowledge obtained. The following section contains research conducted on cheating specifically within the confines of examinations.

### **Examination Cheating Studies**

Rovai (2000) contends that assessments are even more important within online contexts as measures and indicators of student progress in online environments are more limited and often less available than those in a face-to-face environment. As such, research devoted to understanding cheating on online assessments is critical. However, within face-to-face and online cheating studies, researchers have typically conceptualized

cheating as a singular construct, including behaviors such as plagiarism and falsification of data. Nevertheless, studies have supported the fact that cheating consists of various types of behaviors and that categorization of these behaviors allow differences in cheating to surface (Hensley et al., 2013; Newstead et al., 1996; Passow et al., 2006). Existing research on exam cheating that has attempted to examine grades between either online and traditional courses or proctored and unproctored examinations in an attempt to provide a measure of cheating (Beck, 2014; Fask et al., 2014; Flesch & Ostler, 2010; Harmon & Lambrinos, 2008; Hollister & Berenson, 2009; Wachenheim, 2009; Yates & Beaudrie, 2009). However, Bailey and Bailey (2011) note that this type of research does not often account for potential collaboration, differences in mastery levels of the comparison sections, and any practice effects. In addition, most students were given a “practice exam” as a baseline for which the students may not have had an incentive to perform well, skewing difference results.

Although few studies of online exam cheating exist that do not rely on grades as a baseline indicator, some studies have reported the overall prevalence of cheating on examinations within face-to-face contexts, with a meta-analysis of 36 studies by Whitley (1998) finding percentages of exam cheating ranging from 4% to 82%. Other studies have found exam cheating to be within the 30% to 50% range (Hensley et al., 2013; Sheets & Waddill, 2009; Tang & Zuo, 1997) for face-to-face contexts. One study compared the prevalence of exam cheating between online and face-to-face contexts, finding negligible differences (Tang & Zuo, 1997). Other studies indicated more of a likelihood to cheat on traditional, face-to-face tests (Stuber-McEwen et al., 2009), a lower likelihood of reporting peer cheating in traditional classrooms (Bailey & Bailey, 2011),

and a greater likelihood of “serious” test cheating occurring in face-to-face environments (Kidwell & Kent, 2008). However, Lanier (2006) found more students reported receiving help during online exams than with lecture exams. As such, differences found in cheating prevalence within examinations appear to be behavior specific, even within the overall context of examination cheating.

Ashworth et al. (1997) note that exam cheating is viewed by students as the most serious type of cheating and Levy and Rakovski (2006) note that students perceive exam cheating to be the most dishonest form of cheating. Franklyn-Stokes and Newstead (1995) noted that students felt “cheat sheets” were unethical during an exam. However, in spite of these perceptions, the unauthorized use of notes or outside materials pervades in online courses and in digital forms of unauthorized note usage in both face-to-face and online courses (Cole et al., 2014; King et al., 2009; Miller & Young-Jones, 2012; Stephens, Young, & Calabrese, 2007; Yardley et al., 2009). Surprisingly, in one study, 39% felt using notes or a textbook for an exam was an acceptable exam behavior, even without the instructor’s permission, and 37% of online students felt accessing online resources or “googling” was an acceptable behavior (Cole et al., 2014). In another, 71% felt it was appropriate to use the textbook for an online exam (King et al., 2009). However, this number was greatly reduced to 9% when a policy on resource usage was clearly stated, although a percentage of those ignoring these policies was unavailable. Other studies find relatively high rates of collaboration or obtaining answers from one another during online exams (Carpenter et al., 2006; Watson & Sottile, 2010). Levy and Rakovski (2006) allude to a student perception of exam cheating severity, with students stating the most severe punishments should be dealt with on direct exam cheating, such

as letting someone copy off of one's exam. Research by Yardley et al. (2009) asked students to rate the severity of exam cheating behaviors, finding that having someone else take an exam for you, copying from a stranger's exam, and using notes on an exam were rated as some of the most severe cheating behaviors. However, Moberg et al. (2008) indicated that three of the most common exam cheating behaviors included "pre-cheating" strategies such as obtaining old tests and the giving and receipt of exam questions between sections. Although students may perceive certain examination behaviors as being more severe, the overall culture towards cheating has shifted, particularly within online environments, where the ease of access to outside resources without proctor supervision creates a norm whereby online examinations should be considered "open book" (Cole et al., 2014). To combat these behaviors, online courses began to utilize proctoring services, discussed below.

### **Proctoring Studies**

The growth of distance education and an increasing number of students taking online courses has created a need to re-evaluate the concept of assessments and how the integrity of these assessments are ensured (London, 2014). As noted in the previous section, the amount of cheating on examinations, both within a face-to-face and an online environment, presents a serious challenge to educators. Online assessments have presented an additional challenge, with a general consensus that unmonitored, web-based tests produces a greater opportunity for students to cheat through easier access to unauthorized materials and the ability to capture and share test questions and answers (Karim, Karinsky, & Behrend, 2014). Rovai (2000) equates unproctored, online exams' reliability to that of a take-home, face-to-face exam. In addition, a feeling of isolation and

relative anonymity may also influence an online learner's decision to cheat (Ashworth et al., 1997). Research by Whitley (1998) notes that within a testing environment, more cheating occurs when the risk of detection is low. Online cheating can damage the reputation of an institution and can spur administration to impede the growth of distance offerings. As such, online educators began to examine measures of control for online examinations that are typically exerted in traditional, face-to-face course, including the proctoring of one or more examinations (Rodchua et al., 2011). Proctored testing can be defined as "testing that is overseen by an authorized, neutral proctor, who ensures the identity of the test taker and the integrity of the test-taking environment" (University of Colorado-Denver, n.d.).

For online examinations, proctoring acts not only as a deterrent to cheating, but also as a means of authenticating a student's identity (Rovai, 2000). In 2008, the Higher Education Opportunity Act stated that distance education institutions must provide evidence of how they authenticate and verify a student's identity (McGee, 2013). Lanier (2006) suggested a log-in system, which provides each student with a unique username and password, could aid in verifying student's identity and offer assurance of who is completing an exam. However, some accrediting agencies note that a log-in system alone is not enough as students can easily provide their log-in information to another individual. As such, proctoring has been an essential component of meeting accrediting agencies provisions for accrediting online courses.

Proctoring assessments for online courses can occur in two ways: through a face-to-face session, where a proctor and student are in the same physical location, and remotely, where a student is visible to the proctor through the presence of a webcam and

other specialized computer software. Within the text that follows, a discussion of face-to-face proctoring will occur, with the next section devoted to a discussion on remote proctoring.

Institutions which utilize face-to-face proctoring for online course assessments often require students to come to an on-campus location to take high-stakes assessments such as final examinations. Other alternatives include either providing students with a list of pre-approved proctoring facilities and locations or having the student submit a proctor approval form for the institution to validate and approve. Although the categories of allowed proctors varies widely by individual institutions or instructors, typically those in a professional, educational role, such as librarians or school administrators, are included, with family members, co-workers, and those with whom the student shares a personal relationship being excluded from the approved proctor category.

Although face-to-face proctoring is widely used, it is not without significant flaws. Proctoring can be examined within a cost-benefit framework, where costs may include security issues in proctor validation, student and instructor inconveniences, and financial costs to both students and institutions. Proctoring institutions must ensure that those who oversee the assessment process are legitimate in their stated roles and that no familial, personal, or potential “pay for aid” relationship exists between the proctor and student. After proctor validation and before the time of testing, proctors are typically emailed instructions and restrictions for an exam, along with a physical copy of the test if it will be taken paper-based or a password if taken web-based. As proctors are trusted with such highly secure information, validation of their credentials is essential to ensuring the integrity of the proctoring process. When approving student proctor request



forms, this task can become cumbersome, especially when students are located across the nation and across the world. To address these issues, institutions often require students to take tests at official testing center, where students often incur an additional fee to take an assessment through an official testing location. In addition to potential travel time, students also lose flexibility in scheduling. Online courses are often marketed as “flexible” or “anytime, anywhere,” yet students must rearrange work and family responsibilities and schedules to meet the schedules of approved testing centers (Harmon et al., 2008). Additional costs of proctoring include administrative functions such as the development of guidelines on proctoring, enforcing these guidelines, the coordination and relay of test taking information, including the time and place exams will be taken, the approval of proctors and locations, and the staff salaries to coordinate and operate testing and proctoring services (Cluskey et al., 2011). Proctoring benefits typically include compliance with accrediting agency standards for online student validation, deterring cheating through potential detection, and increased faculty confidence in online course exams through the mimicking of the experience found in assessments taken in traditional, face-to-face courses. In a cost-benefit framework for academic cheating, Hutton (2006) proposes that college students cheat as the cost-benefit ratio is slanted in favor of cheating, particularly in the instance of unproctored exams, where there is a lower chance of being caught. One of the strongest deterrents of cheating is the fear of being punished if caught (Diekhoff et al., 1996). However, only 2% of cheaters are caught (Hutton, 2006). In one study, 57.5% of faculty reported not taking any action when they suspected dishonesty, with 82.9% indicating a lack of evidence as a primary reason for not pursuing these incidences (Coalter et al., 2007). According to Hutton (2006), the payoff for

cheating is a higher grade and the avoidance of time and energy put into studying. In order to orient the cost-benefit ratio against from cheating, educators must increase enforcement and the likelihood of catching cheaters. For online exams, cheating must be able to be observed, which often requires proctoring. In a study by Rogers (2006), 52% of faculty stated they were concerned about cheating in online exams, yet 82% gave online exams for face-to-face courses through unproctored environments. Cluskey et al. (2011) note that instructors often proctor one high stakes exam, typically the final exam, per course as a “good faith effort” to ensure academic integrity. In fact, Rowe (2004) recommends the use of proctoring for all “major” assessments. According to Hutton’s theory (2006), increasing proctoring will decrease cheating through a shift of balance in the cheating cost-benefit ratio. Whitley and Keith-Spiegel (2001) go so far as to suggest that institutions should promote academic integrity in the highest possible way, even by supplying proctors for testing as needed. However, other researchers have questioned proctoring as solely a cheating deterrent. Lorenzetti (2006) found that preventing cheating through face-to-face proctoring was not the best reason for administrators to pursue proctoring as proctored assessments offered the benefit of indirectly increasing student study time and overall enhanced learning. Within Gallant’s (2008) framework of academic dishonesty, there are five categories of academic dishonesty: plagiarism, fabrication, falsification, misrepresentation, and misbehavior. McNabb & Olmstead (2009) note that those who utilize proctoring solely as a means of authenticating student identity only cover the misrepresentation portion of Gallant’s framework. Hinman (2005) proposes that there are three types of individuals with respect to one’s academic integrity: those who never cheat and need only a campus culture that supports their values, chronic

cheaters who need measures in place to prevent cheating from occurring, and the occasional cheater, who Hinman notes are the most easily influenced by the ease of e-cheating. Within Hinman's framework, proctoring would cover chronic and occasional cheaters and may deter cheating behaviors, but would detract and potentially be offending to those students who need only an institutional system built on trust to maintain their sense of academic integrity. In Hinman's (2002) study on how institutions can approach academic integrity, three main approaches emerge: policing, prevention, and virtue. Proctoring, within Hinman's framework, acts as both a policing method through catching and punishing and a prevention method through limiting opportunities to cheat. Proctoring, if coupled with an institutional honor code, could also act as a method of virtue, where student's actions are influenced by the campus's culture of integrity.

Harmon et al. (2008) suggested that although proctoring may serve to reduce cheating, it cannot eliminate cheating as students may still engage in cheating behaviors, such as using cheat sheets or collaborating with other students. In a 2010 study conducted by Harmon, Lambrinos, and Buffolino, 46% of students felt cheating occurred regardless of the proctoring status of multiple choice exams. Rowe (2004) noted that three of the main issues in online assessments were obtaining exam questions ahead of time or working to help others get answers ahead of time, false excuses to extend test taking time or to be able to retake an exam, and receiving unauthorized aid from notes, web resources, textbooks, or other unauthorized resources. Although proctoring may address the use of unauthorized materials and may prevent students from copying exam questions, students can still utilize false excuses and find ways to share exam questions

with other students. Moberg et al. (2008) noted that student authentication is not typically required in face-to-face courses when taking exams, although taking a test for another student might be more difficult in smaller, face-to-face courses than for online courses. Moten et al. (2013) noted that some students have hired other individuals to complete an entire course on their behalf.

Proctoring online tests has notable benefits, but cannot prevent cheating in its entirety and comes with considerable costs. As such, the cheating behaviors that occur within proctored settings must be examined and researched. Existing studies on face-to-face proctoring focus on differences between examination scores or grades as an indication of whether cheating has occurred between unproctored and proctored examinations. A number of studies have found either higher examination scores or grades for exams that were taken unproctored, online than those that were taken proctored, face-to-face (Carstairs & Myers, 2009; Fask et al., 2014; Flesch & Ostler, 2010; Harmon & Lambrinos, 2008; Wachenheim, 2009). Other studies have found no differences between unproctored online exam scores and proctored, face-to-face exam scores (Beck, 2014; Hollister & Berenson, 2009; Yates & Beaudrie, 2009). A study by Grivjalva et al. (2006) found proctoring status was not a significant factor of cheating for online courses.

To date, no known research exists on cheating behaviors in online courses when comparing unproctored, online exams and online courses exams which are proctored face-to-face. In addition, the existing research on proctoring compares either grades or exam scores for unproctored versus proctored exams. If grades were different, the researchers assumed cheating occurred. Likewise, if no differences in grades were found, the researchers assumed no cheating occurred. This line of reasoning does not account for

collaboration, potential differences in the mastery level between the sections, reduced anxiety levels of unproctored tests, and any pre-test differences that may account for grade differences between the actual exam (Bailey & Bailey, 2011). For example, some students may have not had a great incentive to perform well on the pretest if it were not graded, or, if the pretest counted for credit, the students may have worked harder to improve scores on the subsequent, follow-up test after receiving poor scores on the first assessment. Other research on proctoring has been conducted in employment settings (Foster, 2009; Tippins, 2009; Weiner & Morrison, 2009), which may not be applicable towards a collegiate, academic setting. Within the next section, another type of proctoring, remote proctoring, will be discussed as it relates to higher education institutional settings.

### **Remote Proctoring Studies**

The lack of control over the online testing environment has led to a call for proctoring exams (Rodchua et al., 2011). As mentioned within the previous section, the utilization of face-to-face proctoring services for online assessments often comes at a significant cost to both students and the online course institution. Online students are often tasked with finding a proctor, or proctoring location, scheduling a test during the proctoring official's open time windows, relaying the testing information and scheduled exam time back to the course institution, and driving to the physical testing location to take the examination. Institutions giving the exams must devote a great amount of time and effort into the proctor approval and test coordination process. As technology has evolved, a host of companies began to offer proctoring services remotely, which allows students to take examinations through a home or personal computer while being

monitored by a proctor through a webcam and special software installed on one's computer. Although each remote proctoring company may vary in the types of services provided, typically students are either watched by live monitors, with or without recording and archiving options, or the student and testing environment are recorded continuously and a review of exam-taking behaviors occur at a later time. Through specialized software, the proctoring company also generally locks down the web-browser on the computer on which the student is taking the exam, limiting the functions conducted on that computer to solely the examination in progress.

Karim et al. (2014) view the purpose of remote proctoring as recreating basic principles of face-to-face proctoring. Remote proctoring provides services such as student authentication, cheating prevention, test security, and flexibility in scheduling, both in timing and geographically. Beck (2014) notes that the use of identification validation for online tests is key to addressing the integrity of online courses. Remote proctoring companies may validate students through multiple methods, including facial recognition via webcam and official ID card, biometric recognition, such as fingerprint scan and keystroke analytics, and a series of questions that are asked upon initial registration and answers must be matched at the time of test taking. Live remote proctors look for behaviors such as eye movement and a student's focus on any area of the room other than the computer, talking to someone else in the room, and any other suspicious activity (Briggs, 2013). Live proctors can also intervene during a test if questionable behaviors occur. For example, if a student is consistently looking up at the ceiling, the live remote proctor can stop the test and ask the student, via webcam, to show the proctor the area in question. Many remote proctoring services still utilize human services, in one form or

another. For example, one remote proctoring company, ProctorU, utilizes live human proctors via webcam and specialized software to monitor test taking behavior. Kolowich (2013) notes that Kryterion, another remote proctoring company, supervisors monitor their proctors or “proctor the proctors” for an additional layer of security. Other services, such as RemoteProctor, record test taking footage, but still require a human to review the recorded footage. The majority of remote proctoring companies allow students to schedule their examinations during flexible, extended times, with some even providing 24/7 exam monitoring services.

However, remote proctoring has not been widely utilized by the masses due to software and technical incompatibilities and cost considerations as the proctoring services and equipment often carry a hefty price tag (London, 2014). In addition, test-takers have expressed concerns of feeling that their privacy was being invaded and feelings of self-consciousness while taking the exam in front of a live, remote proctor (Karim et al., 2014). London (2014) notes that services which only record students while taking an exam, as opposed to having a live proctor, are perceived by students as being less invasive.

Although there are a number of remote proctoring companies which can include a range of various options and services, an in-depth discussion and review of SecureExam RemoteProctor is needed as it is currently the most popular technology utilized by the institution being studied. RemoteProctor is a device which plugs into a computer’s USB port. The device scans the area continuously and features a unique, 360 degrees camera and scanner, with audio detection features (Bedford, Gregg, & Clinton, 2011). Before taking an exam, students must first purchase the device, either directly from the company

or the institution at which one is taking an online course, remove and assemble the device, install the accompanying software on the testing computer, install the device (camera/scanner) via the computer's USB port, register the software and hardware, and create initial credentials within the software through answering a series of questions, taking a photo for the file, and scanning one's fingerprint on the device to register within the system (2011). Once a student has registered the device and has completed the initial validation process once, the student will only need to validate identity through a web photo and a fingerprint scan taken before the exam begins. Instructors register exams to be taken through RemoteProctor and on exam day, students log-in to take the exam, with the camera device loaded into the USB port, where a fingerprint scan and picture will confirm the student's identity. Audio and video are continuously recorded during the exam, and the recording is uploaded to a site maintained by Software Secure's SecureExam Remote Proctor, where instructors or administrators can watch the videos (2011). RemoteProctor also allows options such as random fingerprinting at different testing intervals (Dunn, Meine, & McCarley, 2010). RemoteProctor requires a high speed Internet connection and in addition to the cost of the device, currently \$195, an annual fee of \$45 (Rodchua et al., 2011).

Research on remote proctoring has been largely dominated by company-sponsored, promotional research (Bomgar, 2006; Kapoor, 2014) or research by industrial psychologists on its effectiveness within employment settings (Foster 2009; Karim et al., 2014). Karim et al. (2014) found that in an employment test designed to aid in the selection of personnel, there was a decrease in cheating as measured within a remote proctored environment when compared to test scores taken in an unproctored



environment. Foster (2009) posits that remote proctoring is superior to face-to-face proctoring in terms of student validation due to the increased reliability of biometric scans instead of traditional ID checks as conducted in face-to-face proctoring. Foster states that those who check IDs may not have enough time, motivation, or adequate training to make a positive association between the ID and the individual taking the test. However, testing conducted within employment settings may differ significantly than those conducted in academic settings. At the time of this research, only one scholarly study of remote proctoring in academic settings has been published. In 2010, Mirza measured the effectiveness of remote proctoring via webcam by surveying a group of nursing students on whether or not they felt the remote proctoring service was effective in preventing cheating. The results of the survey indicated that 55% felt that students would be unlikely to cheat with this method and 40% felt this method was less effective than face-to-face proctoring at preventing cheating (Mirza, 2010). Study participants also noted that there were common ways to “cheat” the webcam system, including the posting of cheat sheets where the camera wouldn’t detect their presence (2010).

Remote proctoring may or may not be as effective as face-to-face proctoring. Those taking proctored test remotely more often receive direct individualized attention (Karim et al., 2014), however, Rodchua et al. (2011) notes that students may under-perform due to lack of knowledge of how to use the proctoring system. In a pilot study conducted by Bedford et al. (2011), students indicated that they felt the RemoteProctor system was useful and overall the system discouraged cheating, adding that the system was easy to use and the technical aspects behind the system were “not that difficult.” In order to examine the effectiveness of the remote proctoring system, considerations must

also include an overall cost-benefit analysis. Some known benefits of remote proctoring include having concrete evidence of cheating through recorded video footage and increased flexibility and convenience in scheduling of online exams. However, as noted by Dunn et al. (2010), the price of convenience may come at the expense of invading the individual test taker's privacy and increased anxiety from being watched. In addition, the cost of the equipment and fees of remote proctoring systems must be weighed in relation to overall costs of face-to-face proctoring and also to that of having unproctored online exams. As such, a need exists for research conducted on cheating behaviors in unproctored, face-to-face proctored, and in remotely proctored examinations in order to adequately weigh the relative costs and benefits of each method.

### **Social Desirability Scale**

One of the largest criticisms of self-report measures whose purpose is to provide information on sensitive issues is their ability to accurately assess the intended behavior due to an individual's potential for response bias. As reporting one's cheating behavior may be viewed as a socially undesirable behavior, students may be less likely to report their behaviors honestly. To assess the degree to which participants may respond in ways they feel are socially desirable, rather than provide honest answers, social desirability scales may be used as a measure to validate one's responses to sensitive, self-report measures. Socially desirable responding can be defined as: "a person responding to a test in a manner he/she feels will present them in a positive light (i.e., faking good) (Ventimiglia & MacDonald, 2012, p. 487); a representation of "potential bias to portray an overly positive image of their true selves" (Uziel, 2010, p. 243); or to "make favorable

impressions on others (i.e., over-reporting socially desirable and under-reporting socially undesirable behaviors)” (Tran, Stieger, & Voracek, 2012, p. 870).

According to Stöber (2001), social desirability scales were originally crafted for use with personality inventory scales (Edwards, 1957) and psychological assessments (Marlowe-Crowne Scale, 1960). Since then, social desirability scales have become the standard measure of biased responding to survey items through answering in ways that are deemed socially acceptable (Uziel, 2010). With respect to cheating behaviors, Yardley et al. (2009) utilized a social desirability scale, Stöber’s 2001 SDS-17, to measure the survey participants’ willingness to accurately report cheating behaviors by correlating scores on the social desirability scale with frequencies of cheating behaviors reported. The researchers found no significant relationship between scores on SDS-17 and reported cheating frequencies, indicating that participants were likely not simply responding to the survey on cheating behaviors in ways they felt were desirable to researchers. Sheets and Waddill (2009) used social desirability scores (Crowne & Marlowe’s 1960) for self-reported cheating behaviors to assess survey participants’ desire to answer in ways they felt were socially desirable rather than to respond honestly. The researchers found that overall, there were no associations between the social desirability scores and reported cheating behavior. Specifically, for assessment behavior cheating, there were no significant associations between reported cheating and social desirability scores. Staats and Hupp (2012) utilized a different approach to studying the relationship between cheating and social desirability scores, examining cheating while using social desirability as a covariate, finding no cheating group differences.

Although the Marlowe-Crowne Social Desirability Scale has been the most frequently used measure of validating self-report measures (Tran et al., 2012), Stöber's SDS-17 reflects an updated version of Marlowe-Crowne's 1960 version of social desirability to more closely align with present-day societal standards. The scale has adequate reliability and validity scores and is less influenced by age than Marlowe-Crowne's scale (Stöber, 2001), which is critical as distance students often span a wide range of ages.

## CHAPTER III

### METHODOLOGY

The purpose of this study is to describe the frequencies and types of cheating behaviors occurring within proctored or unproctored testing environments for students enrolled in online courses and taking assessments through an online format. In addition, the study adds to the existing, conflicting literature on both individual and contextual variables that influence cheating in an online environment, while adding a new dimension to the existing literature by factoring in testing environment related to behaviors that are specific to cheating on online assessments.

This chapter begins with a description of the research design and the sample used for this study, followed by a discussion of the instruments to be used and their corresponding reliability and validity measures. Finally, the chapter concludes with a description of the procedures to be used in the study, including data collection and data analyses.

#### **Research Design**

The study followed both a descriptive and correlational survey research design. The specific questions answered in this study include:

1. How often and what types of cheating behaviors occur within online assessments for online students taking assessments through proctored and unproctored environments?
2. Is there a relationship between students' cheating behaviors on online assessments taken in a proctored environment and the following factors: Age; Gender; GPA; Discipline of Study; Undergraduate/Graduate Status; Knowledge of the presence of an institutional honor code?

Research question number one sought to describe the differences in types and frequencies of cheating behaviors committed within online assessments among varying proctoring conditions. Descriptive research is primarily concerned with reporting on the status of what exists within and among selected conditions and variables of interest within a study (Gay, Mills, & Airasian, 2011). Descriptive research can be useful for investigating a variety of educational problems and in comparing responses of various subgroups. Research question two explores whether relationships exist between cheating behaviors and selected variables. Correlational research is primarily concerned with determining whether and to what degree two or more variables are related (Gay et al., 2011).

### **Sample**

The population of interest for this study included individuals who were enrolled as distance students in one or more online classes and took an online assessment. A convenience sample of students who enrolled in one or more online courses through a large, four-year, public, degree-granting institution located within the Southeastern region of the United States were surveyed regarding their cheating behaviors on online

assessments and other information relevant to this study. The sample was limited to those students who were enrolled as solely distance-based students at the institution during the spring 2015 semester. Distance-based students are those whose primary degree program is offered mostly online. All potential participants in the study were enrolled in online courses which are supported by the Blackboard Learn learning management system. Participants were enrolled in online courses within various academic disciplines with varying ranges of academic standings, from freshman to graduate students. Participants were asked to report the college in which their major resides and also their academic standing.

As listed in Table 1, 53.49% of the 172 survey respondents were female and 46.51% were male. Respondents' age ranged from 20 to 69 with an average age of 35.01. 62.44% of respondents were between the ages of 20 and 35. The majority (73.56%) of respondents were classified as graduate students and a large percentage (67.82%) were enrolled as part-time students. Of those responding, 85.63% indicated working more than 20 hours per week and 47.62% spent more than 20 hours per week caring for a dependent. The majority of participants (63.74%) also stated participating in some type of organizational or social club work. The respondents' primary sources of funding included financial aid/student loans (37.71%), employer or military reimbursement (26.86%), and self-funding (26.29%). The majority of respondents (65.71%) also reported a GPA between 3.50 to 4.00. Surprisingly, no participant reported a GPA below a "C" (1.50-2.49).

Table 1

*Demographic Characteristics of Distance Students*

Demographic Indicator	n	%
Age		
25 & Under	27	15.61
26-30	43	24.86
31-35	38	21.97
36-40	17	9.83
41-45	21	12.14
46-50	15	8.67
51-55	8	4.62
56 & Over	4	2.31
Gender		
Male	80	46.51
Female	92	53.49
Class Standing		
Freshman	3	1.72
Sophomore	4	2.30
Junior	10	5.75
Senior	29	16.67
Graduate	128	73.56
College of Primary Major		
Arts and Sciences	56	32.00
Business	23	13.14
Education	44	25.14
Engineering	23	13.14
Forest Resources	1	0.57
Special Non-degree	3	1.71
Graduate School (Unclassified)	20	11.43
Enrollment Status		
Full-time	44	25.29
Part-time	118	67.82
Not currently enrolled	12	6.90
GPA		
A 3.50-4.00	115	65.71
B 2.50-3.49	51	29.14
C 1.50-2.49	9	5.14
Primary Means Funding		
Self-funded	46	26.29
Scholarship	8	4.57
Financial Aid/Student Loans	66	37.71
Parents are Funding	4	2.29
Employer or Military Reimbursement	47	26.86



Table 1 (continued)

Demographic Indicator	n	%
Other	4	2.29
Hours Spent at Work/Job Per Week		
Do Not Participate	11	6.32
1-10 Hours	9	5.17
11-20 Hours	5	2.87
More than 20 Hours	149	85.63
Hours Spent Caring for Child, Parent, or Other Dependent Per Week		
Do Not Participate	58	34.52
1-10 Hours	18	10.71
11-20 Hours	12	7.14
More than 20 Hours	80	47.62
Hours Spent on Organizational Work Per Week		
Do Not Participate	62	36.26
1-10 Hours	88	51.46
11-20 Hours	16	9.36
More than 20 Hours	5	2.92

According to information obtained from the institution's Office of Institutional Research and Effectiveness, enrollment counts for all distance-based students at the beginning of the spring 2015 semester totaled 1,845. Of these, 47.5% were male and 52.5% were female. The average age of distance students in this group was 34.10 and the group had an overall average GPA of 3.15, which was based on the fall 2014 ending GPA. The majority of students were upper classmen, with a breakdown of the population relative to their class standing as follows: freshman (2.4%), sophomore (2.4%), juniors (9.6%), seniors (29.2%), and graduate students (56.4%). A listing of enrollments by college are listed in percentage form: College of Agriculture and Life Sciences (3.96%), College of Arts & Sciences (42.67%), College of Business (12.46%), College of Education (21.37%), College of Engineering (10.34%), College of Forest Resources

(1.0%), Special Non-Degree (1.4%), Graduate School/Unclassified (5.4%), and Academic Affairs (1.4%).

## **Instrumentation**

### **Development of the Online Assessment Cheating Behavior Survey**

The items on the OACBS were developed specifically for this study as existing instruments examining cheating contain items that cover a wide-range of cheating behaviors, including plagiarism, the submission of homework and other non-exam assessments, and research fabrication or falsification for face-to-face courses. In a comparison of online and face-to-face cheating, Miller and Young-Jones (2012) suggested a need for a more comprehensive assessment of cheating behaviors. Stephens, Young, and Calabrese (2007) also suggest a need to include a wider range of cheating behaviors when assessing the level of cheating that has occurred. As the focus of this study is to examine cheating behaviors that are specific to online assessments, a wide range of behaviors that occur before, during, and after online testing were desired for inclusion.

In order to determine items to be included within the OACBS, the researcher conducted a web search for the search terms “how to cheat on online tests,” “how to cheat on online exams,” “how to cheat on online assessments,” “ways to cheat on online tests;” “ways to cheat on online exams;” “ways to cheat on online assessments;” “how to cheat on proctored online tests;” “how to cheat on proctored online exams;” “how to cheat on proctored online assessments;” “ways to cheat on proctored online tests;” “ways to cheat on proctored online exams;” and “ways to cheat on proctored online assessments.” Relevant items found from this search were stored in a separate, potential

item bank document, with the researcher combining common terms and including the web references within the overall reference list. In addition, the researcher conducted an academic, scholarly search for the terms listed above within journal articles and research publications. Relevant items found from this search were included in the potential item bank document and references were included within the overall reference list. Experts on the topic of online cheating reviewed the list of items and merged, deleted, and edited the items to form an initial list of cheating behavior items.

The items were constructed to reflect a scale or frequency of self-reported cheating behaviors for online assessments, as suggested or modeled by a number of previous studies conducted on cheating (Carpenter et al., 2007; Kidwell & Kent, 2008; Miller & Young-Jones, 2012; Stephens et al., 2007; Watson & Sottile, 2010; Yardley et al., 2009). The cheating behavior frequency scale ranged from responses of “never” (coded 0), “once” (coded 1), “two to three times” (coded 2), “more than three times” (coded 3).

In addition to the frequency scale of cheating behaviors, an attitude scale asking students to indicate whether they felt a particular behavior or act was cheating was included, as research by Carpenter et al. (2006) found that frequency of cheating is influenced by a student’s attitude toward the cheating behavior. The attitude scale lists the same items as the frequency of cheating behaviors scale, asking students to rate whether the behavior was “cheating,” “unethical but not cheating,” or “neither cheating nor unethical,” as modeled by the scale of research by Carpenter et al. (2006).

## **Review of Online Assessment Cheating Behavior Survey**

To establish validity, the survey items were reviewed by experts to ensure that the survey contained appropriate language, sufficient and accurate content items, and adequately defined the construct. The reviewers were provided with a definition of online assessment cheating and were asked to provide any comments, edits, and revisions of the initial instrument to the researcher. The panel of reviewers included three qualified individuals, with their qualifications listed below.

Reviewer one is a professor within the department of Instructional Systems and Workforce Development at Mississippi State University. He received his doctorate degree in Research, Information Processing, and Vocational Education from the University of Pittsburgh and has conducted numerous reviews of surveys and various research instruments in his role as a faculty member. In addition, the reviewer has published academic textbooks and accompanying software, has published research in premier academic journals, and instructed doctoral research and development courses.

Reviewer two is the former associate director of the Center for Teaching and Learning at Mississippi State University. She received her BS degree from Ohio State University in Agricultural Education and a MS in Agricultural Education from Mississippi State University. Reviewer two has conducted numerous seminars and workshops on preventing and detecting cheating within online environments and has served as the university's LMS (learning management system) specialist.

Reviewer three is a manager of the Center for Distance Education at Mississippi State University. He received his doctorate degree in Instructional Systems and Workforce Development from Mississippi State University. Reviewer three works with

distance education students through all phases of the distance education experience, including student-presented issues and concerns regarding distance education.

After reviewers provided comments and revisions, suggestions were taken into consideration and the revised survey was sent to an initial pilot study group. Reviewer comments are located in Appendix D.

### **Pilot Study**

The revised survey instrument was sent to a pilot group of students from the list of email addresses obtained of all spring 2015 semester distance-based student enrollments from a single institution. The researcher used a random number generator to select approximately 10% of the total number of email addresses from the list. A recruitment email was sent to the selected 152 email addresses. The purpose of the study was explained, along with a statement of voluntary participation and completion of the study, a statement of confidentiality, study contact information, and a link to the survey instrument, which was housed in SurveyMonkey, a commercial survey site.

A total of 13 participants completed the survey. Pilot study participants responded to questions from the OACBS and also received a set of questions regarding the appropriateness of questions and response items, whether questions were understood in the manner presented, whether directions were easy to follow, the length of time to complete the survey, and were asked to provide any additional information on the survey in general that may aid in the refinement of the instrument or survey process. These questions are included in Appendix E of this document.

After the pilot study survey phase was completed, the file was downloaded to a password-protected Excel file, where student email addresses were deleted. The data

analysis occurred within SPSS version 22 and included a Cronbach's alpha test for internal consistency. Results from this analysis indicated that a total of 10 survey items from the OACBS should be deleted to enhance the internal consistency of the survey, with the remaining 17 items having an overall Cronbach's alpha level of .994. As the sample size was small, the Cronbach alpha level will also be recomputed for the final survey.

In addition, changes were made to the scaling of the frequency responses on the OACBS to reflect a Likert-type frequency structure with choices "Always," "Often," "Sometimes," "Rarely," and "Never." These changes were made to assume a more equal variance in scaling and to allow for greater variability and the items were reverse ordered to reduce potential satisficing or selecting of the first response (Krosnick & Presser, 2010; Wade, 2006).

### **Final Online Assessment Cheating Behavior Survey**

The final OACBS instrument contained 17 behavior-oriented items related to online assessment cheating which asks participants to rate their frequency of participation in the respective behaviors based on a Likert-type frequency scale with options of "Always," "Often," "Sometimes," "Rarely," and "Never." In addition, participants were asked to indicate whether they felt the listed behavior was "Cheating," "Unethical, but not Cheating," or "Neither." The survey also included nine demographic and background variable items and an open-ended item which asked for general comments with regards to online assessments. A copy of the final OACBS instrument can be found in Appendix B.

**Background variables.** Survey items were constructed to provide background information on variables that have shown a relationship with cheating, including one's age, gender, GPA, and discipline of study. Discipline of study was presented as the college in which one's major resides as to avoid presenting specific, potentially incriminating, identifiable information. To aid in analysis, participants were asked to report their academic standing (i.e., freshman, senior). In addition, the knowledge of a presence of the institutional honor code was included as a dichotomous variable.

### **Reliability**

In order to evaluate the reliability of the OACBS instrument, SPSS version 22 was utilized to conduct a reliability analysis using Cronbach's alpha test. Results of the test indicated  $\alpha = .75$ , indicating a fairly high level of internal consistency for the OACBS scale. All items appeared to be worthy of retention, with removing any of the 17 items increasing alpha by a maximum of only .007.

### **Social Desirability Scale-17**

The SDS-17 (Stöber, 2001) is a scale used to assess one's desire to make a good impression. As reporting one's cheating behavior may be viewed as a socially undesirable behavior, students may be less likely to report their behaviors honestly. To assess the degree to which participants may respond in ways they feel are socially desirable, rather than provide honest answers, the SDS-17 was used as a measure to validate one's responses to sensitive, self-report measures.

Stöber's (2001) SDS-17 consists of a scale of agreement with seventeen items designed to detect whether an individual's responses to survey questions are biased

towards responding with the intent of making the individual responding appear more favorable. The SDS-17 was shown to have a test-retest correlation of .82 and a correlation of .74 with another widely used social desirability scale, the Marlowe-Crown Scale, demonstrating sufficient validity (Stöber, 2001). In a study examining cheating in a face-to-face collegiate setting, Yardley et al. (2009) reported that the SDS-17 reached a Cronbach's alpha level of .78. The SDS-17 also demonstrated internal consistency among a wide span of age groups. For the present study, the Cronbach's alpha level for SDS-17 items was .72. As suggested by Stöber (2001), one item should be deleted from the survey as the question pertains to drug-use and negative responses to the item may not necessarily indicate socially desirable responding if individuals have not had any experience using illegal drugs. As such, the researcher deleted the suggested item relating to drug use for a total of sixteen items. Scores on the SDS-17 are summative and may range from 0 to 16. A higher score on the SDS-17 indicates a greater likelihood of socially desirable responding. In order to examine whether the self-reported cheating behavior survey may be influenced by responding in socially desirable ways, the researcher correlated scores on the SDS-17 and the frequencies of cheating behaviors found within the OACBS.

### **Procedures**

The following section outlines information regarding completion of human subjects' trainings as required by the university's institutional review board, the methods used to collect data, and special ethical considerations of this study.



## **IRB Certification**

On July 9, 2013, the researcher successfully completed the Office of Regulatory Compliance and Safety's Institutional Review Board training via Collaborative Institutional Training Initiative (CITI). All individuals who conduct research on human subjects at the university must complete this training every three years at minimum. This study was reviewed and approved by the IRB office. A copy of this approval can be found in Appendix A.

## **Data Collection**

The researcher asked for and received permission from the Center for Distance Education to conduct the research study and to utilize distance education students as the study participants (Appendix I). The Center for Distance Education provided the researcher with a list of student email addresses of distance-based students enrolled during the spring 2015 semester.

Upon receiving IRB approval, the researcher conducted a pilot study as outlined in the pilot study portion of this chapter. Once the review of the pilot study results was completed and changes to the survey instrument were both implemented and approved, the researcher sent a recruitment email to all distance-based students enrolled during the spring 2015 semester. Within the recruitment email, the purpose of the study was explained, along with a statement of voluntary participation and completion of the study, a statement of confidentiality, study contact information, and a link to the survey instrument, which was conducted through SurveyMonkey, a third party, web-based survey company. Upon clicking on the link, the participants were initially taken to a page where the purpose of the study, voluntary participation statement, statement of

confidentiality, and study contact information was provided again. Participants were asked to digitally consent to completing the study via a button confirming their agreement. Once consent was received, the participants continued to answer the survey instrument items as shown in Appendix B.

Miller and Young-Jones (2012) and Stephens et al. (2007) suggested that web-based surveys tend to have lower response rates than paper-based surveys and that providing an incentive may serve to increase the overall level of participation in a web-based study. In an effort to increase response rates, at the conclusion of the survey, students were asked if they would like to be entered in for a drawing to receive one of two \$50 Wal-Mart gift cards by entering in their email address. Once the survey closed, the researcher extracted the data file from SurveyMonkey into an Excel workbook. The email addresses were removed from the original data file and were placed into a separate Excel file, where two winners were randomly selected using a random number selector. The data collection file contained no identifying information and was stored as a password-protected file. The email address file was stored separately and was also password-protected and deleted once the study was complete and winners were notified of their receipt of the lottery prize.

As an additional effort to increase response rates, the recruitment email was initially sent out after receiving IRB approval, with a follow-up reminder email to complete the survey sent out one week after the original email, and an additional email reminder sent out one week after the initial reminder email.

## **Ethical Considerations**

As conducting research and reporting on one's cheating behavior is an especially sensitive topic with potential repercussions should a student be identified, the study in question required extra precautionary measures to ensure the anonymity and confidentiality of participants. A survey was sent out through a link to an online, third party provider (Survey Monkey). Once responses were submitted, students were given a unique, numerical identifier from the third party, which served as the only source of identification in order to protect the participant's privacy. In addition, the survey did not ask for any information specific to a particular class or instructor, and only aggregate data were reported. The data collected were extracted into a password-protected Excel file, of which only the researcher had access to the data file and password. The file used within IBM's Statistical Package for the Social Sciences (SPSS) for data analysis was also password-protected. As noted above, email addresses were stripped from the file and stored in a separate, password-protected file and used only for the purpose of contacting the two recipients of the \$50 Wal-Mart gift cards.

## **Data Analysis**

The data collected from the survey were analyzed within the SPSS version 22 software program. Summary statistics were reported for all demographic variables collected for the total sample and were also examined within the context of the different proctoring conditions. The focus of each research question and the specific, proposed statistical test to address each question are listed within Table 2. In addition, the assumptions to be met for each statistical test in order to provide assurance to the integrity of each analysis are listed. The dependent variable was one's self-reported

cheating on the OACBS, with the variable constructed by combining responses to reported frequencies of cheating behaviors.

Table 2

*Data Analysis Summary by Research Question*

Research Question Focus	Data Analysis	DV	Assumptions for Test
1. Difference in cheating behaviors, proctored and unproctored environment	Mann-Whitney U	Score on OACBS (ordinal) (IV-2 levels proctored and unproctored)	Independence of observations, Ordinal responses
1a. Difference in cheating behaviors, remote and face-to-face proctored environment	Mann-Whitney U	Score on OACBS (ordinal) (IV-2 levels face-to-face and remote proctored)	
2a. Relationship between cheating behaviors and age (proctored only)	Spearman's correlation scores)	n/a; one ordinal, one ratio	Sample size > 30, No Outliers, Monotonic Relationship
2b. Relationship between gender and cheating behaviors (proctored only)	Mann-Whitney U	Score on OACBS (ordinal) 2 levels, female and male	
2c. Relationship between GPA and cheating behaviors (proctored only)	Kruskal-Wallis H	Score on OACBS (ordinal) on GPA levels	Independence of observations, Ordinal responses
2d. Relationship between discipline of study and cheating behaviors (proctored only)	Kruskal-Wallis H	Score on OACBS (ordinal) on discipline of study levels	
2e. Relationship between undergraduate/graduate status and cheating behaviors (proctored only)	Mann-Whitney U	Score on OACBS (ordinal); 2 levels, undergraduate, graduate	
2f. Relationship between institutional honor code knowledge and cheating behaviors	Mann-Whitney U	Score on OACBS (ordinal) on 2 levels (knowledge, no knowledge)	

*Note.* Online Assessment Cheating Behavior Survey abbreviated OACBS

The researcher also correlated scores on the OACBS and Stöber's SDS-17 utilizing a Spearman's rank order correlation analysis as an attempt to determine whether responses on the OACBS may have been prone to socially desirable responding tendencies.

## CHAPTER IV

### RESULTS

The purpose of this study was to describe the frequencies and types of cheating behaviors occurring within proctored or unproctored testing environments for students enrolled in online courses and taking assessments through an online format. Participants of the study were online, distance-based students who were enrolled in one or more distance courses at a large, four-year, public, degree-granting institution located within the southeastern region of the United States during the spring 2015 semester. The primary instrument used to collect data was the researcher-developed OACBS, which includes a wide-range of cheating behaviors that are specific to behaviors which may occur during online examinations. Participants were asked to rate their frequency in engaging in these behaviors during an online exam in either a proctored or unproctored environment. In addition, participants were asked whether he or she felt each behavior was “cheating,” “unethical, but not cheating,” or “neither.” As admitting one’s cheating behavior is a sensitive subject, a social desirability scale, which gauges individuals’ propensity to answer survey items in ways that are socially desirable rather than accurately was included within the survey. Demographic information collected included participants’ age, gender, GPA, discipline of study, academic class standing, knowledge of institutional honor code policies, family and work responsibilities and primary means of financing one’s education. To ensure quality, the survey instrument was reviewed by a

panel of experts and was distributed to a pilot study group. The findings from these two groups led to the development of the final survey instrument, included in Appendix B.

A total of 1,362 distance students were invited to participate in the study through a series of recruitment emails. An initial recruitment email was sent on July 6, 2015, with two follow-up, reminder emails sent on July 13, 2015 and July 20, 2015. A total of 195 individuals completed the web-based survey for a response rate of 14.32%. In order to achieve an overall confidence interval level of 95% with a 7-point confidence interval, a sample size of 171 was needed (The Survey System Sample Size Calculator, n.d.).

Chapter four presents findings of the study relative to the research questions outlined below:

1. How often and what types of cheating behaviors occur within online assessments for online students taking assessments through proctored and unproctored environments?
2. Is there a relationship between students' cheating behaviors on online assessments taken in a proctored environment and the following factors: Age; Gender; GPA; Discipline of Study; Undergraduate/Graduate Status; Knowledge of the presence of an institutional honor code?

Analyses and data interpretation are included for each research question and each sub-item. In addition, other data collected from the study are presented and discussed.

### **Demographics**

Information was collected from participants to aid in the description of study participants. Table 3 displays the demographics of respondents by proctoring status. Respondents who took proctored exams ranged in age from 20 to 55, with an average age



of 34.13. Those who took unproctored exams ranged in age from 22 to 69, with an average age of 35.73. The proctored group contained a slightly larger percentage of females (55.8%) than the unproctored group (51.6%). The majority of participants were classified as graduate students for both proctored (70.5%) and unproctored (76.0%) groups. Of the proctored group, 64.1% were enrolled part-time, compared to 70.8% of the unproctored group. The proctored groups' primary major resided in the College of Arts and Sciences most frequently (34.2%), followed by the College of Education (17.7%), College of Engineering (17.7%) and College of Business (16.5%). For the unproctored group, the largest percentage of respondents' primary major resided in the College of Education (31.3%), followed by the College of Arts and Sciences (30.2%), and "Unclassified" status (13.5%). "Unclassified" status at the institution researched allows students to begin taking graduate level course without having declared a major for up to nine credit hours. Of the proctored group, 58.2% reported a GPA of 3.50 to 4.00, while 71.9% of the unproctored group reported the same GPA. A larger percentage of the proctored group (43.0%) reported utilizing financial aid or student loans as their primary educational funding source than the unproctored group (30.5%). The proctored (84.8%) and unproctored (86.3%) groups reported working more than 20 hours per week at similar rates, with a larger percentage of the proctored group caring for a dependent more than 20 hours per week (53.2%) than the unproctored group (42.9%).

Table 3

*Demographic Characteristics of Distance Students by Proctored/Unproctored Status*

Demographic Indicator	Proctored		Unproctored	
	n	%	n	%
Age				
25 & Under	11	14.1	16	16.8
26-30	22	28.2	21	22.1
31-35	21	26.9	17	17.9
36-40	4	5.1	13	13.7
41-45	8	10.3	13	13.7
46-50	7	9.0	8	8.4
51-55	5	6.4	3	3.2
56 & Over	0	0	4	3.2
Gender				
Male	34	44.2	46	48.4
Female	43	55.8	49	51.6
Class Standing				
Freshman	1	1.3	2	2.1
Sophomore	2	2.6	2	2.1
Junior	5	6.4	5	5.2
Senior	15	19.2	14	14.6
Graduate	55	70.5	73	76.0
College of Primary Major				
Agriculture and Life Sciences	3	3.8	2	2.1
Arts and Sciences	27	34.2	29	30.2
Business	13	16.5	10	10.4
Education	14	17.7	30	31.3
Engineering	14	17.7	9	9.4
Forest Resources	1	1.3	0	0
Special Non-degree	0	0	3	3.1
Graduate School (Unclassified)	7	8.9	13	13.5
Enrollment Status				
Full-time	21	26.9	23	24.0
Part-time	50	64.1	68	70.8
Not currently enrolled	7	9.0	5	5.2
GPA				
A 3.50-4.00	46	58.2	69	71.9
B 2.50-3.49	27	34.2	24	25.0
C 1.50-2.49	6	7.6	3	3.1
Primary Means Funding				
Self-funded	22	27.8	24	22.9

Table 3 (continued)

Demographic Indicator	Proctored		Unproctored	
	n	%	n	%
Scholarship or Grant	2	2.5	6	5.7
Financial Aid/Student Loans	34	43.0	32	30.5
Parents are Funding	1	1.3	3	2.9
Employer or Military Reimbursement	18	22.8	29	27.6
Other	2	2.5	2	1.9
Hours Spent at Work/Job Per Week				
Do Not Participate	5	6.3	6	6.3
1-10 Hours	4	5.1	5	5.3
11-20 Hours	3	3.8	2	2.1
More than 20 Hours	67	84.8	82	86.3
Hours Spent Caring for Child, Parent, or Other Dependent Per Week				
Do Not Participate	22	28.6	36	39.6
1-10 Hours	8	10.4	10	11.0
11-20 Hours	6	7.8	6	6.6
More than 20 Hours	41	53.2	39	42.9
Hours Spent on Organizational Work Per Week				
Do Not Participate	31	39.7	31	33.3
1-10 Hours	36	46.2	52	55.9
11-20 Hours	10	12.8	6	6.5
More than 20 Hours	1	1.3	4	4.3

Table 4 displays the characteristics of participants by proctoring type: face-to-face, remote, and both face to face and remote. The largest number of participants who took a proctored exam utilized a face to face method (77.8%). A larger percentage of female respondents were found in the remotely proctored group (63.6%) and both face to face and remotely proctored groups (60.0%). A larger percentage of those taking remotely proctored exams were 41 or older (36.4%) compared to those taking face to face proctored exams (24.2%). No respondent within any of the three proctoring groups

reported an age of 56 or over. All participants who participated in a remotely proctored exam were graduate students (100.0%), with 64.5% of the face to face group classified as graduate students. The largest percentage of respondents' college of primary major resided in the College of Arts and Sciences for all three groups: face to face (28.6%), remote (54.5%), and both (60.0%). The majority of remotely proctored students were self-funding educational pursuits (54.5%), while only 22.2% of face to face proctored students reported self-funding. All three groups' participants had high levels of working more than 20 hours per week: face to face (82.5%), remote (100.0%) and both (80.0%).

Table 4

*Demographic Characteristics of Distance Students by Proctoring Type*

Demographic Indicator	Face to Face		Remote		Both	
	N	%	N	%	n	%
<b>Age</b>						
25 & Under	8	12.9	0	0	3	60.0
26-30	18	29.0	3	27.3	1	20.0
31-35	17	27.4	4	36.4	0	0
36-40	4	6.5	0	0	0	0
41-45	6	9.7	2	18.2	0	0
46-50	6	9.7	0	0	1	20.0
51-55	3	4.8	2	18.2	0	0
<b>Gender</b>						
Male	28	45.9	4	36.4	2	40.0
Female	33	54.1	7	63.6	3	60.0
<b>Class Standing</b>						
Freshman	1	1.6	0	0	0	0
Sophomore	2	3.2	0	0	0	0
Junior	5	8.1	0	0	0	0
Senior	14	22.6	0	0	1	20.0
Graduate	40	64.5	11	100	4	80.0
<b>College of Primary Major</b>						
Agriculture and Life Sciences	2	3.2	1	9.1	0	0

Table 4 (continued)

Demographic Indicator	Face to Face		Remote		Both	
	N	%	N	%	n	%
Arts and Sciences	18	28.6	6	54.5	3	60.0
Business	13	20.6	0	0	0	0
Education	12	19.0	1	9.1	1	20.0
Engineering	14	22.2	0	0	0	0
Forest Resources	1	1.6	0	0	0	0
Graduate School (Unclassified)	3	4.8	3	27.3	1	20.0
Enrollment Status						
Full-time	18	29.0	1	9.1	2	40.0
Part-time	40	64.5	7	63.6	3	60.0
Not currently enrolled	4	6.5	3	27.3	0	0
GPA						
A 3.50-4.00	38	60.3	5	45.5	3	60.0
B 2.50-3.49	19	30.2	6	54.5	2	40.0
C 1.50-2.49	6	9.5	0	0	0	0
Primary Means Funding						
Self-funded	14	22.2	6	54.5	2	40.0
Scholarship	2	3.2	0	0	0	0
Financial Aid/Student Loans	29	46.0	3	27.3	2	40.0
Parents are Funding	1	1.6	0	0	0	0
Employer or Military Reimbursement	16	25.4	1	9.1	1	20.0
Other	1	1.6	1	9.1	0	0
Hours Spent at Work/Job Per Week						
Do Not Participate	5	7.9	0	0	0	0
1-10 Hours	4	6.3	0	0	0	0
11-20 Hours	2	3.2	0	0	1	20.0
More than 20 Hours	52	82.5	11	100	4	80.0
Hours Spent Caring for Child, Parent, or Other Dependent Per Week						
Do Not Participate	18	29.5	3	27.3	1	20.0
1-10 Hours	6	9.8	2	18.2	0	0
11-20 Hours	5	8.2	0	0	1	20.0
More than 20 Hours	32	52.5	6	54.5	3	60.0

Table 4 (continued)

Demographic Indicator	Face to Face		Remote		Both	
	N	%	N	%	n	%
Do Not Participate	23	37.1	6	54.5	2	40.0
1-10 Hours	30	48.4	4	36.4	2	40.0
11-20 Hours	8	12.9	1	9.1	1	20.0
More than 20 Hours	1	1.6	0	0	0	0

The total number of responses for each individual variable listed in Tables 2-4 indicated a number less than the overall response rate of 195 ( $N < 195$ ), a discrepancy that was due to a participant's lack of response to the individual variable.

### Social Desirability Scale-17

As an attempt to determine if cheating behaviors were influenced by socially desirable responding, participants were asked to complete the SDS-17. Higher scores on the SDS-17 indicate an individual's propensity to respond in ways that are viewed as more socially acceptable as opposed to answering in ways that accurately reflect one's true behavior. Scores on the SDS-17 were correlated with summated scores from the OACBS in which participants were asked to report their frequency in engaging in 17 cheating behaviors while taking an online assessment through either proctored or unproctored environments. The items on the OACBS were measured using a 5-point scale, with responses ranging from "never" (1) to "always" (5). A higher score on the OACBS indicated more frequent cheating behavior. As an attempt to determine if cheating behaviors were influenced by socially desirable responding, a Spearman's rank order correlation analysis was performed on the summated OACBS response items and the SDS-17 scores. The Spearman rank order correlation coefficient allows researchers to

measure the strength and direction of relationships between variables measured on ordinal scales or higher levels of continuous data. The results of this analysis indicated that there was not a significant relationship between OACBS scores and SDS-17 scores,  $r_s = -.083, p = .299, n = 174$ . Given these results, social desirability was not considered in subsequent analyses.

### **Research Question 1**

Research question one asked how often and what types of cheating behaviors occurred within online assessments for online students taking assessments through proctored versus unproctored environments. Participants were asked to report their frequency in engaging in 17 cheating behaviors while taking an online assessment through either proctored or unproctored environments to address research question one. The items on the OACBS were measured using a 5-point scale, with responses ranging from “never” (1) to “always” (5). Descriptive statistics including the mean, standard deviation, and number and percentage of respondents from each response category are presented in Table 5 for each item by all participants. For the majority of the items listed, over 95% of individuals surveyed indicated having never participated in a particular behavior, with exception of the following items: “Obtained test questions/answers before taking a test through a test bank or textbook publisher (94.5% responding “never””, “Used brain dump sites (i.e., Course Hero, Cramster, etc.) to obtain test questions/answers (93.9% responding “never””, “Obtained test questions/answers from someone who already took the exam (94.5% responding “never””, “Used a web search (i.e., Google) during an exam to search for answers (75.8% responding “never”).” None of the participants responding to the survey indicated having “accessed recorded notes

through a wireless headphone and iPod/phone/other audio-capable device.” As such, this item will not be included in individual item-level analyses, but will be utilized in overall analyses between groups.

Table 5

*OACBS Descriptive Statistics for Distance Students*

OACBS Item	M	SD	n (%)	n (%)	n (%)	n (%)	n (%)
			Never	Rarely	Sometimes	Often	Always
Hidden crib notes on body	1.02	0.19	162 (98.2)	2 (1.2)	1 (0.6)	0 (0.0)	0 (0.0)
Hidden crib notes on object	1.02	0.17	163 (98.8)	1 (0.6)	1 (0.6)	0 (0.0)	0 (0.0)
Programmed calculator	1.03	0.26	162 (98.2)	2 (1.2)	0 (0.0)	1 (0.6)	0 (0.0)
Obtained test bank	1.08	0.37	156 (94.5)	6 (3.6)	2 (1.2)	1 (0.6)	0 (0.0)
Purchased instructor edition	1.06	0.34	159 (96.4)	3 (1.8)	2 (1.2)	1 (0.6)	0 (0.0)
Accessed listserv/forum	1.03	0.23	162 (98.2)	1 (0.6)	2 (1.2)	0 (0.0)	0 (0.0)
Braindump site	1.11	0.49	155 (93.9)	5 (3.0)	3 (1.8)	1 (0.6)	1 (0.6)
Google Docs to share test questions/answers	1.01	0.08	164 (99.4)	1 (0.6)	0 (0.0)	0 (0.0)	0 (0.0)
Test questions/answers from someone who took exam	1.06	0.26	156 (94.5)	8 (4.8)	1 (0.5)	0 (0.0)	0 (0.0)
Text/IM for answers	1.01	0.16	164 (99.4)	0 (0.0)	1 (0.6)	0 (0.0)	0 (0.0)
Screen capture for test questions/answers	1.07	0.37	159 (96.4)	2 (1.2)	3 (1.8)	1 (0.6)	0 (0.0)
Rotate test taking	1.02	0.13	162 (98.2)	3 (1.8)	0 (0.0)	0 (0.0)	0 (0.0)
Memorized test questions/answers	1.04	0.19	159 (96.4)	6 (3.6)	0 (0.0)	0 (0.0)	0 (0.0)
Web search during exam	1.39	0.77	125 (75.8)	21 (12.7)	14 (8.5)	5 (3.0)	0 (0.0)



Table 5 (continued)

OACBS Item	M	SD	n (%) Never	n (%) Rarely	n (%) Sometimes	n (%) Often	n (%) Always
False excuses technical failure	1.04	0.35	162 (98.8)	0 (0.0)	1 (0.6)	0 (0.0)	1 (0.6)
False excuses personal illness	1.01	0.08	164 (99.4)	1 (0.6)	0 (0.0)	0 (0.0)	0 (0.0)

Table 6 displays the means, standard deviations, and associated number and percentage of individuals responding “never” by proctoring status. For simplicity in display, responses other than “never” will be categorized as “have used.” As Table 6 shows, unproctored status has a relatively higher percentage of individuals admitting to engaging in the following behaviors: “used hidden crib notes (cheat sheets) placed on your body (i.e., hand, fingernails, on legs, etc.),” “programmed a calculator with notes, equations, formulas, or reference materials to use while taking an online exam without instructor consent,” “obtained test bank questions/answers before taking a test through a test bank or textbook publisher,” “used Google Docs or other collaborative software to share test questions/answers with students while taking an exam,” “obtained test questions/answers from someone who already took the exam,” “used text or instant messaging to obtain or share answers during a test,” “rotated test taking with classmates or friends for purposes of sharing test questions and answers,” “used screen capture computer features to copy exam questions/answers,” “used a web search (i.e., Google) during an exam to search for answers,” and “used false excuses of personal illness or emergency to extend the time to take an exam.”

Table 6

*OACBS Descriptive Statistics for Distance Students by Proctoring Status*

OACBS Item	Proctored				Unproctored			
	M	SD	n (%) Never	n (%) Have Tried	M	SD	n (%) Never	n (%) Have Tried
Hidden crib notes on body	1.01	0.11	81 (98.8)	1 (1.2)	1.04	0.24	81 (97.6)	2 (2.4)
Hidden crib notes on object	1.01	0.11	81 (98.8)	1 (1.2)	1.02	0.22	82 (98.8)	1 (1.2)
Programmed calculator	1.01	0.1	81 (98.8)	1 (1.2)	1.05	0.35	81 (97.6)	2 (2.4)
Obtained test bank	1.07	0.34	78 (95.1)	4 (4.8)	1.08	0.39	78 (94.0)	5 (6.0)
Purchased instructor edition	1.05	0.27	79 (96.3)	3 (3.7)	1.07	0.41	80 (96.4)	3 (3.6)
Accessed listserv/forum	1.04	0.25	80 (97.6)	2 (2.4)	1.02	0.22	82 (98.8)	1 (1.2)
Braindump site	1.13	0.52	76 (92.7)	6 (7.3)	1.08	0.47	79 (95.2)	4 (4.8)
Google Docs to share test questions/answers	1.00	0.00	82 (100.0)	0 (0.0)	1.01	0.11	82 (98.8)	1 (1.2)
Test questions/answers from someone who took exam	1.04	0.19	79 (96.3)	3 (3.7)	1.08	0.32	77 (92.8)	6 (7.2)
Text/IM for answers	1.00	0.00	82 (100.0)	0 (0.0)	1.02	0.22	82 (98.8)	1 (1.2)
Rotate test taking	1.02	0.16	80 (97.6)	2 (2.4)	1.01	0.11	82 (98.8)	1 (1.2)
Screen capture for test questions/answers	1.02	0.22	81 (98.8)	1 (1.2)	1.11	0.47	78 (94.0)	5 (6.0)
Memorized test questions/answers	1.05	0.22	78 (95.1)	4 (4.9)	1.02	0.15	81 (97.6)	2 (2.4)
Web search during exam	1.18	0.63	75 (91.5)	7 (8.5)	1.59	0.84	50 (60.2)	33 (39.8)
False excuses technical failure	1.02	0.22	80 (98.8)	1 (1.2)	1.05	0.44	82 (98.8)	1 (1.2)
False excuses personal illness	1.00	0.00	82 (100.0)	0 (0.0)	1.01	0.11	82 (98.8)	1 (1.2)

The responses to the OACBS were summed and treated as ordinal data in order to examine whether a significant difference existed between the overall cheating behavior scores between proctored and unproctored groups. A Mann-Whitney U test was utilized to compare the mean ranks between the proctored and unproctored groups. This type of analysis can be used to compare differences between two groups that are independent and that have an ordinal level dependent variable (Gravetter & Wallnau, 2009).

The results of the test were significant,  $U = 2447.5$ ,  $p < .001$ ,  $r = 0.29$ . The proctored group had an average rank of 71.22 while unproctored group had an average rank of 93.51. Those taking unproctored exams reported more frequently engaging in cheating behaviors than those taking proctored exams.

In order to examine differences in individual level cheating behavior items for proctored and unproctored groups, a Mann-Whitney U test was performed. Table 7 displays the results of the test by OACBS item. Only one item, “used a web search (i.e., Google) during an exam to search for answers” was statistically significant indicating a difference between groups,  $U = 2398.0$ ,  $p < .001$ ,  $r = .340$ . The proctored group had an average rank of 70.74 for this item, while the unproctored group had an average rank of 95.11, indicating that the unproctored group reported more instances of using web searches during exams to search for answers to the test than proctored students.

Table 7

*OACBS Individual Items Mann-Whitney U test, Proctored vs. Unproctored*

OACBS Item	<i>U</i>	<i>p</i>	<i>r</i>
Hidden crib notes on body	3362.0	0.564	.045
Hidden crib notes on object	3403.0	1.00	0
Programmed calculator	3362.0	0.564	.045
Obtained test bank	3366.0	0.759	.024
Purchased instructor edition	3402.5	0.996	0
Accessed listserv/forum	3361.5	0.559	.045
Braindump site	3315.0	0.488	.054
Google Docs to share test questions/answers	3362.0	0.320	.077
Test questions/answers from someone who took exam	3280.0	0.308	.079
Text/IM for answers	3362.0	0.320	.077
Rotate test taking	3361.0	0.554	.046
Screen capture for test questions/answers	3240.0	0.101	.126
Memorized test questions/answers	3319.0	0.398	.066
Web search during exam	2398.0	<.001*	.340
False excuses technical failure	3361.0	0.993	.001
False excuses personal illness	3362.0	0.320	.078

\*Denotes significance at the .05 level

Table 8 displays the means, standard deviations, and associated number and percentage responding “never” and categorized “have tried” responses by proctoring type, face to face and remote. All six individuals from the “both” proctoring type responded as “never” to all items, with exception of the item “memorized test questions/answers to distribute to others” to which one respondent answered “rarely” and the other five answered “never.” As such, information is only displayed and analyzed for the face to face and remote proctoring groups.

Individuals within the face to face group reported having utilized web searches during an exam to search for answers at a higher rate (10.8%) than within the remote

proctor group (0%). Remote proctoring services often incorporate features such as a lock-down browser into the test monitoring system.

Table 8

*OACBS Descriptive Statistics for Distance Students by Proctoring Type*

OACBS Item	Face to Face				Remote			
	M	SD	n (%) Never	n (%) Have Tried	M	SD	n (%) Never	n (%) Have Tried
Hidden crib notes on body	1.00	0.00	65 (100.0)	0 (0.0)	1.09	0.30	10 (90.9)	1 (9.1)
Hidden crib notes on object	1.00	0.00	65 (100.0)	0 (0.0)	1.09	0.30	10 (90.9)	1 (9.1)
Wireless notes via audio	1.00	0.00	65 (100.0)	0 (0.0)	1.00	0.00	11 (100.0)	0 (0.0)
Programmed calculator	1.02	0.12	64 (98.5)	1 (1.5)	1.00	0.00	11 (100.0)	0 (0.0)
Obtained test bank	1.08	0.37	62 (95.4)	3 (4.6)	1.09	0.30	10 (90.9)	1 (9.1)
Purchased instructor edition	1.05	0.28	63 (96.9)	2 (3.1)	1.09	0.30	10 (90.9)	1 (9.1)
Accessed listserv/forum	1.05	0.28	63 (96.9)	2 (3.1)	1.00	0.00	11 (100.0)	0 (0.0)
Braindump site	1.17	0.57	59 (90.8)	6 (9.2)	1.00	0.00	11 (100.0)	0 (0.0)
Google Docs to share test questions/answers	1.00	0.00	65 (100.0)	0 (0.0)	1.00	0.00	11 (100.0)	0 (0.0)
Test questions/answers from someone who took exam	1.03	0.17	63 (96.9)	2 (3.1)	1.09	0.30	10 (90.9)	1 (9.1)
Text/IM for answers	1.00	0.00	65 (100.0)	0 (0.0)	1.00	0.00	11 (100.0)	0 (0.0)
Rotate test taking	1.02	0.12	64 (98.5)	1 (1.5)	1.09	0.30	10 (90.9)	1 (9.1)
Screen capture for test questions/answers	1.03	0.25	64 (98.5)	1 (1.5)	1.00	0.00	11 (100.0)	0 (0.0)
Memorized test questions/answers	1.03	0.25	63 (96.9)	2 (3.1)	1.09	0.30	10 (90.9)	1 (9.1)

Table 8 (continued)

OACBS Item	Face to Face				Remote			
	M	SD	n (%) Never	n (%) Have Tried	M	SD	n (%) Never	n (%) Have Tried
Web search during exam	1.23	0.70	58 (89.2)	7 (10.8)	1.00	0.00	11 (100.0)	0 (0.0)
False excuses technical failure	1.03	0.25	63 (98.4)	1 (1.6)	1.00	0.00	11 (100.0)	0 (0.0)
False excuses personal illness	1.00	0.00	65 (100.0)	0 (0.0)	1.00	0.00	11 (100.0)	0 (0.0)

The researcher utilized a Mann-Whitney U test on the summated OACBS scores to test for differences in cheating behaviors between remote and face to face proctoring conditions. The results of the test indicated non-significant differences in overall cheating behavior frequencies,  $U = 312.0$ ,  $p = .348$ ,  $r = .109$ .

Difference in individual level cheating behavior items for face to face proctored and remotely proctored groups were examined through a Mann-Whitney U test. Table 9 displays the results of the test by OACBS item. The item “used hidden crib notes (cheat sheets) placed on your body (i.e., hand, fingernails, on legs, etc.)” was significantly different for the face to face and remotely proctored groups,  $p = .015$ . The face to face proctored group had an average rank of 38.00, while the remote proctored group had an average rank of 41.45, indicating the remote proctoring group more frequently reported engaging in this behavior. An additional item, “used hidden crib notes (cheat sheets) placed on a non-technical object (i.e., Kleenex, water bottle, food wrapper, etc.)” was significantly different for the two proctoring types,  $p = .015$ . The face to face proctored group had an average rank of 38.00, while the remote proctored group had an average

rank of 41.45, indicating the remote proctoring group more frequently reported utilizing hidden cheat sheets placed on non-technical objects.

Table 9

*OACBS Individual Items Mann-Whitney U test, Face to Face vs Remotely Proctored*

OACBS Item	<i>U</i>	<i>p</i>	<i>r</i>
Hidden crib notes on body	325.0	0.015*	0.281
Hidden crib notes on object	325.0	0.015*	0.281
Wireless notes via audio	357.5	1.00	0
Programmed calculator	352.0	0.681	0.047
Obtained test bank	342.5	0.567	0.066
Purchased instructor edition	336.5	0.358	0.106
Accessed listserv/forum	346.5	0.558	0.068
Braindump site	324.5	0.297	0.034
Google Docs to share test questions/answers	357.5	1.00	0
Test questions/answers from someone who took exam	336.0	0.347	0.109
Text/IM for answers	357.5	1.00	0
Rotate test taking	330.5	0.151	0.166
Screen capture for test questions/answers	352.0	0.681	0.047
Memorized test questions/answers	336.0	0.347	0.109
Web search during exam	319.0	0.257	0.131
False excuses technical failure	346.5	0.678	0.048
False excuses personal illness	357.5	1.00	0

\*Denotes significance at the .05 level

## Research Question 2

Research question two asked if there was a relationship between online cheating behaviors and six demographic and contextual variables that have been cited in previous research related to traditional face to face collegiate cheating. The researcher was interested in whether cheating behaviors had a relationship with these variables for individuals who took an online proctored exam as limited research exists on cheating

within online proctored exams. The six variables studied included: age, gender, self-reported GPA, discipline of study, undergraduate/graduate status, and knowledge of the institutional honor code. To address this question, participants were asked to report their frequency in engaging in 17 cheating behaviors while taking an online assessment. The items on the instrument formed the OACBS and were measured on a 5-point scale, with responses ranging from “never (1)” to “always (5).” Data were filtered to include only those participants who responded to having taken a proctored exam.

## **Gender**

To examine whether differences existed between the overall cheating behavior scores based on participants’ gender, the summated OACBS items were treated as ordinal data and a Mann-Whitney U test was utilized to compare the mean ranks between male and female respondents. Only respondents who indicated having taken a proctored examination were included in the analysis.

The results of the Mann-Whitney U test were significant,  $U = 560.0, p = .017, r = 0.27$ . Female respondents who had taken a proctored exam had an average rank of 41.98, while male respondents had an average rank of 33.97. Females who took proctored exams more frequently reported having engaged in online assessment cheating behaviors than males.

The researcher utilized a Mann-Whitney U test to examine differences in individual cheating behaviors between female and male respondents. Table 10 displays the results of the test by individual OACBS item. Two of the listed behaviors showed significant differences between male and female proctored students. Female respondents who had taken a proctored exam had an average rank of 40.80 compared to an average



rank of 35.50 for males for the item “used brain dump sites (i.e., CourseHero, Cramster, etc.) to obtain test questions/answers.” Female respondents who had taken a proctored exam had an average rank of 41.49 compared with an average rank of 35.00 for males for the item “used a web search (i.e., Google) during an exam to search for answers.” Female respondents who had taken a proctored exam reported more frequent engagement in these two online cheating behaviors than males.

Table 10

*OACBS Individual Items Mann-Whitney U test, Male vs. Female*

OACBS Item	<i>U</i>	<i>p</i>	<i>r</i>
Hidden crib notes on body	693.0	.381	.100
Hidden crib notes on object	693.0	.381	.100
Wireless notes via audio	709.5	1.00	0
Programmed calculator	693.0	.381	.100
Obtained test bank	643.5	.074	.205
Purchased instructor edition	697.5	.709	.043
Accessed listserv/forum	676.5	.212	.143
Braindump site	610.5	.026*	.254
Google Docs to share test questions/answers	709.5	1.00	0
Test questions/answers from someone who took exam	660.0	.124	.716
Text/IM for answers	709.5	1.00	0
Rotate test taking	676.5	.212	.143
Screen capture for test questions/answers	693.0	.381	.100
Memorized test questions/answers	681.5	.448	.087
Web search during exam	594.0	.016*	.277
False excuses technical failure	693.0	.381	.100
False excuses personal illness	709.5	1.00	0

\*Denotes significance at the .05 level

## Age

In order to examine whether a significant relationship existed between the overall cheating behavior scores and the participants’ age, a Spearman’s rank order correlation

analysis was performed on the summated OACBS response items. The Spearman rank order correlation coefficient allows researchers to measure the strength and direction of relationships between variables measured on ordinal scales or higher levels of continuous data (Gravetter & Wallnau, 2009). This type of analysis also does not require a normal distribution.

Based on the results of the Spearman rank order correlation test, there was not a significant relationship between age and overall OACBS scores for those individuals taking online exams through proctored methods,  $r_s = -.153$ ,  $p = .183$ ,  $n = 77$ . In addition, analyses performed on each of the individual 17 OACBS items did not reveal a significant relationship between the individual cheating behavior and the participants' age,  $p > .05$ .

## **GPA**

All 78 survey respondents who took a proctored exam reported having a GPA between a "C" and an "A" (1.50-4.00). The majority (57.7%) reported an overall GPA of 3.50-4.00. In order to determine whether differences existed between the overall cheating behavior scores based on respondents' reported GPA, summed OACBS items were treated as ordinal data and analyzed through a Kruskal-Wallis H test. The Kruskal-Wallis H test can be utilized to determine differences between two or more groups when the dependent variable is ordinal, is less sensitive to outliers, and does not require an assumption of a normal distribution (Gravetter & Wallnau, 2009).

A Kruskal-Wallis H test showed that there were no statistically significant differences in online cheating behavior scores between the three different GPA groups,  $\chi^2 = 5.175$ ,  $p = .075$ , with an OACBS mean rank score of 36.34 for the "A" GPA group

(3.50-4.00), 43.17 for the “B” GPA group (2.50-3.49) and 46.67 for the “C” GPA group (1.50-2.49).

However, individual OACBS item analysis through a Kruskal-Wallis H test indicated statistically significant differences in GPA for three items: “obtained test questions/answers before taking a test through a test bank or textbook publisher,”  $\chi^2 = 6.039, p = .049$ , “used brain dump sites (i.e. CourseHero, Cramster, etc.) to obtain test questions/answers”  $\chi^2 = 7.391, p = .025$ , and “used a web search (i.e., Google) during an exam to search for answers,  $\chi^2 = 7.803, p = .020$ .

Follow-up, pairwise comparisons for the significant items were performed. For the individual cheating behavior item “obtained test questions/answers before taking a test through a test bank or textbook publisher,” the “A” and “C” GPA groups were found to be significantly different,  $p = .042$ . The “A” GPA group had an average rank of 37.5 compared to the “C” GPA group, which had an average rank of 44.17. Participants with GPA’s in the “C” range tended to report obtaining test questions or answers before taking a proctored online examination more frequently than those participants who reported a GPA in the “A” range.

The OACBS item “used brain dump sites (i.e. CourseHero, Cramster, etc.) to obtain test questions/answers” showed significant differences between GPA groups “A” and “C,”  $p = .025$ . Respondents who reported an overall GPA in the “C” range had an average rank of 49.25, compared with 37.42 for those reporting overall GPA’s in the “A” range, indicating those students in the “C” GPA group reported utilizing brain dump sites to obtain test questions and answers more frequently than those in the “A” GPA group.

The OACBS item “used a web search (i.e., Google) during an exam to search for answers” showed a significant difference between the “A” and “C” GPA groups,  $p = .014$ . Those taking proctored exams and reporting an overall GPA in the “C” range had an average rank of 48.83, while distance students reporting an overall GPA in the “A” range had an average rank of 36.86. Respondents in the “C” GPA group more frequently reported engaging in web searches during online exams to search for exam answers than those in the “A” GPA group.

### **Discipline of Study**

In order to provide an additional layer of anonymity for survey participants, one’s discipline of study was confined to the academic college in which one’s primary major resided. To examine whether differences existed between participants’ discipline of study and online cheating behaviors within proctored examinations, a Kruskal-Wallis H test was performed on the summated cheating behavior scores and the respondents’ discipline of study. The results of the Kruskal-Wallis H test indicated no significant differences between overall cheating behavior scores and the seven valid discipline of study groups,  $\chi^2 = 6.503$ ,  $p = .369$ , with an OACBS mean rank score of 58.67 for the College of Agriculture and Life Sciences, 37.02 for the College of Arts and Sciences, 40.17 for the College of Business, 41.68 for the College of Education, 38.36 for the College of Engineering, 33.00 for the College of Forest Resources, and 38.57 for the Unclassified (Graduate School).

However, an analysis of the individual OACBS items utilizing a Kruskal-Wallis H test indicated statistically significant differences in discipline of study for one item: “programmed a calculator with notes, equations, formulas, or reference material to use

while taking an online exam without instructor consent,”  $\chi^2 = 25.00$ ,  $p < .001$ . Follow-up, pairwise comparisons for this significant item was performed and revealed a statistically significant difference between the College of Agriculture and Life Sciences and five other colleges: College of Arts and Sciences, College of Business, College of Education, College of Engineering, and Unclassified (Graduate School),  $p < .001$  for all five colleges. Participants from the College of Agriculture and Life Sciences tended to report programming a calculator with materials to use while taking an online exam more frequently than those participants from the College of Arts and Sciences, College of Business, College of Education, College of Engineering, and Unclassified (Graduate School).

### **Undergraduate/Graduate Status**

Participants were asked to indicate their class standing from one of the following response categories: freshman, sophomore, junior, senior, graduate student. In order to analyze whether any differences existed for cheating behaviors between undergraduate and graduate students who had taken proctored exams, the four undergraduate categories were combined to form a new variable “undergraduate” and responses to the OACBS were summated and treated as ordinal data. A Mann-Whitney U test was performed and revealed no statistically significant differences,  $U = 569.0$ ,  $p = .375$ ,  $r = 0.10$ .

In order to examine differences in individual cheating behaviors between undergraduate and graduate students, a Mann-Whitney U test was performed. Two of the individual cheating behaviors showed significant differences between undergraduate and graduate students: “used brain dump sites (i.e., CourseHero, Cramster, etc.) to obtain test questions/answers,”  $U = 539.0$ ,  $p = .050$ ,  $r = 0.22$ , and “used a web search (i.e., Google)

during an exam to search for answers,”  $U = 511.0, p = .014, r = 0.28$ . Undergraduate students who had taken a proctored exam had an average rank of 42.57 compared to an average rank of 37.48 for graduate students for the item “used brain dump sites (i.e., CourseHero, Cramster, etc.) to obtain test questions/answers.” Undergraduate respondents who had taken a proctored exam had an average rank of 43.78 and graduate respondents had an average rank of 36.96 for the item “used a web search (i.e., Google) during an exam to search for answers. Undergraduate students who had taken a proctored exam reported more frequent engagement in these two online cheating behaviors than graduate students.

### **Knowledge of Honor Code**

All students having taken a proctored online exam indicated an awareness of the institutional honor code ( $n = 78$ ). As there were no respondents who indicated a lack of awareness of the institutional honor code, no analysis of a relationship between those who had an awareness of the institutional honor code and those who were unaware of the institutional honor code could be performed.

### **Summary**

The overall prevalence of reported cheating behaviors on online tests ranged from 0% to 24.2%, varying by the specific online assessment behavior. Individuals most frequently reported cheating through utilization of a web search during an online exam to search for answers through both proctored (8.5%) and unproctored (39.8%) exam conditions.

A Mann-Whitney U test was used to determine if differences existed between proctored and unproctored testing environments across overall and individual cheating behaviors. Those taking unproctored exams reported more frequently engaging in cheating behaviors overall than those taking proctored exams. Analyses of individual cheating behaviors indicated that students taking unproctored exams used a web search during an online exam to search for answers more often than those taking exams through unproctored methods.

A Mann-Whitney U test was also used to determine if differences existed between face to face and remote proctoring exams in terms of online cheating behaviors. Results of the test on overall cheating behavior scores indicated no significant difference. However, an analysis of individual cheating behaviors found that students taking remotely proctored exams more frequently reported hiding cheat sheets on their body and on non-technical objects during exams than the face to face group.

A Mann-Whitney U test was conducted to determine if differences existed by gender in terms of reporting online cheating behaviors for students taking proctored exams only. Overall, females taking proctored exams more frequently reported engaging in cheating behaviors during online assessments than male students. Individual cheating behavior analyses revealed that females who had taken a proctored exam more frequently used brain dump sites to obtain test questions and answers and used a web search during an exam to search for answers than male students.

Spearman rank order correlations were performed to determine if a relationship existed between proctored individuals' age and reported cheating behaviors. The analysis

revealed no relationship between age and the overall cheating behaviors or any of the 17 individual cheating behaviors.

A Kruskal-Wallis H test examined whether differences existed for online cheating behaviors by participants' GPA. The test revealed no differences by GPA for overall cheating behaviors. However, individual item analyses revealed that those individuals who had taken proctored exams and had a GPA of a "C" (1.50-2.49) more frequently reported engaging in obtaining test questions and answers through a test bank or textbook publisher, using brain dump sites to obtain test questions and answers, and using a web search during an exam to search for answers.

A Kruskal-Wallis H test was also used to examine differences between proctored students' online cheating behaviors and discipline of study, finding no differences between the various disciplines of study in reported overall cheating behaviors. However, individual level analyses revealed that the College of Agriculture and Life Sciences majors reported more frequently programming a calculator with notes, equations, formulas, or reference materials to use while taking an online exam than majors within the College of Arts and Sciences, College of Business, College of Education, College of Engineering, and Unclassified students (Graduate School).

A Mann-Whitney U test also revealed no overall differences between overall cheating behaviors based on one's belonging to either undergraduate or graduate status. However, individual item analyses revealed that undergraduate students more frequently reported using brain dump sites and web searches during proctored exams than graduate students.



## CHAPTER V

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to describe the frequencies and types of cheating behaviors occurring within proctored and unproctored testing environments for students enrolled in online courses and taking assessments through an online format. In addition, this study sought to examine relationships between demographic variables and online cheating behaviors for students who had taken online assessments through proctored methods. Participants were asked to rate their frequency in engaging in online cheating behaviors as outlined in the OACBS to aid in this investigation. This chapter presents a summary of the study, followed by conclusions based on an analysis of the data. Finally, this chapter concludes with recommendations for practical applications and the direction of future research.

#### **Summary**

This study answered the following research questions:

1. How often and what types of cheating behaviors occur within online assessments for online students taking assessments through proctored and unproctored environments?
2. Is there a relationship between students' cheating behaviors on online assessments taken in a proctored environment and the following factors:

Age; Gender; GPA; Discipline of Study; Undergraduate/Graduate Status;  
Knowledge of the presence of an institutional honor code?

The study utilized participants who were online, distance-based students enrolled in online courses and taking assessments through an online format through a large, four-year, public, degree-granting institution located in the southeastern region of the United States during the spring 2015 semester. The majority of participants were part-time (67.82%), graduate students (73.56%) who worked more than 20 hours per week (85.63%). The majority of respondents were between the ages of 20 and 35 (62.44%) and 63.74% financed ones' education through financial aid or student loans. The majority of participants reported high GPAs between 3.5 to 4.0 (65.71%). A larger percentage of participants who had taken unproctored exams (71.9%) reported a GPA between 3.5 to 4.0 than those who had taken proctored exams (58.2%).

The primary instrument used to collect data was the researcher-developed OACBS, which includes a wide-range of cheating behaviors that are specific to behaviors which may occur during online examinations. Participants were asked to rate their frequency in engaging in these behaviors during an online exam in either a proctored or unproctored environment. In addition, participants were asked whether he or she felt each behavior was "cheating," "unethical, but not cheating," or "neither." As admitting one's cheating behavior is a sensitive subject, a social desirability scale, which gauges individuals' propensity to answer survey items in ways that are socially desirable rather than accurately was included within the survey. Demographic information collected included participants' age, gender, GPA, discipline of study, academic class standing,

knowledge of institutional honor code policies, family and work responsibilities and primary means of financing one's education.

A Mann-Whitney U test was conducted to determine if there was a difference between the reported online assessment cheating behaviors of distance students who took exams through proctored and unproctored methods. Reports indicated that those taking unproctored exams reported more frequently engaging in cheating behaviors overall than those taking proctored exams. Analyses of individual cheating behaviors indicated that students taking unproctored exams used a web search during an online exam to search for answers more often than those taking exams through unproctored methods.

A Mann-Whitney U test was also used to determine if differences existed between face to face and remote proctoring exams in terms of online cheating behaviors. Results of the test on overall cheating behavior scores indicated no significant difference. However, an analysis of individual cheating behaviors found that students taking remotely proctored exams more frequently reported hiding cheat sheets on their body and on non-technical objects during exams than the face to face group.

A Mann-Whitney U test was conducted to determine if differences existed by gender in terms of reporting online cheating behaviors for students taking proctored exams only. Overall, females taking proctored exams more frequently reported engaging in cheating behaviors during online assessments than male students. Individual cheating behavior analyses revealed that females who had taken a proctored exam more frequently used brain dump sites to obtain test questions and answers and used a web search during an exam to search for answers than male students.

Spearman rank order correlations were performed to determine if a relationship existed between proctored individuals' age and reported cheating behaviors. The analysis revealed no relationship between age and the overall cheating behaviors or any of the 17 individual cheating behaviors.

A Kruskal-Wallis H test examined whether differences existed for online cheating behaviors by participants' GPA. The test revealed no differences by GPA for overall cheating behaviors. However, individual item analyses revealed that those individuals who had taken proctored exams and had a GPA of a "C" (1.50-2.49) more frequently reported engaging in obtaining test questions and answers through a test bank or textbook publisher, using brain dump sites to obtain test questions and answers, and using a web search during an exam to search for answers.

A Kruskal-Wallis H test was also used to examine differences between proctored students' online cheating behaviors and discipline of study, finding no differences between the various disciplines of study in reported overall cheating behaviors. However, individual level analyses revealed that the College of Agriculture and Life Sciences majors reported more frequently programming a calculator with notes, equations, formulas, or reference materials to use while taking an online exam than majors within the College of Arts and Sciences, College of Business, College of Education, College of Engineering, and Unclassified students (Graduate School).

A Mann-Whitney U test also revealed no overall differences between overall cheating behaviors based on one's belonging to either undergraduate or graduate status. However, individual item analyses revealed that undergraduate students more frequently

reported using brain dump sites and web searches during proctored exams than graduate students.

### **Conclusions**

Research conducted on online assessment cheating behaviors for online distance students rendered the major findings listed below:

1. Distance students taking unproctored exams reported more frequently participating in cheating behaviors during online assessments than proctored students ( $U = 2447.5, p < .001$ ).
2. Distance students taking unproctored exams revealed more frequent usage of web searches during online exams than those students taking proctored exams ( $U = 2398.0, p < .001$ ).
3. Distance students taking proctored exams through remote proctoring methods more frequently reported hiding crib notes on one's body ( $U = 325.0, p = .015$ ) and on non-technical objects ( $U = 325.0, p = .015$ ) than those taking face to face proctored exams.
4. Female distance students taking proctored exams more frequently reported cheating behaviors than male distance students ( $U = 560.0, p = .017$ ).
5. Female distance students taking proctored exams more frequently reported using brain dump sites ( $U = 610.5, p = .026$ ) and web searches during online exams ( $U = 594.0, p = .016$ ) than male distance students.
6. Distance students taking proctored exams who had a GPA of a "C" (1.50-2.49) more frequently reported obtaining test questions and answers before taking a test through a test bank or textbook publisher ( $\chi^2 = 6.039, p =$

0.49), using brain dump sites ( $\chi^2 = 7.391, p = 0.25$ ) and using web searches during an exam ( $\chi^2 = 7.803, p = 0.23$ ) than students with a GPA of an “A” or “B.”

7. Distance students taking proctored exams with majors in the College of Agriculture and Life Sciences reported more frequently programming calculators with reference materials to use while taking an online exam than other colleges ( $p < .001$ ).
8. Undergraduate distance students taking proctored exams more frequently reported using brain dump sites ( $U = 511.0, p = .014$ ) than graduate distance students.

The finding that distance students taking online unproctored exams more frequently report cheating than those taking proctored exams is consistent with findings from research that indicate more frequent cheating in online, unproctored exams when compared to face to face classrooms (Carstairs & Myors, 2009; Fask et al., 2014; Flesch & Ostler, 2010; Harmon & Lambrinos, 2008; Wachenheim, 2009). To date, this study is the only known study examining cheating behaviors in unproctored and proctored methods for online exams taken for online courses. The finding that unproctored distance students more frequently use web searches during online exams than proctored exams supports the hypothesis of Cole et al. (2014) that students feel the nature of online courses implies consent to share and access available resources. In fact, only 74.29% of all individuals surveyed indicated that using a web search during an exam to search for answers was considered cheating. Of those students who took unproctored exams and reported engaging in the cheating behavior, only 18.75% classified using web searches

during an exam as cheating. In contrast, 71.4% of students who took proctored exams and reported using web searches during exams classified the behavior as cheating, indicating that the act of proctoring itself creates a heightened awareness of cheating through the explicit restriction of resource use. Comments from an open-ended question regarding proctoring supported this notion:

I have all of my exams proctored at a community college. They make it nearly impossible to cheat because they monitor what you are allowed to bring in to the testing center and have remote access to your computer (so you can't look at google).

In addition, the ease of access to materials in unproctored exams may play a role in this type of cheating as one participant notes:

When taking an online exam, it can be too easy to look at notes, textbooks or websites to quickly find answers.

Some participants even felt the need to cheat in order to remain competitive due to a perception of peer cheating in unproctored exams:

When online exams are unproctored it is obvious when looking at test scores that everyone uses it as an open-book test even if told not to. In order to not fall behind you have to follow suit.

For most of my academic career I never even thought about using any sort of google search, etc. to look for an answer or for help on a question. Then you find out that so many of these questions are online word for word because many of the online classes just use pre-fabricated tests and assignments. Once you find out that these questions are posted all over the internet and that so many of your peers

use these resources, it becomes difficult to stay completely honest in the process.

When you find out so many people around you are using outside resources, it makes you feel like it's not fair - why put in so much effort if the other guy isn't?

The finding that students taking proctored distance exams through remote proctoring methods more frequently reported hiding crib notes on their body or on a non-technical object than those taking exams through face to face proctoring methods reveals one potential weakness of remote proctoring systems. Remote proctoring systems, which typically rely on the use of a web camera to monitor individuals while taking a test may not be able to as easily detect these notes on one's body. In addition, if the exam is taken in the student's home or other place where the environment is controlled by the student, the proctor loses an element of control through standardization of the environmental conditions. For example, a seemingly intact object on the student's desk, such as a stapler, may contain notes and test aides which may be harder to detect through a virtual test environment scan conducted through a web camera.

The finding that female students taking online proctored tests more frequently reported cheating behaviors than males supports one researcher's finding on gender and cheating in online courses (Watson & Sottile, 2010) but is contradictory to other studies finding either no difference (Bailey & Bailey, 2011; Charlesworth et al., 2006; Miller & Young-Jones, 2012; Sheets & Waddill, 2009) or that males report cheating more than women (Lanier, 2006; Gurung et al., 2012). The finding may be due to the uniqueness of the study in its approach towards examining students in various proctoring conditions or may be the result of another artifact, such as perception of whether certain behaviors constitute cheating, GPA, or graduate status. For example, the results of the study



indicated females who took online proctored exams were more likely than males to report cheating by using a web search during an exam and by using brain dump sites. 70.7% of women felt using a web search during an exam constituted cheating compared to 75.3% of males, and 60.5% of women felt using brain dump sites was cheating compared to 76.5% of males. In addition, women tended to be lower classmen than men, with only 62.8% of women participants enrolled as graduate students compared to 82.4% of men. Men also had higher GPAs, with 64.7% of males having an “A” GPA while only 53.5% of women respondents reported a GPA of “A.”

A student's GPA has been a frequently cited factor for predicting cheating behaviors in traditional classrooms, with lower GPAs tending to report cheating more (Atmeh & Al-Khadash, 2008; Burrus, McGoldrick, & Schuhmann, 2010; Hensley et al., 2013; McCabe & Trevino, 1997; Moberg et al., 2008; Newstead et al., 1996; Roig & Caso, 2005; Tang & Zuo, 1997; Whitley, 1998; Williams et al., 2010; Yardley et al., 2009). However, the influence of GPA on cheating behaviors in online courses has produced conflicting results with some research supporting findings from traditional classroom studies of an inverse relationship between cheating and GPA (Grijalva et al., 2006; Lanier, 2006; Sheets & Waddill, 2009) and finding GPA to influence cheating (Beck, 2014). Although no significant differences were found by GPA on overall cheating behaviors, this study's finding that proctored distance students with a GPA of a “C” (1.50-2.49) more frequently reported obtaining test questions and answers before taking a test through a test bank or textbook publisher, using brain dump sites, and conducting web searches during an exam than students with a GPA of “A” or a “B” coincides with the cost-benefit analysis framework of cheating which postulates that

students will engage in riskier behavior if the reward is greater. Although the other two behaviors, obtaining test questions and answers before taking a test through a test bank or textbook publisher and using brain dump sites, were likely conducted before the exam, the students' use of web searches while taking a proctored exam would be considered a high-risk behavior. However, the students may have felt a greater pay-off or reward and had more motivation than those with higher GPAs as the majority of proctored students were graduate students (70.5%) under an institutional policy stating academic probation and potential dismissal from graduate school for a GPA of "C" or lower.

Although there were no differences in overall cheating behaviors by discipline of study, the study did present an interesting finding that online proctored students with majors in the College of Agriculture and Life Sciences reported programming calculators with materials to use while taking an online exam more frequently than those with majors from other colleges. The limited amount of prior research conducted on online exam cheating by discipline of study found higher rates of cheating among business and sciences disciplines (Lanier, 2006). Business students who took proctored exams were primarily graduate students (92.3%) compared to 66.7% of Agriculture and Life Sciences students, which may have influenced results. As graduate level business students would be taking classes related directly to their major, a future, interesting analysis would be whether or not the cheating occurred within major or non-major courses. As one student noted in the open ended comments:

I wonder how often people cheat. I am a graduate student, and I am attending because I want to learn. I am interested in the material, and I think it helps the graduate program is concentrated on business. I suppose if I had to take several

classes that were not related to business, I would be less interested in learning, and perhaps more inclined to find loopholes in test-taking.

The findings that the age of proctored online students was not significantly related to overall cheating behaviors or any of the individual level items supports research conducted by Passow (2006) on online engineering students that found no relationship between age and cheating and also research by Charlesworth et al. (2006) that found age could not significantly predict cheating in online environments. Other research on online environments found younger students reported cheating more on online exams than face to face, traditional classroom-based exams (Lanier, 2006; Miller & Young-Jones, 2012; Sheets & Waddill, 2009). As the majority of proctored students in this study were over the age of 25 (85.9%), the results of this analysis may have been influenced by having a group of older, more mature students. Likewise, non-significant findings from overall cheating behaviors between undergraduate and graduate students taking proctored, online exams may have been influenced by the group's overall age. However, the study did find that proctored undergraduate students tended to report more frequently using a web search during an exam and using brain dump sites to obtain questions and answers. Again, using a web search during an online proctored exam is indicative of higher risk-taking behavior which may be found in younger students. However, these results may have been influenced by one's GPA as 85.7% of those cheating by utilizing web searches during proctored exams reported a GPA between (3.49 to 2.50) and 83.3% of those using brain dump sites reporting the same GPA range.

Surprisingly, all students who took a proctored exam indicated an awareness of the institutional honor code. Knowledge of this policy may have reduced overall levels of

cheating as prior research found lower rates of cheating among honor code colleges for traditional, face to face courses (McCabe et al., 2001; Whitley, 1998). However, this knowledge did not deter all cheating, as incidences of cheating were still reported in both proctored and unproctored settings. Future research may wish to examine what methods online programs utilize to disseminate honor code information and the overall effectiveness of each method.

The findings from this study contribute to the body of research on online cheating through a direct analysis of cheating behaviors between online proctored and online unproctored exams for distance students. Previous research has examined either cheating behaviors between traditional face to face classrooms with online courses or simply examined grades between proctored or unproctored online courses. This study examined and reported both information on overall and individual cheating behaviors through proctored and unproctored methods. In addition, the existing body of research on the influence of demographic variables on online cheating behaviors is supplemented through an analysis of the effect of examining only distance students taking an online proctored exam in light of the demographic variables of age, gender, GPA, discipline of study, undergraduate/graduate status, and knowledge of the institutional honor code. Research on these variables has produced conflicting results when conducting analyses on cheating behaviors of online students for generalized cheating behaviors, while this study focuses solely on online assessment cheating behaviors and opens a new focus area of research.

This study also examines not only cheating prevalence between unproctored and proctored groups, but also provides individual item level analyses on specific assessment

cheating behaviors to enhance the educational community's understanding of what types of targeted interventions may be needed in order to mitigate these cheating behaviors.

Finally, this study also lays the groundwork for an area of research exploration through its inclusion of analyses of cheating behaviors between remotely proctored and face to face proctored methods. As remote, web-based proctoring is a relatively new option for online students, an analysis of its utility in deterring cheating in comparison to traditional methods was needed.

### **Recommendations**

The following section will list practical recommendations and directions for future research based on the results of this study. Overall, more cheating occurred in unproctored settings than proctored settings, indicating that proctoring may indeed be necessary to deter cheating behaviors during online assessments. However, the only individual cheating behavior indicating significant differences between the two groups was using a web search during an exam to search for answers in which the unproctored group engaged more frequently. Student misconceptions about what behaviors are acceptable while taking online exams may contribute to the prolificacy of this behavior. Indeed, some students indicated in open-ended comments that their instructors allowed the usage of materials and when not explicitly stated, it was assumed. One student notes:

I dislike proctored exams. They are a pain to set up and the rules for each exam are rarely clearly defined. This makes it difficult for the student and proctor to know what is allowed during the exam.

Another student commented:

I think there is much more gray area regarding to what's cheating while taking unproctored exam than a proctored.

As such, when utilizing both proctored and unproctored methods, instructors should clearly define expectations for online testing behavior and what materials are allowed and prohibited. Perhaps asking the student to digitally sign off on a statement confirming that the instructor's rules (such as no outside resources, including the web, calculators, etc.) will be followed before being allowed to access the online exam questions would set concrete expectations of student online exam conduct as instructor's rules tend to vary across instructor and course.

However, even proctoring methods aren't cheat-proof, with students taking proctored exam admitting to engaging in web searches during online tests and using brain dump sites and obtaining test questions or answers from textbook publishers or websites before taking an online test. Students indicated a temptation to cheat knowing that tests were pre-fabricated:

The whole proctoring thing sounds like a band-aid for distributing poorly developed tests over and over.

Instead of designing tests based on the textbook's question set or asking questions that test the student's recall, instructors could design tests containing unique items that ask students to apply knowledge which cannot be easily searched through a website or found in a textbook. In addition, the use of timed tests in conjunction with these types of tests may serve to deter cheating as the access to outside materials would not create as much of an advantage to students using these resources as there would not be an adequate amount of time to rely on these sources to answer the test questions.

University faculty and instructors are often brought in as specialists in their content area and receive little to no training on online assessment design methods. A need exists for all colleges and universities to offer formal instruction and aide to online faculty on best practices in online assessment design to prevent cheating.

Faculty should also be mindful of inconveniences that proctoring requirements may cause as online students inherently have expectations of more flexibility in scheduling. Students reported that the requirement of proctored examinations placed them at a disadvantage through the need to take off work to schedule a face to face proctored exam, high proctored exam costs, and large travel time to an approved proctor location:

Although I haven't incurred any out-of-pocket proctoring costs because I have the training department at my employer proctor the exams, I do have to take personal leave from work in order to take exams.

A proctored test at the testing center at the local community college is \$75 per exam.

The local colleges offer proctoring at \$50-100 per test, which I find absolutely insane. If an instructor of a course wishes to have their exam proctored, a student should not have to pay for that as well. We are already paying for the class.

While having the test proctored is fine, finding a nearby location in which to take it is very difficult for me. It is always at least an hour away from my home, and difficult to schedule, and the money it costs is sometimes unexpected. One semester I could not get into my first choice, had to choose a nearby university, which was \$30 per hour. One teacher had already stated that if we finished her

two hour test in an hour or less, there would be repercussions, so I had to pay \$60 for her test, then rush through another to beat the one hour/ thirty dollar deadline. It is stressful, especially with limited funds.

Due to my inability to locate a proctor as a distance student living in a rural area, proctored exams have not only led to my not enrolling in or dropping certain classes, but are also currently preventing me from taking required courses. This issue could prevent me from graduating.

Another student pointed out a common fallacy of face to face proctoring:

In my opinion, it is easier to cheat with a proctored exam than it is with a regular exam because you are trusting the students are choosing legit proctors who will abide by the time limit and not allow the student to cheat. In my case, I took one proctored exam and on the sheet I had the option of doing it through a manager at work. I was to print the test out and only have two hours. My manager forwarded me my exam the day before I was supposed to take it and didn't even watch me take it. Granted I didn't have to cheat on it because it was an easy class, but it would have been extremely easy to get 100% on it due to no supervision and have the test in my hands early. It seemed like a huge hassle to fill out the proctor info and involve a third party when it was easier to cheat through them than through a regular timed online exam.

If instructors wish to proctor an online exam, they may wish to examine the feasibility of remote proctoring services, who utilize neutral, unaffiliated proctors. Results of this study indicated students taking remotely proctored exams hid more cheat sheets than the face to face proctored students but showed no differences in other



behaviors. Requiring remote proctors to adhere to rules such as a clean desk and thorough test environment scans may reduce discrepancies in students using hidden notes.

Other options to reduce inconveniences caused by proctoring may include proctoring only high stake assessments with a requirement that the test be taken through an official testing center or alternate test design combined with a set timer. Registered students should be clearly notified of the proctoring requirement, preferably before online classes begin through a welcome email message, along with expectations of student testing behavior. These statements should also be included within the course syllabus.

Within this study, data were collected from a convenience sample from a single institution, limiting generalizability. Future research should seek to replicate this study at other institutions or should contain a sample of students from a multitude of institutions across the United States. More research should also be conducted on students who have taken a remotely proctored exam as this study is the only known study to examine cheating behaviors occurring through this method. Existing studies have examined remote proctoring in the context of employment testing. More information is needed on the service's utility within educational, collegiate settings. Additional research conducted on remote proctoring methods should include concerns about invasion of privacy and technical issues as participants noted these points in open-ended comments.

Information from this study was obtained through self-reported cheating behaviors. In order to protect individual's privacy at the single institution researched, students were not asked to report information on individual level classes. Future research may wish to directly compare cheating behaviors between proctored and unproctored environments by using the same course taught by the same instructor through more

experimental-based approaches. In addition, a comparison of test scores could be included with self-reported cheating behaviors.

At the institution surveyed, the population consisted primarily of graduate students who may differ from undergraduate students in terms of intrinsic motivations for learning. Previous research indicates an increase in cheating within traditional classrooms when the course was a non-major course (Yardley et al., 2009) and several students in this study indicated a personal desire to learn. Additional research should be conducted using a group consisting of primarily undergraduate students, along with a measure of one's primary reason for taking the course.

Finally, more qualitative research should be conducted to follow-up on reported cheating behaviors to determine what factors contributed to the individual's decision to engage in the cheating behavior. Although data were collected on an individual's GPA, hours spent working and caring for a dependent and primary means of financing one's education, alternate explanations may exist to help researchers and practitioners better understand what obstacles students face that may contribute to cheating behavior.

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APPENDIX A  
INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL LETTER



**Owens, Hannah Street**

---

**From:** nmorse@orc.msstate.edu  
**Sent:** Tuesday, May 05, 2015 3:04 PM  
**To:** Owens, Hannah Street  
**Cc:** Morse, Nicole; Morse, Nicole; Adams, Jim  
**Subject:** Study 15-166: Cheating within online assessments: A comparison of cheating behaviors in proctored and unproctored environments

Protocol Title: Cheating within online assessments: A comparison of cheating behaviors in proctored and unproctored environments

Protocol Number: 15-166

Principal Investigator: Ms. Hannah Street Owens

Date of Determination: 5/5/2015

Qualifying Exempt Category: 45 CFR 46.101(b)(2)

Attachments: Stamped informed consents in separate email

Dear Ms. Owens:

The Human Research Protection Program has determined the above referenced project exempt from IRB review.

Please note the following:

- Retain a copy of this correspondence for your records.
- An approval stamp is required on all informed consents. You must use the stamped consent form for obtaining consent from participants.
- Only the MSU staff and students named on the application are approved as MSU investigators and/or key personnel for this study.
- The approved study will expire on 12/31/2016, which was the completion date indicated on your application. If additional time is needed, submit a continuation request. (SOP 01-07 Continuing Review of Approved Applications)

- Any modifications to the project must be reviewed and approved by the HRPP prior to implementation. Any failure to adhere to the approved protocol could result in suspension or termination of your project.
- Per university requirement, all research-related records (e.g. application materials, letters of support, signed consent forms, etc.) must be retained and available for audit for a period of at least 3 years after the research has ended.
- It is the responsibility of the investigator to promptly report events that may represent unanticipated problems involving risks to subjects or others.

This determination is issued under the Mississippi State University's OHRP Federalwide Assurance #FWA0000203. All forms and procedures can be found on the HRPP website: [www.irc.msstate.edu](http://www.irc.msstate.edu)

Thank you for your cooperation and good luck to you in conducting this research project. If you have questions or concerns, please contact me at [nmorse@irc.msstate.edu](mailto:nmorse@irc.msstate.edu) or call 662-325-5220.

Finally, we would greatly appreciate your feedback on the HRPP approval process. Please take a few minutes to complete our survey at <https://www.surveymonkey.com/s/PPM2FBP>.

Sincerely,

Nicole Morse, CIP  
IRB Compliance Administrator

cc: James H. Adams, Advisor

**Owens, Hannah Street**

---

**From:** nmorse@orc.msstate.edu  
**Sent:** Tuesday, June 16, 2015 11:01 AM  
**To:** Owens, Hannah Street  
**Cc:** Morse, Nicole; Morse, Nicole; Adams, Jim  
**Subject:** Study 15-166: Cheating within online assessments: A comparison of cheating behaviors in proctored and unproctored environments

June 16, 2015

Hannah Street Owens  
Instructional Systems & Workforce Development  
Mail Stop 9730

RE: HRPP Study #15-166: Cheating within online assessments: A comparison of cheating behaviors in proctored and unproctored environments

Dear Ms. Owens:

Your procedural modification request submitted on 6/15/2015 has been approved. You are approved to proceed with your research as modified. A stamped copy will be sent to you in a separate email. Please use this letter and the stamped copy as verification of the approval.

Finally, we would greatly appreciate your feedback on the HRPP approval process. Please take a few minutes to complete our survey at <https://www.surveymonkey.com/s/PPM2FBP>.

If you have questions or concerns, please contact nmorse@orc.msstate.edu or call 662-325-5220.

Sincerely,

Nicole Morse, CIP  
IRB Compliance Administrator

cc: James H. Adams, Advisor

APPENDIX B

FINAL ONLINE ASSESSMENT CHEATING BEHAVIORS INSTRUMENT

**Introduction**

1. Consent statement (derived from consent form)
  - Yes, I agree (continue to survey)
  - No, I do not agree (exit from survey)

**Behavior in Online Assessments**

For the questions in this section, please select the answer which best describes you.

1. While a distance student at your current institution, have you taken a **proctored** online examination? In proctored exams, students are monitored by an approved individual (such as a testing center or approved person) or object (such as a webcam) while taking the exam. Unproctored exams do not rely on this type of monitoring.
  - Yes (1); go to question 2
  - No (2); skip to question 3
  
2. Please indicate what **type** of proctored online examination you have taken while a distance student at your current institution. In **remotely proctored, online exams**, monitoring of the exam occurs without the physical presence of a monitor, such as through a webcam or specialized software. In **face-to-face proctored, online exams**, monitoring of the exams occurs within the physical presence of a proctor at either the official testing center for the institution's distance students or through an approved, off-site proctor.
  - Face-to-face Proctored (1)
  - Remotely Proctored (2)
  - Both (3)

	Approved:	Expires:
	6/16/15	12/31/16
	IRB # 15-166	

3. If you have taken an online proctored exam, please indicate the frequency for which you have participated in the following acts during an online proctored exam while a distance student at your current institution. If you have not taken an online proctored exam, please indicate the frequency for which you have participated in the following acts during an online unproctored exam while a distance student at your current institution.

(OACBS Items)	Always (5)	Often (4)	Sometimes (3)	Rarely (2)	Never (1)
Used hidden crib notes (cheat sheets) placed on your body (i.e., hand, fingernails, on legs, etc.)					
Used hidden crib notes (cheat sheets) placed on a non-technical object (i.e., Kleenex, water bottle, food wrapper, etc.)					
Accessed recorded notes through a wireless headphone and iPod/phone/other audio-capable device					
Programmed a calculator with notes, equations, formulas, or reference materials to use while taking an online exam					
Obtained test questions/answers before taking a test through a test bank or textbook publisher					
Purchased the instructor's edition of the textbook for solutions					
Accessed a listserv or forum before an exam to obtain test questions/answers					
Used brain dump sites (i.e., Course Hero, Cramster, etc.) to obtain test questions/answers					
Used Google Docs or other collaborative software to share test questions/answers with students while taking an exam					
Obtained test questions/answers from someone who already took the exam					
Used text or instant messaging to obtain or share answers during a test					
Rotated test taking with classmates or friends for purposes of sharing test questions and answers					
Used screen capture computer features to copy exam questions/answers					
Memorized test questions/answers to distribute to others					
Used a web search (i.e., Google) during an exam to search for answers					
Used false excuses of a technical failure to extend the time to take an exam					
Used false excuses of personal illness or emergency to extend the time to take an exam					

4. For the items listed below, please indicate whether you feel the listed behavior is cheating, unethical but not cheating, or neither cheating nor unethical.

(OACBS Items)	Cheating (1)	Unethical, but not cheating (2)	Neither (3)
Used hidden crib notes (cheat sheets) placed on your body (i.e., hand, fingernails, on legs, etc.)			
Used hidden crib notes (cheat sheets) placed on a non-technical object (i.e., Kleenex, water bottle, food wrapper, etc.)			
Accessed recorded notes through a wireless headphone and iPod/phone/other audio-capable device			
Programmed a calculator with notes, equations, formulas, or reference materials to use while taking an online exam			
Obtained test questions/answers before taking a test through a test bank or textbook publisher			
Purchased the instructor's edition of the textbook for solutions			
Accessed a listserv or forum before an exam to obtain test questions/answers			
Used brain dump sites (i.e., Course Hero, Cramster, etc.) to obtain test questions/answers			
Used Google Docs or other collaborative software to share test questions/answers with students while taking an exam			
Obtained test questions/answers from someone who already took the exam			
Used text or instant messaging to obtain or share answers during a test			
Rotated test taking with classmates or friends for purposes of sharing test questions and answers			
Used screen capture computer features to copy exam questions/answers			
Memorized test questions/answers to distribute to others			
Used a web search (i.e., Google) during an exam to search for answers			
Used false excuses of a technical failure to extend the time to take an exam			
Used false excuses of personal illness or emergency to extend the time to take an exam			

#### SDS Items

Below you will find a list of statements. Please read each statement carefully and decide if that statement describes you or not. If it describes you, please mark the statement as "true"; if not, mark the word "false."

\*\*note to researcher: Items 1, 5, 6, 10, 14, and 16 are reverse coded.

	True	False
1. I sometimes litter.		
2. I always admit my mistakes openly and face the potential negative consequences.		
3. In traffic, I am always polite and considerate of others.		
4. I always accept other's opinions, even when they don't agree with my own.		
5. I take out my bad moods on others now and then.		
6. There has been an occasion when I took advantage of someone else.		
7. In conversations, I always listen attentively and let others finish their sentences.		
8. I never hesitate to help someone in case of an emergency.		
9. When I have made a promise, I keep it- no ifs, ands, or buts.		
10. I occasionally speak badly of others behind their back.		
11. I would never live off of other people.		
12. I always stay friendly and courteous with other people, even when I am stressed out.		
13. During arguments, I always stay objective and matter of face.		
14. There has been at least one occasion when I failed to return an item that I borrowed.		
15. I always eat a healthy diet.		
16. Sometimes I only help because I expect something in return.		

## Background

For the questions in this section, please select the answer which best describes you.

1. What is your academic class standing?
  - Freshman (1)
  - Sophomore (2)
  - Junior (3)
  - Senior (4)
  - Graduate Student (5)
2. Please type in your age, using whole numbers (i.e., "22") \_\_\_\_\_
3. What is your gender?
  - Male (1)
  - Female (2)
4. In what college does your primary major reside?
  - College of Agriculture and Life Sciences (1)
  - College of Architecture, Art, and Design (2)
  - College of Arts and Sciences (3)
  - College of Business (4)
  - College of Education (5)
  - College of Engineering (6)
  - College of Forest Resources (7)
  - College of Veterinary Medicine (8)
  - Special Non-Degree (9)
  - Graduate School (Unclassified) (10)
  - Academic Affairs (11)
5. What is your current enrollment status? (For undergraduate students, full-time enrollment is considered to be 12 or more hours per semester. For graduate students, full-time enrollment is considered to be 9 or more hours per semester.)
  - Full-time (1)
  - Part-time (2)
  - Not currently enrolled (3)
6. What is your approximate, cumulative grade point average (GPA)?
  - A 3.50-4.00
  - B 2.50-3.49
  - C 1.50-2.49
  - D 0.50-1.49
  - F 0.00-0.49
7. What is your *primary* means of financing or paying for your education?
  - Self-funded (1)
  - Scholarship (2)

- Financial Aid/Student Loans (3)
- Parents are funding (4)
- Employer or Military Reimbursement (5)
- Other (Please specify) \_\_\_\_\_

8. If you currently participate in any of the following activities, please indicate on average how much time you spend on each activity per week:

	Do Not Participate (0)	1-10 Hours (1)	11-20 Hours (2)	More than 20 Hours (3)
Work/Job				
Caring for a child, parent, or other dependent				
Organizational work, such as social club involvement or volunteering				

9. In how many online courses have you been enrolled?

- 1-3
- 4-6
- 7-9
- 10 or more

10. Are you aware of your current institution's honor code policies and procedures?

- Yes (1)
- No (2)

11. If you have taken a proctored exam, please type in the average amount of money you spent on proctoring *per semester* while a distance student at your current institution. (Please include in this average any travel costs, testing fees, and technology costs associated with taking a proctored exam). \_\_

12. Please share any comments that you have regarding your experiences related to online assessments through proctored or unproctored methods.



APPENDIX C

INITIAL ONLINE ASSESSMENT CHEATING BEHAVIORS INSTRUMENT

Note: Survey will be placed in SurveyMonkey and questions which require a “skip to” will automatically occur. Coding information is provided next to each response and is indicated with a ().

### Introduction

1. Consent statement (derived from consent form)
  - Yes, I agree (continue to survey)
  - No, I do not agree (exit from survey)

### Behavior in Online Assessments

For the questions in this section, please select the answer which best describes you.

1. While a distance student at your current institution, have you taken a **proctored** online examination? In proctored exams, students are monitored by an approved individual (such as a testing center or approved person) or object (such as a webcam) while taking the exam. Unproctored exams do not rely on this type of monitoring.
  - Yes (1); go to question 2
  - No (2); skip to question 3
2. Please indicate what **type** of proctored online examination you have taken while a distance student at your current institution. In **remotely proctored, online exams**, monitoring of the exam occurs without the physical presence of a monitor, such as through a webcam or specialized software. In **face-to-face proctored, online exams**, monitoring of the exams occurs within the physical presence of a proctor at either the official testing center for the institution’s distance students or through an approved, off-site proctor.
  - Face-to-face Proctored (1)
  - Remotely Proctored (2)
  - Both (3)

3. If you have taken an online proctored exam, please indicate the frequency for which you have participated in the following acts during an online proctored exam while a distance student at your current institution. If you have not taken an online proctored exam, please indicate the frequency for which you have participated in the following acts during an online unproctored exam while a distance student at your current institution.

(OACBS items)	Never (0)	Once (1)	2 to 3 Times (2)	More than 3 Times (3)
Used advanced coding or programming methods to view or reveal test answers while taking the exam				
Hacked into an online test system or learning management system (i.e., Blackboard) to obtain test questions/answers				
Used hidden crib notes (cheat sheets) placed on your body (i.e., hand, fingernails, on legs, etc.)				
Used hidden crib notes (cheat sheets) placed on a non-technical object (i.e., Kleenex, water bottle, food wrapper, etc.)				
Accessed recorded notes through a wireless headphone and iPod/phone/other audio-capable device				
Programmed a calculator with notes, equations, formulas, or reference materials to use while taking an online exam				
Paid someone to take an exam for you				
Had someone take an exam for you without payment				
Obtained test questions/answers before taking a test through a test bank or textbook publisher				
Purchased the instructor's edition of the textbook for solutions				
Accessed a listserv or forum before an exam to obtain test questions/answers				
Used brain dump sites (i.e., Course Hero, Cramster, etc.) to obtain test questions/answers				
Developed a relationship with an instructor or teaching assistant for purposes of obtaining exam information				
Used Google Docs or other collaborative software to share test questions/answers with students while taking an exam				
Used a cellphone to capture exam questions/answers to share with others				
Obtained test questions/answers from someone who already took the exam				
Used text or instant messaging to obtain or share answers during a test				
Rotated test taking with classmates or friends for purposes of sharing test questions and answers				
Used screen capture computer features to copy exam questions/answers				
Used a wireless earpiece or microphone to access a live person's aide during an exam				
Memorized test questions/answers to distribute to others				
Used a small or undetectable recording device (i.e., pinhole camera, recordable watch, recordable pen) to record exam questions/answers				
Received assistance from a live person in the same room during an exam				
Used a web search (i.e., Google) during an exam to search for answers				
Posted in a live chat room during an exam to receive test answers from specialists				
Used false excuses of a technical failure to extend the time to take an exam				
Used false excuses of personal illness or emergency to extend the time to take an exam				

4. For the items listed below, please indicate whether you feel the listed behavior is cheating, unethical but not cheating, or neither cheating nor unethical.

(OACBS items)	Cheating (1)	Unethical, but not cheating (2)	Neither (3)
Used advanced coding or programming methods to view or reveal test answers while taking the exam			
Hacked into an online test system or learning management system (i.e., Blackboard) to obtain test questions/answers			
Used hidden crib notes (cheat sheets) placed on your body (i.e., hand, fingernails, on legs, etc.)			
Used hidden crib notes (cheat sheets) placed on a non-technical object (i.e., Kleenex, water bottle, food wrapper, etc.)			
Accessed recorded notes through a wireless headphone and iPod/phone/other audio-capable device			
Programmed a calculator with notes, equations, formulas, or reference materials to use while taking an online exam			
Paid someone to take an exam for you			
Had someone take an exam for you without payment			
Obtained test questions/answers before taking a test through a test bank or textbook publisher			
Purchased the instructor's edition of the textbook for solutions			
Accessed a listserv or forum before an exam to obtain test questions/answers			
Used brain dump sites (i.e., Course Hero, Cramster, etc.) to obtain test questions/answers			
Developed a relationship with an instructor or teaching assistant for purposes of obtaining exam information			
Used Google Docs or other collaborative software to share test questions/answers with students while taking an exam			
Used a cellphone to capture exam questions/answers to share with others			
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Rotated test taking with classmates or friends for purposes of sharing test questions and answers			
Used screen capture computer features to copy exam questions/answers			
Used a wireless earpiece or microphone to access a live person's aide during an exam			
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Used a web search (i.e., Google) during an exam to search for answers			
Posted in a live chat room during an exam to receive test answers from specialists			
Used false excuses of a technical failure to extend the time to take an exam			
Used false excuses of personal illness or emergency to extend the time to take an exam			

**SDS Items (note to researcher/reviewer: these items are to indicate one's tendency to respond in a manner he or she feels is socially desirable. Responses to these items are not related to cheating, but rather serve to validate one's responses to self-reported measures on sensitive topics.)**

Below you will find a list of statements. Please read each statement carefully and decide if that statement describes you or not. If it describes you, please mark the statement as "true"; if not, mark the word "false."

\*\*note to researcher: Items 1, 5, 6, 10, 14, and 16 are reverse coded.

	True	False
1. I sometimes litter.		
2. I always admit my mistakes openly and face the potential negative consequences.		
3. In traffic, I am always polite and considerate of others.		
4. I always accept other's opinions, even when they don't agree with my own.		
5. I take out my bad moods on others now and then.		
6. There has been an occasion when I took advantage of someone else.		
7. In conversations, I always listen attentively and let others finish their sentences.		
8. I never hesitate to help someone in case of an emergency.		
9. When I have made a promise, I keep it- no ifs, ands, or buts.		
10. I occasionally speak badly of others behind their back.		
11. I would never live off of other people.		
12. I always stay friendly and courteous with other people, even when I am stressed out.		
13. During arguments, I always stay objective and matter of face.		
14. There has been at least one occasion when I failed to return an item that I borrowed.		
15. I always eat a healthy diet.		
16. Sometimes I only help because I expect something in return.		

## Background

For the questions in this section, please select the answer which best describes you.

1. What is your academic class standing?
  - Freshman (1)
  - Sophomore (2)
  - Junior (3)
  - Senior (4)
  - Graduate Student (5)
  
2. Please type in your age, using whole numbers (i.e., "22") \_\_\_\_\_
  
3. What is your gender?
  - Male (1)
  - Female (2)
  
4. In what college does your primary major reside?
  - College of Agriculture and Life Sciences (1)
  - College of Architecture, Art, and Design (2)
  - College of Arts and Sciences (3)
  - College of Business (4)
  - College of Education (5)
  - College of Engineering (6)
  - College of Forest Resources (7)
  - College of Veterinary Medicine (8)
  - Special Non-Degree (9)
  - Graduate School (Unclassified) (10)
  - Academic Affairs (11)
  
5. What is your current enrollment status? (For undergraduate students, full-time enrollment is considered to be 12 or more hours per semester. For graduate students, full-time enrollment is considered to be 9 or more hours per semester.)
  - Full-time (1)
  - Part-time (2)
  - Not currently enrolled (3)
  
6. What is your approximate, cumulative grade point average (GPA)?
  - A 3.50-4.00
  - B 2.50-3.49
  - C 1.50-2.49
  - D 0.50-1.49
  - F 0.00-0.49

7. What is your *primary* means of financing or paying for your education?

- Self-funded (1)
- Scholarship (2)
- Financial Aid/Student Loans (3)
- Parents are funding (4)
- Employer or Military Reimbursement (5)
- Other (Please specify) \_\_\_\_\_

8. If you currently participate in any of the following activities, please indicate on average how much time you spend on each activity per week:

	Do Not Participate (0)	1-10 Hours (1)	11-20 Hours (2)	More than 20 Hours (3)
Work/Job				
Caring for a child, parent, or other dependent				
Organizational work, such as social club involvement or volunteering				

9. In how many online courses have you been enrolled?

- 1-3
- 4-6
- 7-9
- 10 or more

10. Are you aware of your current institution's honor code policies and procedures?

- Yes (1)
- No (2)

11. Please share any comments that you have regarding your experiences related to online assessments through proctored or unproctored methods.

APPENDIX D  
RECOMMENDED CHANGES TO INSTRUMENT



- Behavior in Online Assessments, question “Obtained test questions/answers before taking a test through a test bank or textbook publisher”; Not sure students will know what a test bank is, maybe say “textbook website”
- Behavior in Online Assessments, question “Accessed a listerv or forum before an exam to obtain test questions/answers”; Not sure students will know what a listserv is, might be outdated, would change to say only forum
- Overall, looks good, the survey items are long but are very comprehensive, I couldn’t think of anything to add nor take away to improve the Behavior in Online Assessments section
- Background section, Question regarding major/college: add in Undeclared to “Academic Affairs” to enhance understanding
- Behavior in Online Assessments, question regarding proctoring type:
  - Wordy; I had to read this a few times. Would it be better to explain the type of proctoring in the bulleted list of choices?
  - Might want to say “person” instead of monitor. Monitor leads some to think of technology.
- Very few suggestions- looks great, comprehensive list of cheating behaviors for online exams

APPENDIX E  
ADDITIONAL PILOT QUESTIONS

1. Were the directions provided for responding to the survey clear and easy to understand? If not, please explain how they could be improved?
2. Were you able to understand the questions as they were written? If not, what question or survey area was unclear?
3. Approximately how long did it take you to complete this survey?
4. Is there any additional information regarding this survey that may help the researchers to improve the experience of those taking this survey?

APPENDIX F  
INITIAL RECRUITMENT EMAIL

Dear MSU Distance Student,

My name is Hannah Owens and I am a doctoral student in the department of Instructional Systems and Workforce Development at Mississippi State University. You are receiving this email as you are a MSU distance student enrolled in online courses. As part of my doctoral dissertation, I am conducting research on behaviors that occur within the context of online assessments taken through various proctoring methods. The growing number of students enrolled in online courses has sparked controversy regarding the integrity of these courses, especially in relation to assessments taken online. In response to these concerns, educators began utilizing various proctoring services and methods in an effort to deter academic dishonesty. However, there are large costs associated with using proctoring services and systems are often untested. With your assistance, information can be provided to determine some of the behaviors that occur during either unmonitored or monitored online tests.

The survey takes approximately 15-20 minutes to complete. You must be 18 or older to participate in this survey. Your participation in this survey is entirely voluntary and responses will be kept anonymous. The researcher will remove any unique identifier (i.e., IP address, email address) from the survey data file and the data collected will be analyzed and reported at a group level (i.e., averages, percentages). Your honest responses are desired. The researchers will not be interested in identifying who you are or in which class(es) you are enrolled at any time. Your refusal to participate in this survey will involve no penalty or loss of benefits and you may choose to discontinue participation at any time.

If you decide to complete the survey, you will be given the option to enter into a drawing for one of two (2) Walmart e-gift cards. If you would like to participate, please click on the following link <URL> or copy and paste this link <URL> to your web browser.

Please keep this email for your records. If you have any questions regarding this study please contact me, Hannah Owens, at [hds10@msstate.edu](mailto:hds10@msstate.edu) or Dr. James Adams at [jadams@colled.mstate.edu](mailto:jadams@colled.mstate.edu)

Thank you for your consideration and help. Your participation plays an important role in assessing the effectiveness and feasibility of proctoring methods used for online assessments.

Sincerely,

Hannah Owens, Doctoral Student  
Department of Instructional Systems and Workforce Development  
Mississippi State University  
[hds10@msstate.edu](mailto:hds10@msstate.edu)

APPENDIX G  
REMINDER RECRUITMENT EMAIL

Dear MSU Distance Student,

The survey for my doctoral research investigating cheating behaviors that occur in online assessments within various proctoring situations is still available. Your participation would be greatly appreciated. The information you provide can play an important role in examining the effectiveness and feasibility of proctoring online assessments.

If you have already submitted a response to this survey, thank you for your participation. If you have not submitted a response, please see the instructions below to participate.

The survey takes approximately 15-20 minutes to complete. You must be 18 or older to participate in this survey. Your participation in this survey is entirely voluntary and responses will be kept anonymous. The researcher will remove any unique identifier (i.e., IP address, email address) from the survey data file and the data collected will be analyzed and reported at a group level (i.e., averages, percentages). Your honest responses are desired. The researchers will not be interested in identifying who you are or in which class(es) you are enrolled at any time. Your refusal to participate in this survey will involve no penalty or loss of benefits and you may choose to discontinue participation at any time.

If you decide to complete the survey, you will be given the option to enter into a drawing for one of two (2) Walmart e-gift cards. If you would like to participate, please click on the following link <URL> or copy and paste this link <URL> to your web browser.

Please keep this email for your records. If you have any questions regarding this study please contact me, Hannah Owens, at [hds10@msstate.edu](mailto:hds10@msstate.edu) or Dr. James Adams at [jadams@colled.mstate.edu](mailto:jadams@colled.mstate.edu)

Thank you for your consideration and help. Your participation plays an important role in assessing the effectiveness and feasibility of proctoring methods used for online assessments.

Sincerely,

Hannah Owens, Doctoral Student  
Department of Instructional Systems and Workforce Development  
Mississippi State University  
[hds10@msstate.edu](mailto:hds10@msstate.edu)

APPENDIX H  
PERMISSION TO USE SDS-17



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**Owens, Hannah Street**

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**From:** Joachim Stoerber <J.Stoerber@kent.ac.uk>  
**Sent:** Tuesday, March 17, 2015 12:35 PM  
**To:** Owens, Hannah Street  
**Subject:** RE: Permission to Use SDS-17 for Doctoral Dissertation Research

Dear Hannah: Permission granted. All best & good luck with your research, Joachim

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Joachim Stoerber, PhD | Professor of Psychology | School of Psychology  
Keynes College, University of Kent, Canterbury, Kent CT2 7NP, United Kingdom  
Phone: +1227 824196 | Fax: +1227 827030 | E-mail: [J.Stoerber@kent.ac.uk](mailto:J.Stoerber@kent.ac.uk)  
Internet: <http://www.kent.ac.uk/psychology/people/stoerber/>

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**From:** Owens, Hannah Street [mailto:[howens@ctl.msstate.edu](mailto:howens@ctl.msstate.edu)]  
**Sent:** 17 March 2015 16:07  
**To:** Joachim Stoerber  
**Subject:** Permission to Use SDS-17 for Doctoral Dissertation Research

Greetings! My name is Hannah Owens and I am a doctoral student within the College of Education at Mississippi State University. I am writing to request your permission to utilize your instrument, The Social Desirability Scale-17 (SDS-17) as part of my doctoral research. My research involves cheating within online assessments through proctored and unproctored environments and collecting data of self-reported cheating behaviors. I would love to utilize the SDS-17 to evaluate whether respondents may answer in ways they feel are socially desirable. As suggested, I would strike from the survey the original Item 4 relative to drug-use "I have tried illegal drugs (for example, marijuana, cocaine, etc.). Other than this change, the survey would be unaltered within the context of my study.

Thank you for your time! I look forward to hearing back from you.

*Hannah Street Owens*  
Hannah Street Owens, Instructional Resource Consultant  
Center for Teaching & Learning  
<http://www.ctl.msstate.edu>  
P.O. Box 6244  
Mississippi State, MS 39762  
662-325-9219 (phone)  
662-325-6795 (fax)  
[howens@ctl.msstate.edu](mailto:howens@ctl.msstate.edu)

APPENDIX I  
PERMISSION TO SURVEY DISTANCE STUDENTS

## Owens, Hannah Street

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**From:** Taylor, Steve  
**Sent:** Wednesday, March 18, 2015 10:57 AM  
**To:** Owens, Hannah Street; Busby, Michael  
**Subject:** RE: Dissertation Study: Official Approval to Conduct Research

Good morning to you!

Yes, we will give you access to the students in the desired semesters, along with their email addresses. However, this is all contingent upon your obtaining permission of your dissertation committee and subsequent IRB approval.

Best regards,

*G. Stephen Taylor*

*G. Stephen Taylor, PhD  
Executive Director, Center for Distance Education  
301 Memorial Hall  
Mississippi State University  
Mississippi State, MS 39762*

662.325.0007

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**From:** Owens, Hannah Street  
**Sent:** Wednesday, March 18, 2015 10:55 AM  
**To:** Busby, Michael; Taylor, Steve  
**Subject:** Dissertation Study: Official Approval to Conduct Research

Good morning! Thank you both for verbally agreeing to allow me to conduct research on your distance education students. My dissertation research centers on comparing the cheating behaviors for distance students taking online assessments through various proctored conditions. For my dissertation proposals and official records, would you mind responding to this email with confirmation of your willingness to allow me to contact your distance students via email? Also, if my proposal is approved and IRB approval is obtained, would your office be willing to supply me with the email addresses of campus 5 distance students who are/were enrolled for the Fall 2014 and Spring 2015 semesters?

I appreciate your help and thank you for your willingness to aid in my doctoral research!

*Hannah Street Owens*  
Hannah Street Owens, Instructional Resource Consultant  
Center for Teaching & Learning  
<http://www.ctl.msstate.edu>  
P.O. Box 6244  
Mississippi State, MS 39762  
662-325-9219 (phone)  
662-325-6795 (fax)  
[howens@ctl.msstate.edu](mailto:howens@ctl.msstate.edu)

APPENDIX J  
RESOURCES USED TO FORM OACBS

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