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Transitioning in a Time of Crisis: Understanding the Impact Students' Prior Online Learning Experiences Have on Online Course Achievement

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**TRANSITIONING IN A TIME OF CRISIS: UNDERSTANDING
THE IMPACT STUDENTS' PRIOR ONLINE LEARNING
EXPERIENCES HAVE ON ONLINE COURSE ACHIEVEMENT**

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The School of Education

by
Clayton F Benton
B.S., Louisiana State University, 2006
M.S., Louisiana State University, 2009
December 2022

For my dad.

ACKNOWLEDGEMENTS

The acknowledgements section is meant to serve as a stage for the writer to mention the people who lifted them on their journey to completion. I contemplated whether to have acknowledgements as part of this paper because the truth is, I could never acknowledge the myriad of people that played a role. From my committee to my work family to classmates that started this journey with me, the group of people that left a mark on my quest is a list longer than this document. I love and cherish each and every one of them, and I thank them for making this a reality.

I do want to take a few sentences to acknowledge the three people that were paramount in reaching today. The first is my mother, Barbara Benton. She supported me since day one and shared in my joys just as much as she felt each of my struggles. The second is my husband, Cary Caro. He somehow managed to navigate the years of my procrastination and still stepped up to pull me across the finish line. There are few things that I am more certain of than the fact I could not have finished this without him by my side.

The third person that I must acknowledge is my father, Ronnie Benton. He may not be here for me to tell him in person, but I know that he understands the role he played in providing an underlying motivation that could not be ignored. When I thought about walking away, I always felt that extra push to try again and earn it. To steal his favorite words, “I’m gonna remember this” ... just as I will always remember him.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	iii
ABSTRACT.....	vi
CHAPTER 1. INTRODUCTION	1
Rationale	1
Theoretical Framework.....	5
Purpose of Study	5
Research Questions.....	6
Method and Design	6
Population Sample	7
Data Analysis	7
Significance of Study	8
Definition of Key Terms	8
Chapter Summary	9
CHAPTER 2. REVIEW OF THE LITERATURE	10
Introduction.....	10
Definitions in the Literature.....	12
Synchronous vs. Asynchronous	15
Community of Inquiry Framework.....	17
Prior Online Experiences	21
Student Success and Engagement.....	23
Schlossberg's Transition Theory	25
Research Questions	29
Chapter Summary	30
CHAPTER 3. METHODS	32
Introduction.....	32
Purpose of the Study	32
Research Questions	32
Quantitative Research	33
Research Design.....	34
Dependent Variables	35
Independent Variables	36
Population and Sample	37
Instrumentation	38
Data Collection	39
Data Analysis	39
Analysis of Research Questions.....	41
Institutional Review Board Approval / Ethical Considerations.....	43
Chapter Summary	43
CHAPTER 4. RESULTS	45

Introduction.....	45
Review of the Sample	45
Research Question One Results	48
Research Question Two Results	52
Research Question Three Results	61
Chapter Summary	69
 CHAPTER 5. SUMMARY AND CONCLUSIONS	 70
Introduction.....	70
Summary of Purpose and Specific Objectives.....	70
Summary of Procedures and Methodology.....	71
Summary of Major Findings	72
Implications for Policy and Future Research.....	79
Limitations of the Study.....	83
Conclusion	84
 APPENDIX. LOUISIANA STATE UNIVERSITY INSTITUTIONAL REVIEW BOARD APPLICATION FOR EXEMPTION FROM INSTITUTIONAL OVERSIGHT	 85
 REFERENCES	 87
 VITA.....	 96

ABSTRACT

This quantitative study examines the impact that selected academic and personal demographic characteristics had on the successful completion of online coursework during the Covid-19 pandemic. Focused on a high-research university in the Southeastern United States during the Fall of 2020, this research looked the potential influence that prior online learning experiences had on students' abilities to transition to the online modality during a time of crisis.

Data for this study was retrieved from institutional sources and the sample consisted of 5,739 second-year students at the institution. After describing the sample and population, exploratory regressions were conducted to establish models for explaining variance in online GPA performance and percentage of online course completion during the Fall 2020 semester. The resulting models account for 40% of the earned online GPA and 19% of the variance in online course completion percentage.

In addition to the aforementioned models, the results of this study showed significant differences in online learning performance by race, with White students significantly outperforming students of color. This held for students with and without prior online learning experiences, which were found to have little impact on the performance of students in the online modality during a time of crisis. The results of the study also showed that academic discipline, while having a negligible relationship in most cases, did negatively impact the performance of some STEM students.

This ex-post facto research highlights the fact that crisis learning differs from traditional learning in more ways than originally thought. Overall, performance during the semester studied declined, indicating the impact of added stresses during a time of crisis. The study sheds light on

opportunities for future research, including the prospect of investigating how students initially experiencing online learning during a time of crisis perform in subsequent online classes and the need to focus on how teacher preparation and course design may impact learner engagement in the online modality.

CHAPTER 1. INTRODUCTION

Rationale

Higher Education and the Pandemic

Crisis is “a difficult or dangerous situation that needs serious attention” (“Merriam-Webster,” 2022). The year 2020 started like many others, with New Year celebrations across the globe. Although things seemed normal on the surface, a global pandemic that would fundamentally change the way of life was beginning.

Within three months, countries across the world implemented strict measures to reduce contact and slow the spread of the Covid-19 coronavirus (Cohen & Tankersley, 2020; Katella, 2021). Masks became commonplace, and the concepts of quarantining and isolation were discussed broadly. Worldwide, people were asked to maintain a physical distance of six feet between each other, and creative marketing campaigns were launched to encourage appropriate hand-washing strategies. Medical-grade personal protective equipment (PPE) such as gowns, gloves, and face shields/masks were recommended for increased usage in the workplace (“Operational Safety,” 2022) and PPE production was accelerated (International Finance Corporation, 2020; Unicef, 2021). The Covid-19 pandemic had arrived.

The technology industry responded to these new physical restrictions. The meaning of the word Zoom (Zoom, 2022) took on a new life as virtual meetings and calls became a necessity, both for professional and personal communications. Tools such as FaceTime and Skype (Apple, 2022; Microsoft, 2022), once seen as fun ways to engage at a distance, became primary sources for sharing and receiving information. Within weeks, the world had shifted to a new reality that presented everyone with new challenges and opportunities.

Higher education was certainly not immune from the pandemic and was forced to quickly pivot to remote learning strategies. Initially, many institutions across the United States (U.S.) paused to consider the changing landscape and regroup before shifting coursework online to complete the Spring 2020 semester. Given the timing, many institutions had approximately a month left in the semester, and the result was a cobbled together end of term. Academic policies were revisited, and many exceptions were made to registration rules and grading strategies (UC Davis, n.d.; Sullivan, 2020). A movement to allow students the option to elect pass/fail grading in lieu of traditional letter grades spread across the country as a way to abate negative academic consequences (Burke, 2020).

Once the Fall 2020 semester began, institutions and faculty had been living in the global pandemic for approximately six months, and pedagogical strategies had been considered. Instructional design support and faculty training had been deployed and universities across the U.S. entered the semester attempting to teach in various modalities (in-person, hybrid, and fully online) (The University of North Carolina at Chapel Hill, 2020). Although most faculty had never provided online instruction before, the summer months afforded an opportunity to learn and prepare.

Many students, on the other hand, entered the fall semester with little to no prior exposure to online courses other than the finish of the Spring 2020 semester. Even though online courses had been around for decades, most online programs targeted non-traditional students and working individuals seeking added flexibility in their studies (Harasim, 2000; Simplicio, 2019). Suddenly, students that were accustomed to and seeking a traditional face-to-face learning experience were staring at a computer screen seeking to have a successful learning experience online.

Review of Online Learning

The last two decades have caused institutions of higher learning to shift instructional methods as a means of continuing their mission and purpose (Lorenzo, 2008; Ayebi-Arthur, 2017; Swartz et al., 2018). The most recent global novel coronavirus pandemic was one of, if not the first, such emergency situation in which most colleges and universities were compelled to teach courses outside of the traditional classroom. Thus, as Rapanta et al. (2020) suggest, most faculty were forced into roles of course designers and online tutors, generally without a comprehensive training program to support their initiatives. While history can trace the first online course to 1981, the immediate pivot from the classroom to an online modality was a unique feature of the pandemic.

Prior to the onset of the pandemic, Allen et al. (2016) reported that online enrollments had continued to increase in the United States. This increase in interest has caused an explosion in online courses, which can be identified as a course “in which at least 80% of the course content is delivered online” (Allen et al., 2016, p.7). This differs from a hybrid course, one in which 30% to 79% of the content is delivered online, and a web-facilitated course, which notes less than 30% of instruction as occurring online (Allen et al., 2016).

The pandemic caused a period of full online instruction, with professors relying fully upon remote delivery that could be classified as synchronous or asynchronous. The defining characteristic of synchronous online instruction is teaching which occurs at a set date/time, while online asynchronous instruction allows learners the flexibility to progress on their own schedule with and without fixed submission deadlines (Hrastinkski, 2008). Absent during the immediate response to the pandemic was teaching in the traditional classroom setting, creating a dichotomy amongst student populations between those who had experienced online education previously

and those who were experiencing online education for the first time as the result of a global crisis. The disparities between these two groups was further exacerbated by differences in access to technology (Xu & Xu, 2019).

Central to any educational modality is the concept of community, and the community of inquiry developed by Garrison (2007) and Garrison et al. (2010), whereby cognitive presence, teaching presence, and social presence frame the intrinsic value of a sense of belonging and feeling of a community. A litany of studies focus on the pedagogy of online learning and the quest to replicate the sense of community often found in a traditional classroom (Moore & Miller, 2022; Sadaf, Wu, & Martin, 2021; Garrison, 2007; Garrison, Anderson, & Archer, 1999). Online education presents new educational learning environments for learners, and their ability to reframe their mental models of learning is vital to success in the online environment. The fact that the pandemic forced many students to experience online learning for the first time, which altered students' mental models of learning, is a central framework of this study.

Hachey et al. (2014) noted that students experiencing online learning for the first time were at an increased risk of poor performance and were at a higher risk for attrition. They further noted that performance in the first online course acts as a subsequent indicator or predictor of performance in future online courses. In contrast, Rodriguez et al. (2008) reported a negative relationship between satisfaction with online learning and the number of hours completed in an online format. Some of this may be attributed to the reduced levels of participation and engagement often seen in online settings. To this end, “the leading cause of student failures in an online course of study is the inability to maintain student interest and involvement” (Simplicio, 2019, p. 173).

Considering the impact of satisfaction and engagement, prior experience in the online environment may have importance for setting an “expectations benchmark” for students. In turn, this benchmark, or expectation, may help learners to negotiate the new learning environment and construct a mental framework for their academic success.

Theoretical Framework

The global pandemic transitioned students and higher education into a new reality broken from the traditional norms of learning. Schlossberg’s Transition Theory (1981) helps to frame the intricacies of transition and can be applied to how an individual may have adapted to the pandemic and to the new realities of learning. Schlossberg noted, “it is not the transition itself that is of primary importance, but rather how that transition fits with an individual’s stage, situation, and style at the time of the transition” (p. 5). Furthermore, Schlossberg’s Transition Theory suggests that familiarity or proficiency with the changed environment allows individuals to more successfully adapt and transition through transformations (1981). Thus, there should be an expectation of difference in the successful adaption to the realities of a “pandemic world” based on the unique individual characteristics and life experiences of learners across the higher education landscape (Anderson et al., 2011; Schlossberg, 1981).

Purpose of Study

This poses the question, were some students better prepared for the transition to remote learning, and how did increased preparation impact their eventual success? Beyond prior experiences, were there other student attributes that impacted the ability for students to succeed in fully online courses during the pandemic period being examined?

The study sought to answer these questions and to glean a better understanding of how student experience in an online modality may impact the learner and future online learning success.

Research Questions

The primary purpose of this study was to determine the impact of selected academic and personal demographic characteristics on the successful completion of online coursework by students enrolled in a campus-based academic program at a high-research university in the Southeastern United States during the Fall of 2020. Specific questions to be analyzed in the study will include the following:

Research Question 1: Is there a statistically significant difference in student learning performance in online coursework for students who have previously taken online courses and those who have not?

Research Question 2: Is there a statistically significant difference in student learning performance by demographic group for students in online courses who have had prior online course experience?

Research Question 3: Is there a model that explains a significant portion of the variance in student learning performance among students enrolled in online coursework for the first time and those that have previously enrolled in online coursework at the institution?

Method and Design

The researcher conducted a quasi-experimental study whereby prior collected data from the spring and fall 2020 semesters are analyzed for differences. The ex-post facto design, which is utilized due to the lack of interference from the researcher (Salkind, 2010), allowed for the population samples to be compared for differences in performance along the identified

demographic and academic characteristics. Furthermore, the lack of treatment by the researcher made the quasi-experimental design appropriate, as the pandemic and resulting online instruction acts as the treatment, which was experienced by all.

Population Sample

The sample for this study was defined as all students beginning their second year of studies and taking at least one online class while enrolled in a campus-based academic program during the Fall 2020 semester at a high-research university in the Southeastern United States. This sample was taken from the complete undergraduate population of the institution. While all individuals were accessible to the researcher, second year students at the institution were targeted in an effort to abate impacts standard first year experiences have on retention and completion rates. Retention rates are impacted by a myriad of factors (Millea et al, 2018; Morrow and Ackermann, 2012; Pascarella and Terenzini, 2005; Tinto, 2006; Webber and Ehrenberg, 2010). With these considerations in mind, the researcher sought to better isolate the academic and demographic characteristics of the study by limiting the population to second year students.

Data Analysis

After describing the population, the researcher conducted a dependent sample, or paired sample, t-test to determine if differences exist between students with prior online learning experiences and those without. The researcher then analyzed the groups based on a series of academic and demographic variables using a series of correlation coefficients. Finally, in an effort to develop a model to explain any variance present, the researcher conducted an exploratory regression using the GPA in the study semester (Fall 2020) as the dependent variable and a second model utilizing online course completion percentage as the dependent variable.

Significance of Study

This study sought to bring a greater understanding as to how prior learning experiences and exposures to different learning modalities may position students for success in online courses during a time of crisis. Furthermore, as online coursework continues to promulgate through the education landscape, this study can bring clarity for policy makers seeking to support learning objectives and key education outcomes.

Research focused on online education, while maturing, has been primarily concentrated less on traditional students and more on the non-traditional target market of founding online programs and pedagogical strategies. There is a dearth of research focused on traditional students taking online courses as part of traditional campus-based programs. Given the differences that exist in the two populations, this study sought to draw attention to and start a conversation about how institutions can better identify risks to their success and support campus-based students in the online modality. This is especially important for future periods of crisis learning.

Definition of Key Terms

Asynchronous Instruction. teaching that occurs without a set date or time; a teaching modality where students experience flexibility around the schedule of interaction with the course materials

Enrolled Student. an individual that has scheduled and completed registration for at least one academic course; enrolled students earn a grade in the course and receive a record of their enrollment even if they fail to complete the term

Online Course. a structured course that is delivered remotely, with at least 75% of the instruction being delivered via the web.

Previous Online Course. a prior enrollment in an online course at the institution of focus for this study, which resulted in a transcribed value (including unsatisfactory attempts, which can be logged as failures or withdrawals)

Student Learning Performance. a measure of understanding and knowledge of course material that is based on the learner's grade in the course and subsequent grade point average for the term, as well as the learner's percentage of course completion

Synchronous Instruction. teaching that occurs at a set date and time; a teaching modality whereby the student is expected to participate on a specific schedule both with the materials and instructor

Chapter Summary

This chapter introduced the rationale for and purpose of the study, along with an introduction of the research questions to be addressed. A brief review of the methods employed for the study, including the research design, population sample, and data analysis techniques, was also presented. The chapter concluded with an overview of the significance of the study and a listing of terms relevant to research focused on online education and this study.

CHAPTER 2. REVIEW OF THE LITERATURE

Introduction

The Covid-19 pandemic changed lives across the world. Regardless of whether one was medically impacted by the virus or one's life was simply turned upside-down by social and physical distancing mandates (Meleo-Erwin et al., 2021), everyone felt the effects of the virus in their daily lives. Higher education was not exempt from these impacts, as institutions around the world were forced to shut down their physical operations seemingly overnight. Regulations governing each state's reaction to the virus seemingly changed daily and varied widely from state to state (Meleo-Erwin et al., 2021). For colleges and universities, the quick transition online in Spring 2020 was quickly followed by the daunting task of pivoting the classroom for Fall 2020. The Chronicle of Higher Education surveyed 3,000 universities across the United States and found that only 4% of surveyed institutions offered fully in-person coursework during the Fall 2020 semester (Elias et al., 2020).

The 2020 migration to online coursework was unique in that it was a global trend. According to the National Center for Education Statistics (2022), Fall 2020 enrollment saw over 70% of students enrolled in some online coursework in the United States (U.S.) alone. As expected, this was a drastic shift from the 37.2% of students that enrolled in some online education from the prior year. Moreover, 40% of students were exclusively in online settings by 2020, more than doubling the 17.6% of students that were exclusively online the prior fall. To further highlight this shift, consider that in the Fall of 2019, only four states, Arizona, New Hampshire, Utah, and West Virginia, had exclusively online enrollment that exceeded 40% of their higher education population. In Fall 2020, there were 22 states that had over 40% of their students enrolled exclusively in online courses, with 12 of those states having the majority of

their students in online-only education (National Center, 2022). The shift was significant and abrupt, with many faculty and students finding themselves thrown into uncharted waters with limited access to computer equipment (Wahab & Iskandar, 2020) and internet access (Nashruddin et al., 2020). Furthermore, teacher preparation was lacking as many struggled to adapt to the technical environment becoming paramount to their instruction (Efriana, 2021).

While the physical doors to institutions could be closed quickly, the transformation to a virtual learning environment could not be made as swiftly (Adan & Anwar, 2020). “The unexpected change to online learning became a measure of organizational agility” (Wu, 2020), and while institutions struggled to bring coursework online, many students were left facing a new frontier of remote education with little or no experience learning remotely.

The concept of changing delivery modalities to deliver education remotely was not a novel response to unforeseen events. In the past two decades alone, both natural disasters and social uprisings have caused institutions to shift instructional methods as a means of maintaining continuity in their teaching (Ayebi-Arthur, 2017; Lorenzo, 2008; Swartz et al., 2018). Shifting to online learning in response to outside pressures such as a pandemic or natural disaster, as opposed to shifting for educational purposes, could more accurately be termed crisis learning (Pace et al., 2020); after all, faculty were thrust into new roles as course designers and online tutors virtually overnight and without proper training or tutelage (Rapanta et al., 2020). As noted by Fabriz et al. (2021) a consequence of emergency remote teaching was that “teachers had difficulties tapping the full potential of asynchronous teaching and learning arrangements” (p. 11) potentially limiting the satisfaction, engagement, and success of students participating in an asynchronous course during the Spring 2020 term.

This study seeks to better understand the potential impacts that one's prior experiences taking online coursework may have had on their transition to, and eventual success in, online coursework that was required as a result of universities worldwide being forced to shift learning from the brick-and-mortar classroom to a digital learning space. While the literature on the topic is evolving, the relative youth and lack of congruence with regards to online education approaches has created a grey area in which many practitioners have not adequately quantified their results. This chapter seeks to bring clarity to the existing literature by first defining the online learning landscape and exploring the various forms of online pedagogy in current practice. This exploration of the basics provides a foundation for this study by ensuring a common understanding of the ways each online teaching strategy impacts learning and the educational experiences of today's students. Next, the literature review provides a review of existing studies on student success, namely how the success of online students is impacted by prior experiences and engagement in virtual classrooms. The chapter continues with a theoretical framework for the study: Schlossberg's Model for Analyzing Human Adaption to Transition (1981). Given the tenuous transitions experienced by college students, this enduring model helps to provide a sound theoretical framework for the research questions addressed in this study, which are listed at the culmination of the chapter.

Definitions in the Literature

Online learning would not be possible without the internet and the rapid technological evolution witnessed over the last three decades. However, the origins of the modality can be traced back to the first completely online course, which was taught in 1981. The first online course was non-credit, and the facilitators quickly learned that typical lectures would not hold their audience and immediately sought to develop student-centric activities to cultivate

engagement (Harasim, 2000). Over time, both the delivery of online coursework and the pedagogical strategies employed by online instructors have continued to evolve. Online classes now employ a myriad of teaching strategies beyond the simple posting of materials. Group learning (Glyn & Thorpe, 2019), gamification (Antonaci et al., 2019), and real-time feedback through collaboration and chat (Zha & He, 2021) are examples of the pedagogical evolution of online learning, with each seeking to promote the interactivity and engagement of online learners.

Online enrollments have continued to increase despite the overall negative trajectory of enrollments across the higher education landscape (Allen et al., 2016). This is due in part to changes in funding models at the state and federal level and to the increased flexibility online coursework provides non-traditional students that may have work and personal commitments that abate their ability to enroll in traditional programs (Xu & Xu, 2019).

Reviewing the landscape of remote learning can be difficult due to the relative recent emergence of the discipline and the lack of consistency around common language. As stated by Dziuban et al. (2015), “it would be an understatement to say that there is some confusion related to a definition of online learning” (p. 5). A clear distinction is made between *online learning*, which refers to learning that takes place over the internet, and *distance learning*, which has its roots in instructional materials ranging from CDs and cassettes to paper instructional manuals (Dziuban et al., 2015), and communication tools ranging from the postal services to television and radio (Palvia et al., 2018).

Allen and Seaman’s definition of an online course is both widely accepted and has been consistently cited for the purpose of research throughout its thirteen-year existence (Lakhal & Belisle, 2020; Efriana, 2021). Given the need for an industry standard to serve as a clear

explanation of criteria, Allen et al. (2016) sought to differentiate delivery modalities without overcomplicating an already nuanced naming convention. In the simplest of terms, online courses are “defined as one in which at least 80% of the course content is delivered online” (Allen et al., 2016, p.7). This definition differs from blended or hybrid courses in which 30-79% of the course content is delivered online (usually with reduced in-person meetings), and web-facilitated courses that have some, but often less than 30% of the instruction online (Allen et al., 2016).

While these definitions of course types are helpful to frame one’s understanding of the literature and research, they are admittedly difficult to quantify in a real-world setting. Furthermore, they seem restrictive and inflexible (Dziuban et al., 2015) and do not take in to account how technology is being utilized or the types of course content that are delivered online. They also do not provide a codification for pedagogical or curricular approaches used by the instructor.

Beyond a course’s mere classification as being online, blended/hybrid, or web-facilitated, it is equally as important to understand how students attend the actual class. Instruction in the course can occur synchronously or asynchronously, with the two pedagogical strategies sharing one key difference: Synchronous instruction occurs at a set time. During this set time learners participate in a live course. Conversely, asynchronous instruction occurs via pre-packaged materials which the learner consumes on their own schedule (Hrastinski, 2008). The two approaches are not completely void of overlap, as individual assignments (e.g., discussion boards that are asynchronous, course presentations that are conducted synchronously) may fall in to either category regardless of how the class is structured.

Synchronous vs Asynchronous

Fabriz et al. (2021) noted that “synchronous environments allow for teaching methods such as group work or video discussions, which inherently support social interaction of students as well as student-teacher interaction.” (p. 10) Furthermore, Fabriz et al. (2021) expounded on this notion by highlighting that asynchronous environments were more conducive to faculty-led facilitation of student engagement with the learning materials in contrast to student-teacher interactions that were paramount in synchronous learning environments. In each setting, however, the concept of feedback can be realized in similar forms, including peer, teacher to student, and student to teacher formats (Fabriz et al., 2021).

The chosen delivery model may have an impact on the student experience and satisfaction in the course, but research indicated that student performance is not impacted by synchronous or asynchronous delivery as much as it is impacted by student attendance in the course (Nieuwoudt, 2020). Whether watching live or participating by observing recorded lectures, Nieuwoudt (2020) established significant differences in student outcomes for learners that “attended” virtual classes vs. those that did not.

Nieuwoudt’s (2020) study specifically examined 164 students that enrolled in an online student success program. Nieuwoudt (2020) sought to examine the impact of class engagement and participation on final grades earned. Nieuwoudt used the dependent variables of hours spent on the learning management system (LMS), synchronous class attendance, recorded lectures viewed, discussion board interactions, and the number of times the Study Guide was accessed. The results of Nieuwoudt’s (2020) study indicated a significant, positive relationship between student outcomes as measured by their final grades and the amount of time in which the student engaged with the LMS of the course.

Nguyen et al. (2021) conducted a survey of 4,789 undergraduate students across 95 countries to assess and understand student experiences and perspectives of remote instruction. The study was conducted during Spring 2020 and followed the transition to remote learning as the result of the Covid-19 pandemic. Nguyen et al. (2021) reported that synchronous courses led to higher levels of motivation, engagement, and participation across all respondents and were therefore the preferred method of online instruction. Furthermore, Nguyen et al. (2021) found that respondents preferred varied teaching methods beyond lectures/presentations and the greater the variety of activities within the synchronous environment, the higher the respondent's level of satisfaction with the course.

In general, asynchronous classes provided added flexibility to the learner (and instructor) given the lack of scheduled interactions. Fabriz et al. (2021) surveyed 3,056 students and also found that students who experienced asynchronous learning environments reported higher levels of self-driven/autonomous learning. Therefore, it is no surprise that most online classes currently taught follow an asynchronous model (Lowenthal et al., 2017); however, a blended model that provides for synchronous activities and live meeting sessions that supplement asynchronous teaching and balance between engagement and flexibility may also benefit learners and faculty (Lowenthal et al., 2017; Kebritchi et al., 2017). Nguyen et al. (2021) supported this approach by concluding in their research that student levels of satisfaction increased in asynchronous courses when faculty utilized a variation of learning activities to boost interaction.

Lowenthal et al. (2017) conducted surveys and interviews with a small group of graduate students enrolled in a fully online educational technology program at a metropolitan research university in the U.S. Their questioning focused on student perceptions of live meeting sessions and how these virtual interactions enhanced predominately asynchronous course instruction.

Feedback was used to redesign the structure of the live sessions over a two-year period, which resulted in exponential increases in attendance and student satisfaction. Paramount, based on student feedback, was the opportunity live meeting sessions provided for direct teacher interaction and engagement (Lowenthal et al., 2017).

Draves (2013) suggested a set of reasons as to why online learning is both preferred and superior to traditional face-to-face delivery. His rationale, as outlined in the fourth edition of his influential book, *Teaching Online*, is centered around flexibility. His top ten list of reasons included the ability for the learner to control the speed of their studies, increased interactions with faculty and peers, a diverse set of classmates and teachers, and the opportunity to form a virtual community (Draves, 2013).

Community of Inquiry Framework

Fundamental discussions regarding the efficacy of each online learning modality are focused on the concept of community, and more specifically, the community of inquiry framework developed by Garrison et al. (2010) as an evolution of John Dewey's early works. The community of inquiry framework follows the findings of previous higher education research in suggesting the intrinsic value of a sense of belonging and feeling of community (O'Keefe, 2013; Chickering & Reisser, 1993; Tinto, 1987) through the identification of three presences – Cognitive Presence, Teaching Presence, and Social Presence. This framework has been utilized in research seeking to identify the advantages and disadvantages of each instructional strategy and in helping to enhance online pedagogy.

In their own words, Garrison et al. (2010) hearken back to the seminal works of John Dewey as the foundation for their community of inquiry framework and the elements of cognitive, social, and teaching presence. While the sum of each presence is the educational

experience, understanding the definition of each presence helps one to cultivate a more complete understanding of the learning environment. Furthermore, each presence is codependent on the other two in order to reach the optimal state or experience online (Garrison, 2010).

Cognitive presence, as the name suggests, is centered on the comprehension of new ideas. Garrison (2007) defined this presence “as the exploration, construction, resolution, and confirmation of understanding through collaboration and reflection” (p. 65); the group further defined cognitive presence through the four phases of practical inquiry: triggering (gaining awareness), exploration (seeking out information), integration (placing in context and deriving meaning), and resolution (establishing an understanding). Multiple studies have highlighted the difficulty experienced in moving learners through the events of integration and resolution, suggesting that teaching presence has a significant impact on cognitive presence (Moore & Miller, 2022; Sadaf, Wu, & Martin, 2021; Garrison, 2007; Garrison, Anderson, & Archer, 1999).

Social presence is expressed as “the ability to project one’s self and establish personal and purposeful relationships” (Garrison, 2007, p. 63). In the simplest of terms, social presence is the human side of online learning; it is making oneself “real” to the learner on the other side of the screen. It was suggested that social presence has a direct impact on cognitive presence through the promotion of critical thinking in a community of learners (Garrison, Anderson, & Archer, 1999) and the overall educational experience by increasing learner engagement and performance.

As part of their research, Fabriz et al. (2021) surveyed 3,056 students at a large university in Germany to understand students’ satisfaction and overall achievement in online courses during the Covid-19 pandemic. A principal outcome of the study was that “students in synchronous settings reported a more positive learning experience as well as greater support of their basic

psychological needs” (Fabriz et al., 2021, p. 10). The researchers noted that the “social aspects of teaching and learning” (p.10) tended to be more prevalent in a synchronous learning environment, which provided for a greater opportunity to learn through social interactions such as student-teacher discussions, peer-to-peer discussions, and group work.

And, finally, teaching presence is centered on the development or design of the educational experience and the facilitation of the learning (Garrison, 2007).

Asynchronous and synchronous learning, on their own, each provide noticeable differences over their counterpart. It has been argued that asynchronous courses help to promote a sense of teaching and cognitive presence, characteristics of courses tied to perceptions of engagement (Oztok et al. 2013). Drawing on prior research by Tagg (1994) in which students openly commit to leadership roles in discussions, Heckman & Annabi (2005) suggested that asynchronous courses allow for the teaching responsibility to be shared amongst students through the student-led moderation of weekly message boards. This engagement increases the sense of teaching presence in the absence of live face-to-face instruction and can serve to improve student satisfaction. Furthermore, research indicates that peer-led facilitation of discussions may actually be more supportive of critical thinking than instructor-led facilitations (Oh et al., 2018), compounding the importance of teaching presence while also reinforcing that teaching is not a top-down strategy.

Oh et al. (2018) conducted their research as part of an online course for Master’s degree students at a university in the Midwestern region of the United States. The study was conducted over a multiweek period during which participants were asked to take a stance regarding a critical thinking scenario. Several weeks later, the instructor introduced an additional way to think about the scenario to one cohort while a student introduced the same approach in the

second cohort. Oh et al. found that the student-introduced approach, while the same as the instructor's, led to increased levels of critical-thinking discussions.

The publications of Garrison (2007) seem to cast doubt on this assertion that learning may be magnified in asynchronous environments by highlighting the difficulty learners have in reaching the stage of resolution (understanding) in the overall process of inquiry. Citing the works of Celentin (2007), Meyer (2003), and Meyer (2004), Garrison (2007) explains that active and deliberate teaching is paramount to the learning process. Research shows that activities and questions that promote the highest levels of learning are designed in a way that promotes collaboration and active discussion rather than siloed activities in which learners fail to participate in a learning community (Garrison, 2007).

Put simply, “progression requires direction” (Garrison, 2007, p. 66). Many asynchronous classes utilize discussion boards for ongoing conversation on various topics, but without well-trained and deliberate facilitation, the ability of learners to process the material in a way that promotes critical thinking is abated. “The consensus is that teaching presence is a significant determinate of student satisfaction, perceived learning, and sense of community.” (Garrison, 2007, p. 67). These three outcomes are the defining characteristics of a valuable constructive online learning experience, which can directly impact learning and student success.

Utilizing the Community of Inquiry framework originated by Garrison et al. (1999), Ma's research has confirmed the central role that teaching plays in achieving desired learning and satisfaction outcomes (Ma, Han, Yang, & Cheng, 2015). Ma et al. (2015) analyzed the behaviors and activities of students in an online course environment through a systematic review of data obtained directly from the courses' learning management systems. They established a clear link between the instructor's preparation, structured activities, and consistent

involvement/assistance with students in the course and the culmination of desired outcomes. The structuring of tasks and instructor feedback directly impacted levels of student engagement and learning (Ma, Han, Yang, & Cheng, 2015), further supporting the importance of teaching presence in the online environment.

Given the research highlighting the importance of a consistent and deliberate teaching presence, asynchronously taught courses can face criticism due to the added flexibility of their structure. However, the Community of Inquiry framework provides a blueprint for ensuring that knowledge is transferred to the learner. Deliberate instructional design and active course facilitation can promote consistent engagement on the part of the learner (Ma, Han, Yang, & Cheng, 2015; Shea, Li, & Pickett, 2006). While these strategies can promote a healthy learning environment, learning, especially in an asynchronous environment, still requires additional self-discipline and interest in the material on the part of the learner.

Prior Online Experiences

The old adage that “practice makes perfect” seems to be predicated on the notion that exposure and experiences in a space or with a task makes it more likely that you will be more successful. But is this the case with online learning? Studies by Hachey et al. (2014) built upon research that pointed to learners experiencing online coursework for the first time as being at a higher risk for attrition and/or poor performance. Furthermore, their research has indicated that the level of success that a student sustains in their first online experience is an indicator of subsequent online success and serves as a way for institutions to target students for supplementary support programs (Hachey et al., 2014).

The research of Hachey et al. (2014) considered 962 students enrolled in an online STEM course (science, technology, engineering, and math disciplines) at an institution with a majority

minority enrollment. The study took in to account a number of independent demographic variables and also classified students as having no prior online experience, successful prior online experience, mixed success in prior online courses, or an unsuccessful prior online experience. The resulting figures showed that students with unsuccessful prior online attempts had the lowest rates of subsequent success, even lagging statistically significantly behind their counterparts who had no prior online experience.

Simplicio's (2019) research suggests five strategies for promoting student success in an online environment. His research leads off with the concept of readiness. Factors such as academic background and familiarity with the technology utilized in online coursework are identified as fundamental predictors of student success. Coupled with additional engagement strategies that promote interactions between students and with faculty, Simplicio recommends an approach to online coursework that creates a system of support, which is predicated on readiness by all parties.

Other research has indicated conflicting levels of success for students with prior online experiences. Rodriguez et al. (2008) showed that prior experiences online actually led to a reduced level of satisfaction, which they suggested may be linked to a reduction in future success online. Rodriguez et al. conducted an online survey at a Research-I University in the Midwestern region of the United States and classified respondents into three categories: students with prior online experience; students with hybrid learning experience; and students with no online-related experience. Their findings showed a negative relationship between the number of courses taken by those with prior online experience and their level of satisfaction with online learning. Similarly, approximately half of the hybrid cohort of their study indicated that the online components of their hybrid courses were "less than helpful". Interestingly, their research also

indicated that learner comfort levels with technology did not increase with prior experience. This seems counterintuitive in that familiarity with platforms would likely increase one's ability to navigate the experience, but the findings of Rodriguez et al. cast doubt on this basic assumption.

Student Success and Engagement

“Learners in the twenty-first century have been web consumers for much of their lives and are now demanding online instruction that supports participation and interaction. They want learning experiences that are social and that will connect them with their peers.” (West & West as cited in Conrad & Donaldson, 2011, p. 1)

So, what makes an online student successful? Some researchers argue that a learner's success is predicated on engagement and their ability to self-direct and self-motivate their studies (Sumner, 2018). This suggestion is supported by the fact that “the leading cause of student failures in an online course of study is the inability to maintain student interest and involvement” (Simplicio, 2019, p. 173). In order to understand how engagement may factor into student success, it is helpful to first consider how engagement can be defined.

Much like delivery methods and instruction modality, student engagement can be defined differently depending on the context. Khlaif et al. (2021) provides a rundown of definitions ranging from Bond's (2020) description of engagement as an observable energy and effort by an individual within their learning community to Wong and Chong's (2018) view of engagement as a more holistic summation of the learning, participation, communication, involvement, and feelings of support. Martin and Bolliger (2018) expounded upon traditional definitions and introduced types of engagement as being between learners, between the learner and the course material, and between the learner and instructor.

In concert, definitions of student engagement and types of student engagement paint a matrix of scenarios where learners are flowing in and out situations that challenge their ability to be engaged based on a series of factors such as support, personal feelings, and course content. Khlaif et al. (2021) surmised that student engagement in online learning environments can be viewed as “attending online sessions, communicating with peers and the instructor, participating in the online class activities, being a knowledge producer, and the efforts that students make in their learning environment” (Khlaif et al., 2021, p. 7036). Reviewing this list of factors, one could reasonably theorize that ability and interest in the material have a profound influence on one’s decision to engage.

Much research has focused on the impacts of student engagement. Overwhelmingly, the literature has coalesced around the assertion that engagement plays a critical role in achievement and persistence (Khlaif et al., 2021; Simplicio, 2019). Specifically, “researchers have noted that self-regulated learning is essential to being successful in online courses” (Schwam et al., 2021, p. 133).

Engagement in online courses is paramount given the need for the learner to be self-driven and dedicated in remote environments. Prior research has identified online learners as less likely than their face-to-face counterparts to complete courses with a passing grade and more at risk for failing to persist towards degree completion (Lee & Combes, 2020). Retention rates for online students have historically lagged behind the retention rate of their in-person counterparts, with 10-20% more online students failing to complete online degree programs (Bawa, 2016). Even more alarming, with regards to individual courses, Smith (2010) found that between 40% and 80% of online students dropped classes. The sum of these behaviors is that more and more

students are not only dropping online classes, but they are also leaving entire online degree programs (Simplicio, 2019).

The demographic makeup of student bodies is changing. The term non-traditional student is being blurred and institutions are finding it more and more difficult to serve constituents with disparate backgrounds and needs. Understanding ways to support student success, which is driven by engagement, will be paramount for institutions (and learners) for years to come.

Schlossberg's Transition Theory

History and Formulation of Transition Theory

Schlossberg (1981) introduced Schlossberg's Model for Analyzing Human Adaptation to Transition in her seminal article, of the same name, which was initially published in a 1981 edition of *The Counseling Psychologist*. Seeking to better understand how adults navigate the unavoidable transitions of life, she introduced the model to investigate how different people can react so differently from each other, and even themselves, at various points in their lives (Schlossberg, 1981). Schlossberg (1981) refused to categorize these points in time as events; rather, her model defines them as transitions that are byproducts of changes in relationships, routines, assumptions, and roles.

The formulation of Schlossberg's model was the result of an appraisal of several theorists that preceded her. Notably, Schlossberg (1981) referred to the different approaches of these theorists by suggesting a continuum in which each approached "transitions and adaptive behavior by individual idiosyncrasy, life stage, or chronological age" (p. 3). On each end of the spectrum were viewpoints established in influential publications by Levinson et al. (1977) and Neugarten (1979). Levinson et al. (1977) viewed transitions as being tied closely with one's age; furthermore, Levinson et al. (1978) concluded that there was "relatively low variability in the age

at which every period begins and ends” (p. 318) signaling that age, and not experience, was the driving force behind how one transitions. In contrast, Neugarten’s (1979) work is positioned on the opposite end of Schlossberg’s continuum in that Neugarten stresses variability and is opposed to simply accepting age as being the basis from which approaches to transition are born.

While Levinson et al. (1977, 1978) and Neugarten (1979) have viewpoints that are contradictory in foundation, Lowenthal et al. (1975) established the notion of life stages, a perspective that is grounded in the idea that the differences in sex, perceived stresses, and resources interact to frame one’s stage in life, regardless of age. As Abeles & Riley (1976) expounded, “it is necessary to place [the stage of the individual] within the context of the preceding and following developmental changes and stabilities and within its historical context” (p.3). In short, the fact that an individual is 20 years old, or 50 years old, means little in understanding how they will handle a situation without first understanding how additional variables like age, sex, upbringing, family structure, socioeconomic status, past experiences, etc. interact to form the basis for their approach.

In utilizing existing research, Schlossberg (1981) built her model on the simple belief that “it is not the transition itself that is of primary importance, but rather how that transition fits with an individual’s stage, situation, and style at the time of the transition” (p. 5). Schlossberg continues with a suggestion that it is essential one understand how three fundamental sets of factors interact to provide context for one’s transitions in life. Those factors include the characteristics of the transition in question, the pre- and post-transition environment, and the individuals themselves (Schlossberg, 1981).

In updated works, Chickering and Schlossberg (1995) sought to further explain factors that influenced one’s ability to navigate a transition by introducing the concept of “moving in”,

“moving through”, and “moving out” of transitions. As Anderson et al. (2011) elaborated, “a transition is a process over time that includes phases of assimilation and continuous appraisal as people move in, through, and out of it” (p. 59). The key to understanding adaptation to change is to discover how the situation, self, support structures, and strategies interact to provide a coping framework (Chickering & Schlossberg, 1995).

When discussing Schlossberg’s model, it is critical that one use a shared language to describe transition and adaptation. Transition includes those changes that are visible and those that go unseen, including modifications in one’s goals. It’s these non-events and occurrences that never happen that can be more difficult to understand, but that have just as profound of an impact on one’s transitions in life (Schlossberg, 2011). Of equal importance is the notion that many transitions can have multiple consequences and that these consequences can be positive and negative for the same individual (Schlossberg, 1981).

Adaption, as defined by Schlossberg (1981), “is a process during which an individual moves from being totally preoccupied with the transition to integrating the transition into his or her life” (p. 7). In other words, as the change becomes more accepted, the individual learns to maneuver in a new normal, and the impacts of the change become second nature. Schlossberg (1981) suggests that in order to more seamlessly adapt, one’s resources (perceived or actual) must outweigh their deficits. Born out of the works of Lowenthal et al. (1975), the resource versus deficit ratio seeks to explain how two individuals can adapt differently to the same situation by suggesting that different starting points and varying levels of support can greatly impact pace and success that otherwise similar individuals have in adapting to a change. Goodman et al. (2006) further expounded on the model by introducing the concept of the 4 S’s, situation, self, support, and strategies, to classify assets and liabilities that influence the resource

ratio. As the categories suggest, the 4 S's exist to classify factors regarding the type of, and necessity for, the change, personal and demographic characteristics of the individual, the organization of encouragement that may or may not be present, and the individual's approach to process or mentally cope with the change.

An additional impact on one's proficiency in adapting to a transition is whether or not he or she is familiar with the changed environment. That is to say that the individual has some understanding of what to expect in the post-transition environment or that their understanding of the pre-transition environment is such that they can more keenly navigate the change. Utilizing Parkes (1971) work suggesting that assumptions and biases are established through our "known world", Schlossberg (1981) based her model on the key view that successful adaptation is heavily influenced by "the degree of difference between the pre-transition and the post-transition environment insofar as that difference affects the individual's assumptions about self and the world" (p. 8).

Transition Theory and the World Today

Covid-19, and the pandemic ignited by its proliferation across the globe, thrust countless individuals into an environment in which they had little to no prior experience. Working from home became the norm. Wearing masks in public spaces became commonplace. Attempting to learn via online instruction became a necessity. Luckily, online learning has been around and evolving since the 1990's, and many faculty and learners alike entered the pandemic with unique skillsets and experiences that helped ease their transition to the new (temporary) normal.

Anderson et al. (2011) surmised that "the more the transition alters the individual's life, the more coping resources it requires and the longer it will take for assimilation or adaption" (p. 46). Therefore, given that prior exposure suggests some form of adjustment has previously

occurred, one could posit that prior enrollment in an online learning environment should aid in the transition and reduce the need for additional resources to successfully transition. As such, this study seeks to explore how prior online learning experiences impacted student learning performance and how effective those prior experiences/enrollments are in lessening the magnitude of a student's transition to fully online coursework by exposing him or her to aspects of online learning at an earlier stage in life.

Furthermore, given Schlossberg's interest in differences amongst the sexes with regards to coping strategies, it is prudent to also explore how gender interacts with outcomes. "Men are taught to hide emotion and deny problems whereas women are given greater freedom to express their feelings, men present a more favorable picture with respect to mental health. Despite appearances, however, women's greater capacity for intimacy and mutuality may make it easier for them to adapt to certain transitions" (Schlossberg, 1981, p.13). "The effects of the individual's racial/ethnic background on his or her ability to adapt are probably mediated through other factors such as value orientation and cultural norms ... one's racial/ethnic background may be an isolating factor, making adaption more difficult" (Schlossberg, 1981, p.14). In other words, some people may be inherently better prepared to cope with transitions in life based on upbringing and family.

Research Questions

In establishing the research questions, the researcher seeks to answer questions around student success in online coursework during times of crisis while utilizing Schlossberg's Transition Theory (1981). Specifically, the researcher seeks to better understand how prior participation in online coursework at an institution may impact academic preparedness, as measured by academic performance, of various student groups in online learning. Additionally,

the researcher seeks to understand if statistically significant differences in performance exist based on selected personal and academic characteristics.

Research Question 1: Is there a statistically significant difference in student learning performance in online coursework for students who have previously taken online courses and those who have not?

Research Question 2: Is there a statistically significant difference in student learning performance by demographic group for students in online courses who have had prior online course experience?

Research Question 3: Is there a model that explains a significant portion of the variance in student learning performance among students enrolled in online coursework for the first time and those that have previously enrolled in online coursework at the institution?

Chapter Summary

The global pandemic caused a shift in higher education, compelling the move from traditional classroom environments to online learning. Understanding the importance of community, research has focused on the pedagogy of online learning, seeking to duplicate the sense of community often found in traditional classrooms. Research has extolled the value of both online synchronous and online asynchronous environments, with no definitive answer on which modality is best. What cannot be argued, however, is the role that online learning plays in higher education, and the impact it has on satisfaction, retention, and academic progress. This was especially true at the height of the global pandemic as students were forced to learn away from their campus.

The shift to online learning created two dichotomous groups of learners, those with and those without previous online learning experience. In short, there were students who had

consciously transitioned into online learning previously and those for whom the pandemic caused their first entry into the educational space. The impact of this experience on the successful completion of online courses as a result of the global pandemic was the focus of this research.

This chapter reviewed the literature around various online teaching modalities and introduced the reader to Garrison's Community of Inquiry Framework and Schlossberg's Transition Theory. The chapter also explored research on prior learning experiences and the impact online education can have on student satisfaction and success. The chapter culminated with the series of research questions to be addressed in this study.

CHAPTER 3. METHODS

Introduction

This chapter provides an overview of the methods and research design used in examining the research questions. The chapter includes a discussion on quantitative research, the quasi-experimental research design, and a listing of dependent and independent variables. Further, the population and instrumentation are explained before detailing the data collection and analysis methods of the study. The chapter concludes with a brief summary.

Purpose of the Study

The primary purpose of this study was to determine the impact of selected academic and personal demographic characteristics on the successful completion of online coursework by students enrolled in a campus-based academic program at one high research university in the Southeastern United States during the Fall of 2020. Beyond course completion, this study sought to explain a portion of the variance in GPA amongst the same population.

Research Questions

To inform this study, the following objectives were assembled with the intent to better understand the impact of selected academic and personal demographic characteristics on student success in online coursework during a time of public crisis:

Research Question 1: Is there a statistically significant difference in student learning performance in online coursework for students who have previously taken online courses and those who have not?

Research Question 2: Is there a statistically significant difference in student learning performance by demographic group for students in online courses who have had prior online course experience?

Research Question 3: Is there a model that explains a significant portion of the variance in student learning performance among students enrolled in online coursework for the first time and those that have previously enrolled in online coursework at the institution?

Quantitative Research

Creswell (1994) defined quantitative research as “explaining phenomena by collecting numerical data that are analyzed using mathematically based methods (in particular statistics)”. This study sought to utilize a quantitative design to empirically explain the phenomena of crisis learning and its impact on learners from varying backgrounds. The goal of this study was to determine if statistical differences in student success, as measured by online course completion percentage and GPA, exist in a population of students forced into an online learning environment as the result of the Covid-19 pandemic. Furthermore, this study sought to utilize statistics to develop a model that helps predict student success and preparation based on a series of demographic and academic variables.

McCusker and Gunaydin (2014) explained that quantitative measures seek to answer questions such as “how many” or “how much”, and that quantitative studies can be utilized to “construct models in an attempt to explain what is observed” (p. 2). As McCusker and Gunaydin (2014) further note, a hallmark of quantitative research design is the notion that the researcher enters the study with an expectation that a question will be answered and not necessarily what that answer will be. There is a general assumption that quantitative research is more precise and laser focused on specific outcomes, whereas qualitative research outcomes can be seen as highly subjective and influenced by the researcher and pool of subjects (Sukamolson, 2007).

Sukamolson (2007) noted that quantitative research is ideal when a researcher seeks a numerical answer, seeks to segment audiences, and seeks to better understand the impact of a phenomena to make predictions.

Research Design

The goal of this study was to determine the impact prior online experiences had on the success of students forced online as the result of the Covid-19 pandemic. To accomplish this, an ex-post facto design was used whereby the researcher collected data from the spring and fall semesters of 2020 and compared them to test for differences. Salkind (2010) stated that an “ex post facto study, or after-the-fact research, is a category of research design in which the investigation starts after the fact has occurred without interference from the researcher”. As such, an ex-post facto design was required, as the event being studied occurred prior to this study being initiated.

The research design was quasi-experimental, as participants were classified into groups based on preidentified characteristics and not random assignment. White and Sabarwal (2014) explain the importance of comparison groups in quasi-experimental designs, which they related to treatment groups in experimental designs. Quasi-experimental designs are most appropriate when no treatment is occurring during the study because the change or impact has been experienced by all; as a result, subjects are grouped retroactively based on a characteristic that the researcher hopes to better understand. Further, as noted by Campbell and Riecken (1968), quasi-experimental design is appropriate for unplanned conditions and events, which suits research focused on impacts of the global pandemic.

Dependent Variables

The dependent variables of this study were the online course completion percentage and grade point averages (GPAs) of the measured sample. Collectively, these variables are referred to the level of success in online courses achieved by each student, or the student's learning performance. Per Pascarelli and Terenzini (2005), grades are frequently used in academic research to measure success. Attewell, Heil, and Residel (2012) identified course completion as a measure of academic momentum, which is recognized as a predictor of academic success (Adelman, 1999, 2006).

Course completion percentages were defined as the number of earned hours divided by the number of attempted hours. These hours were obtained directly from the institution's student information system and were extracted from census day and end of term data tables.

The GPA calculated was also obtained from end of term data tables and was referred to as a semester GPA because only Fall 2020 grades from online courses were used to calculate the average. The GPA was calculated by dividing earned quality points by the number of carried hours. The institution assigned quality points to each grade type as follows:

Table 3.1. Grading scale used at a High Research University in the Southeastern United States.

Grade Earned	Quality Points per Credit Hour
A+	4.3
A	4.0
A-	3.7
B+	3.3
B	3.0

cont'd.

Grade Earned	Quality Points per Credit Hour
B-	2.7
C+	2.3
C	2.0
C-	1.7
D+	1.3
D	1.0
D-	0.7
F	0.0

Independent Variables

The independent variables of this study primarily focused on the demographic characteristics and prior experiences of the measured sample. These variables included age, gender, race, GPA in semester prior to the study, ACT scores (composite), whether prior online courses had been completed, and the academic discipline of each student's declared program of study.

All variables were obtained from the institution's student information system at the time of the study. The variable of age was calculated as the difference between the individual's date of birth and the first day of classes for the Fall 2020 term. Race was self-reported by all subject at the time of application to the institution. The GPA for the semester prior to the study was established as the Spring 2020 cumulative GPA for all students. ACT scores were reported by subjects and verified by the institution at time of application. The variable noting whether prior online courses had been completed was based on the participants prior courses at the institution

and did not take into account online courses that may have been completed at alternate institutions. The academic discipline was determined by college classification of each declared degree program. This value was retrieved from the curriculum code tables of the institution.

Population and Sample

The sample for this study was defined as all students beginning their second year of studies and taking at least one online class while enrolled in a campus-based academic program during the Fall 2020 semester at a high research university in the United States. The accessible population for this study is all students taking at least one online class while enrolled in a campus-based academic program during the Fall 2020 semester at one high research university in the Southeastern United States.

The researcher sought to target second year students at the institution in an effort to abate impacts standard first year experiences have on retention and completion rates. Howell et al. (2021) explain that first to second year retention rates prior to the pandemic were approximately 82.9% for public four-year institutions, while private counterparts maintained first to second year retention rates of 80.5%. As explored by Millea et al. (2018), these rates are impacted by a myriad of factors, including institutional influences that encourage student persistence (Tinto, 2006), student support services (Webber and Ehrenberg, 2010), and the level of involvement and engagement exhibited by the student (Morrow and Ackermann, 2012). Additionally, retention to the second year of studies can be influenced by financial factors that change the economics around affordability as the student progresses (Pascarella and Terenzini, 2005). With these factors in mind, the researcher sought to focus on students who had already acclimated to collegiate life in an effort to better isolate the factors involved in the transition to an online learning environment.

Given the ex-post facto design of the study and the fact that all members of the sample went through the same experience/treatment, perfect matching of the comparison group was possible. While rare, the ability to perfectly match participants of the comparison group with the treatment group is ideal (White & Sabarwal, 2014). This was possible in the design of this study, as members of the comparison group were matched with themselves.

The sampling plan for this study was to identify all undergraduate students enrolled in a campus-based academic program during the Fall 2020 semester at the selected institution. The sample population included individuals registered as fulltime students, which was defined by the institution as being enrolled in 12 hours or more of academic credit during the semester being analyzed. Once identified, the researcher curbed the sample to eliminate any individuals not meeting the above criteria.

Instrumentation

The instrument used to capture data for this study was an electronic workbook that was the product of the researcher and technical expert of the institution's student information system. All variables included in the workbook were extracted from the university's student information system, which serves as the system of record for all academic transactions.

Course offerings (including teaching modalities), student registrations, and faculty grading are entered into the student information system for each academic transaction. Additionally, the student information system contains academic and demographic characteristics of all students, which was collected as part of the admissions/on-boarding process.

Content validity for the recording instrument was established through a review of variables with a panel of individuals having expertise in the institution's student information

system and data definitions. Additionally, the identified variables were reviewed for study validity by the institution's Data Steward for student records.

Data Collection

Data utilized for this study was obtained directly from the institution's student information system. The primary researcher completed an ad hoc data request through the institution's Office of the University Registrar, who compiled the requested data into a singular spreadsheet with all personal identifiers having been removed from the file. The electronic file was then be provided to the researcher through an encrypted file sharing platform.

The data for this study was originally collected by the institution prior to and during the Fall 2020 semester. For this study, the data was compiled from the following:

1. The demographic variables were self-reported by the student during the application and admissions processes. Additionally, metrics on academic readiness, including standardized test scores, were collected from the student prior to initial enrollment.
2. The academic variables related to performance in collegiate courses were collected and stored in the student information system throughout each student's academic career. This data was entered into the system by administrative units on campus, faculty teaching courses, and directly by students in the form of transaction logs. This data includes the dependent variables of course completion and academic GPA, which collectively inform the concept of student learning performance.

Data Analysis

Prior to analyzing the research questions of the study, the researcher describes the sample population on the series of independent variables previously identified. The variables are descriptive and are measured on multiple variable scales. As an ordinal variable, age is analyzed

using measures of central tendency. Frequencies and percentages are used for categorical (nominal and interval) measures. This includes the variables of gender, race, prior experience with an online format, and college classification of the declared degree program during the Fall 2020 semester. For this study, gender is coded as 0 for females and 1 for males, races are coded to create dummy variables based on the number of identified races, and prior completion of a college course taught in an online format is coded as 1 for previous completion and 0 for not having previously completed an online class. Categories for the declared program of study during the Fall 2020 semester are presented below:

- College of Agriculture (AGRI)
- College of Art and Design (ADSN)
- College of Business (BADM)
- College of the Coast and Environment (CES)
- College of Engineering (ENGR)
- College Human Sciences and Education (HSE)
- College of Humanities and Social Sciences (HSS)
- School of Mass Communication (MCOM)
- College of Music and Dramatic Arts (MDA)
- College of Science (SCI)
- University Center for Advising and Counseling (UCAC)
- University Center for Freshmen Year (UCFY)

Variables measured on an interval or ratio scale are analyzed using descriptive statistics. Measures of central tendency are calculated for each of the individual measures. This includes the variables of university GPA the prior semester, ACT scores, the number of credit hours in

which the student was enrolled, the number of credit hours the student successfully completed, and the semester GPA of each student.

Analysis of Research Questions

Research Question One

The first question sought to determine if a difference existed in the academic performance during the Fall 2020 semester of students that had and had not previously completed online course work. Specifically, the question was: Is there a statistically significant difference in student learning performance in online coursework for students who have previously taken online courses and those who have not?

This objective was solely concerned with establishing if a difference in online GPA during the Fall 2020 semester exists between students that had prior online experiences and those that first took a class online during the Fall 2020 semester. The rather simple nature of the research objective allows for use of two paired sample t-tests to establish if differences in means exist. A paired sample, or dependent sample t-test, is appropriate when the same populations being studied has observations recorded in pairs (Gerald, 2018). This was possible since the question was focused on the potential difference in two observations rather than a series of observations. The latter, while not applicable to this research objective, would require an ANOVA to reduce the potential for Type I error to occur.

Additionally, an independent sample t-test will determine if a difference exists between the performance in the Fall 2020 semester online GPA of students with prior online experiences at the institution and those without. For context, an additional set of dependent sample t-tests were run to determine if a difference exists in performance between the Spring 2020 semester

and Fall 2020 semester online GPA for students with and without prior online learning experiences.

Research Question Two

The second question of this study sought to determine if there is a statistically significant difference in learning performance that can be associated to demographic differences of students. Specifically, the question was: Is there a statistically significant difference in student learning performance by demographic group for students in online courses who have had prior online course experience?

Given that this question was focused on the establishment of relationship and that the variables are logically related, a series of correlation coefficients were established to determine how each variable is related to the outcomes of course completion and GPA. This followed the design of Tope-Banjoko et al. (2020), who studied academic resilience by using correlational coefficients to examine the relationship between various coping mechanisms and a student's earned GPA and the study of Fabriz et al. (2021), who utilized correlation coefficients to determine if students with a greater acceptance of online tools had a more positive learning experience.

Research Question Three

The third question sought to determine if a model exists that explains a significant portion of the variance in student learning performance among students enrolled in a campus-based program during the Covid-19 worldwide pandemic. Specifically, the question was: Is there a model that explains a significant portion of the variance in the GPA earned among students enrolled in online coursework for the first time and those that have previously enrolled in online coursework at the institution?

This question required an exploratory regression, with the dependent variable established as the online GPA earned during the study semester and the variables previously described using descriptive statistics serving as the independent variables. Utilizing an a priori alpha level of $p < 0.05$ to test the overall significance of each model, the researcher established a model of independent variables that accounts for the greatest variance in student learning performance as measured by GPA. This process required the usage of the R squared statistic, showing the amount of variance explained by the model. Additionally, the researcher utilized the same a priori level of $p < 0.05$ to ensure the significance of each independent variable's beta coefficient.

The process was repeated with the dependent variable changed to the student's online course completion percentage and all independent variables remaining the same.

This statistical method follows the design of Briant and Crowther (2020), who utilized a regression analysis in their longitudinal study that explored the relationship between a series of academic variables and academic success. Further, Hinkle, Wiersma, and Jurs (2003) note that regression analysis is appropriate for exploring the relationship between variables and making a prediction based on series of predictor variables.

Institutional Review Board (IRB) Approval / Ethical Considerations

IRB was sought on June 8, 2022. IRB approval was received on July 21, 2022. Special ethical considerations were made based on the researcher's role at the institution. The researcher is the institutional registrar; therefore, the researcher recused himself from culling data for this study.

Chapter Summary

This chapter focused on the methods to be utilized in the study and began with a brief review of quantitative research. After addressing the rationale for an ex-post facto quasi-

experimental design, the researcher outlined the dependent and independent variables, population and identified sample, and the data collection process. Each research question was then explored and statistical methods for analysis were defended with cited rationale from timely academic studies. Chapter four will present the findings of the study.

CHAPTER 4. RESULTS

Introduction

This chapter presents the results of the study. After first using descriptive statistics to provide an overview of the sample populations, the results for each research objective are presented. The following chapter will include a formal summary of the study and results, including connecting the findings to existing literature, limitations of the study, implications for practitioners in the field of higher education, and final conclusions

The sample was culled from a high research university in the Southeastern United States with a total undergraduate student population, at the time of the study, of 24,921. The sample consisted of 5,739 second-year students. While all enrolled students were accessible to the researcher, second year students at the institution were targeted to abate impacts standard first year experiences are shown to have on retention and completion rates (Millea et al., 2018; Pascarella and Terenzini, 2005).

Review of the Sample

There were 5,739 unique cases included in the study sample. Regarding gender identification, the sample consisted of 3,109 female students (54%) and 2,630 (46%) male students (Table 4.1). The percentage breakdown of gender for the sample aligned with that of the population. The university does not have any other gender categories for students to select, thus, no other gender identities were included in the sample.

Table 4.1. Gender Demographics Comparing the Sample to the Population at a High Research University in the Southeastern United States

Gender	Sample N	Sample Percent	Population N	Population Percent
Female	3,109	54%	13,344	54%
Male	2,630	46%	11,577	46%
Grand Total	5,739	100%	24,921	100%

Table 4.2 presents the Integrated Postsecondary Education Data System (IPEDS) reported ethnicities of the sample, with White students (67%) making up the largest portion of the sample. Non-White students collectively represented one-third of the sample population. Similar to gender, the IPEDS reported ethnicities of the sample were reflective of the population.

Table 4.2. IPEDS Reported Ethnicity Comparing the Sample to the Population at a High Research University in the Southeastern United States

Ethnicity	Sample N	Sample Percent	Population N	Population Percent
White	3,839	67%	16,782	67%
Black or African American	830	14%	3,662	15%
Hispanic	438	8%	1,907	8%
Other*	632	11%	2,570	10%
Grand Total	5,739	100%	24,921	100%
*American Indian or Alaskan Native, Asian, Native Hawaiian or Other Pacific Islander, Non-Resident Alien, Multi-Racial, or No Response Given				

The average age, ACT composite scores, and cumulative GPA through the Spring 2020 semester for the sample are represented in Table 4.3. The mean age was 19.35 (SD = 1.83), the mean ACT composite score was 25.78 (SD = 4.08), and the cumulative GPA earned through the completion of the Spring 2020 semester was 3.25 (SD = 0.59). Age of the sample was lower than that of the population given that second year students were targeted for the study. The academic variables of ACT composite and cumulative GPA of the sample were slightly higher than that of the population, which can be attributable to variances between admission cohorts.

Table 4.3. Age, ACT Composite, and Spring 2020 Cumulative GPA Descriptive Statistics Comparing the Sample to the Population at a High Research University in the Southeastern United States

	Sample N	Sample Mean	Sample St. Dev.	Population N	Population Mean	Population St. Dev.
Age	5,739	19.35	1.831	24,921	20.04	2.86

cont'd.

	Sample N	Sample Mean	Sample St. Dev.	Population N	Population Mean	Population St. Dev.
ACT Composite	5,304	25.78	4.084	23,250	25.53	3.98
Spring 2020 Cumulative GPA	5,739	3.25	0.59	17,548	3.17	0.56

ENGR (Engineering) programs were declared by the largest segment of students (Table 4.4) at 19% (N = 1116), while SCE (Coast & Environment) comprised the smallest segment of students at 1% (N = 41). UCAC (Center for Advising and Counseling) houses the allied health pre-programs, which are non-degree granting programs offered by the institution. UCFY (Center for Freshmen Year) programs are declared by students remaining in an undecided status or those who are in their first year of studies, thus accounting for the percentage difference between the population and sample.

Table 4.4. Declared Program Discipline of the Sample as Compared to the Population at a High Research University in the Southeastern United States

College	Sample N	Sample Percent	Population N	Population Percent
ADSN	236	4%	1,058	4%
AGRI	352	6%	1,602	6%
BADM	906	16%	3,755	15%
ENGR	1,116	19%	5,276	21%
HSE	817	14%	3,155	13%
HSS	1,031	18%	4,356	18%
MCOM	296	5%	1,116	4%
MDA	96	2%	438	2%
SCE	41	1%	174	1%
SCI	626	11%	2,874	12%
UCAC	194	3%	550	2%
UCFY	28	<1%	453	2%
Grand Total	5,739	100%	24,807	100%

Of the 5,739 students in the sample, nearly half ($N = 2,854$) had a previous online learning experience at the university prior to the Fall 2020 semester, with the number of females ($N = 1,549$, 49.82%) attempting online learning exceeding that of males (1,305, 49.61%).

Further, more than half of White students ($N = 1,970$, 51.3%) had attempted an online course at the institution prior to the Fall 2020 semester. Each of the other race categories of students had a lower percentage of students with prior attempts at online coursework (Black/African American, 48.7%; Hispanic, 46.6%; Other, 43.7%).

Summary

The sample of 5,739 students enrolled in their second year of student at a high-research University in the Southeastern United States is representative of the population of students from which it was gleaned. The gender percentage breakdown of the sample, 54%, aligns directly with the percentage breakdown of gender for the population. This was also true of the students' self-reported ethnicities, as the 67% White, 14% Black or African American, and 8% Hispanic representation of the sample was nearly identical to the population. Further, the ACT composite score of the sample was only 0.38 points higher than that of the population, and the cumulative GPA earned through the completion of the Spring 2020 semester for the sample was 3.25, compared with 3.16 for the population. As the sample was determined to represent the university's population, thus lowering the opportunity for error, the researcher concluded the sample to have integrity and proceeded with data analysis. This chapter continues with the results of the statistical analysis conducted to answer each of the research questions.

Research Question One Results

The first research question was: *Is there a statistically significant difference in student learning performance in online coursework for students who have previously taken online*

courses and those who have not? A series of dependent-samples t-tests were conducted to compare the cumulative GPA earned through the Spring 2020 semester to the earned Fall 2020 online GPA. The first t-test considered students who had no previous experience in an online course followed by a second t-test considering students with previous online experience, measured as at least one synchronous or asynchronous course delivered via online instruction in their academic career at the institution. The a priori alpha level was established at $p < 0.05$ for each t-test.

The research hypothesis for the cohort of students who had previous online experience was:

$$H_0 = \mu_1 = \mu_2$$

$$H_a = \mu_1 \neq \mu_2$$

The research hypothesis for the cohort of students who had no previous online experience was:

$$H_0 = \mu_1 = \mu_2$$

$$H_a = \mu_1 \neq \mu_2$$

Students with Previous Online Experience

To begin the analysis, the assumptions of a t-test were reviewed, and none were found to have been violated. The mean Spring 2020 cumulative GPA for students with previous online experience (Table 4.5) was 3.19 with a standard deviation of 0.58. The online GPA earned by these students in the Fall 2020 semester was 3.07 with a standard deviation of 0.89. This represented a mean decrease of 0.12.

Table 4.5. Mean Ratings for Students with Previous Online Learning Experience Comparing Cumulative GPA through Spring 2020 and Earned Online GPA in the Fall of 2020 at a High Research University in the Southeastern United States

	Mean	N	Std. Deviation
Cumulative GPA to Spring 2020	3.19	2,835	0.58
Fall 2020 Online GPA	3.07	2,835	0.89

The results of the t-test (Table 4.6) indicated that the cumulative GPA earned through the Spring 2020 semester was statistically significantly different ($t = 9.07$, $p = < 0.001$) from the online GPA earned in the Fall 2020 semester for students with previous online learning experience.

Table 4.6. Paired-Samples t-test Statistics for Students with Previous Online Learning Experience Comparing Cumulative GPA through Spring 2020 and Earned Online GPA in the Fall of 2020 at a High Research University in the Southeastern United States

Paired Comparison	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Spring 2020 Cumulative GPA with Fall Online GPA	0.12	0.72	9.07	2834	<0.001

Students without Previous Online Experience

To begin the analysis, the assumptions of a t-test were reviewed, and no violations were found. The Spring 2020 mean cumulative GPA for students without previous online experience (Table 4.7) was 3.31 with a standard deviation of 0.59. The online GPA earned by these students in the Fall 2020 semester was 3.13, with a standard deviation of 0.91. This represented a mean decrease of 0.18.

Table 4.7. Mean Ratings for Students without Previous Online Learning Experience Comparing Cumulative GPA through Spring 2020 and Earned Online GPA in the Fall of 2020 at a High Research University in the Southeastern United States

	Mean	N	Std. Deviation
Cumulative GPA to Spring 2020	3.31	2,849	0.59
Fall 2020 Online GPA	3.13	2,849	0.91

The results of the t-test (Table 4.8) indicated that the cumulative GPA earned through the Spring 2020 semester was statistically significantly different ($t = 13.55$, $p = < 0.001$) from the online GPA earned in the Fall 2020 semester for students with no previous online learning experience.

Table 4.8. Paired-Samples t-test Statistics for Students without Previous Online Learning Experience Comparing Cumulative GPA through Spring 2020 and Earned Online GPA in the Fall of 2020 at a High Research University in the Southeastern United States

Paired Comparison	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Spring 2020 Cumulative GPA with Fall Online GPA	0.18	0.71	13.55	2848	<0.001

Comparing those With and Without Prior Online Learning Experience

An independent samples t-test was conducted to compare the mean GPA earned through the Spring 2020 semester for students with previous online learning experience to those without previous online learning experience. A second independent samples t-test was conducted to compare the two groups on the online Fall 2020 GPA earned.

The results of the independent samples t-test (Table 4.9) comparing the mean GPA earned through the Spring 2020 semester for students with previous online learning experience to those without previous online learning experience ($t = 7.97$, $p = < 0.001$) indicated that a statistically significant difference existed between the two variables.

Table 4.9. Independent-Samples t-test Statistics Comparing the Cumulative GPA through the Spring 2020 Semester of students With Previous Online Learning Experience to those Without Previous Online Learning Experience at a High Research University in the Southeastern United States

	Mean Difference	Std. Error Difference	t	df	Sig. (2-tailed)
With vs. Without Previous Online Learning Experience	0.12	0.15	7.97	5737	<0.001

The results of the independent samples t-test (Table 4.10) comparing the mean online GPA earned in the Fall 2020 semester for students with previous online learning experience to those without previous online learning experience ($t = 2.75$, $p = 0.006$) indicated that a statistically significantly difference existed between the two variables.

Table 4.10. Independent-Samples t-test Statistics Comparing Fall 2020 Online GPA of students With Previous Online Learning Experience to those Without Previous Online Learning Experience at a High Research University in the Southeastern United States

	Mean Difference	Std. Error Difference	t	df	Sig. (2-tailed)
With vs. Without Previous Online Learning Experience	0.07	0.02	2.75	5737	0.006

The mean difference in GPAs between the two populations, while remaining statistically significantly different, did shrink in the Fall 2020 semester when considering online coursework. The mean difference in GPAs was reduced to 0.07 from a 0.12 difference in Spring 2020 cumulative GPAs. In both terms, the mean GPA of those without prior online learning experience was higher.

Research Question Two Results

The second research question was: *Is there a statistically significant difference in learning performance by demographic group for students in online courses who have had prior online course experience?* This question was focused on the establishment of a relationship, with an understanding that the variables should be related to the dependent variables in varying degrees. Thus, question two was answered through a series of correlation coefficients. The a priori alpha level was established at $p < 0.05$ to determine if the relationship was significant. The research hypothesis for the cohort of students who had previous online experience was:

$$H_0 = \rho_1 = \rho_2$$

$$H_a = \rho_1 \neq \rho_2$$

The research hypothesis for the cohort of students who had no previous online experience was:

$$H_0 = \rho_1 = \rho_2$$

$$H_a = \rho_1 \neq \rho_2$$

Relationships to Fall 2020 Online GPA

Table 4.11 compares the relationship between gender and Fall 2020 Online GPA for both student groups – those with and those without previous online learning experience. In both instances there was a low relationship between the two variables; however, the relationship was negative for male students ($R = -0.15$, $p < 0.001$) when compared to female students ($R = 0.15$, $p < 0.001$). The difference in the strength of the relationship for students with and students without previous online learning experience was negligible; however, in both instances, the relationship was stronger for students with previous online experience.

Table 4.11. Correlation Output for Gender and Fall 2020 Online GPA by Previous Online Experience at a High Research University in the Southeastern United States

Gender		Fall Online GPA ¹	Strength of Relationship	Fall Online GPA ²	Strength of Relationship
Female	R	0.15	Low	0.13	Low
	Significance ³	< 0.001		< 0.001	
Male	R	-0.15	Low	-0.13	Low
	Significance ³	< 0.001		< 0.001	
¹ Denotes students with previous online experience. ² Denotes students without previous online experience. ³ Significance determined through a two-tailed test.					

Table 4.12 compares the relationship between Fall 2020 Online GPA and students' IPEDS reported ethnicity. Note that the category of "other", which was a combination of the smallest cohorts in the sample, was excluded from this analysis as it would not yield any valid conclusions given the grouping of different, unrelated cohorts. White students ($R = 0.19$, $p = 0.00$) had the only positive relationship between race and Fall 2020 Online GPA. Black students ($R = -0.24$, $p = 0.00$) had the strongest, negative relationship between the two variables. Each of these relationships was statistically significant. The relationship between race and Fall 2020 Online GPA was stronger for students with previous online experience than for those without.

Table 4.12. Correlation Output for Race and Fall 2020 Online GPA by Previous Online Experience at a High Research University in the Southeastern United States

Race		Fall Online GPA¹	Strength of Relationship	Fall Online GPA²	Strength of Relationship
White	R	0.19	Low	0.15	Low
	Significance ³	0.00		0.00	
Black	R	-0.24	Low	-0.16	Low
	Significance ³	0.00		0.00	
Hispanic	R	-0.03*	Negligible	-0.06	Negligible
	Significance ³	0.19		0.00	
¹ Denotes students with previous online experience. ² Denotes students without previous online experience. ³ Significance determined through a two-tailed test. *Not significant at the $\alpha = 0.05$					

To further explore the variables of race and gender, Table 4.13 incorporates the variable of gender into race. Male students are utilized as the reference group. Across all racial groups, males exhibited a negative relationship with the outcome of Fall 2020 Online GPA, regardless of prior online experience. The greatest difference between males and females was with Black students that had previous online experience. In this subgroup, Black male students had the strongest negative relationship ($R = -0.22$, $p < 0.001$) with Fall 2020 Online GPA.

Table 4.13. Correlation Output by Race and Gender with Fall 2020 Online GPA by Previous Online Experience at a High Research University in the Southeastern United States.¹

Race		Fall Online GPA²	Strength of Relationship	Fall Online GPA³	Strength of Relationship
White	R	-0.17	Low	-0.14	Low
	Significance ⁴	<0.001		<0.001	
Black	R	-0.22	Low	-0.09*	Negligible
	Significance ⁴	<0.001		0.07	
Hispanic	R	-0.07*	Negligible	-0.21	Low
	Significance ⁴	0.33		0.001	
¹ Males used as reference group. ² Denotes students with previous online experience. ³ Denotes students without previous online experience. ⁴ Significance determined through a two-tailed test. *Not significant at the $\alpha = 0.05$					

Previous academic performance as measured through students' cumulative GPA earned through the Spring 2020 semester had the strongest, positive relationship with Fall 2020 Online GPA ($R = 0.59$, $p < 0.001$). The results of the analysis, found on Table 4.14, also indicated that the strength of the relationship was slightly stronger, and significant, for students without previous online learning experience ($R = 0.62$, $p < 0.001$) than for those with previous online learning experience ($R = 0.59$, $p < 0.001$).

Table 4.14. Correlation Output for Spring 2020 Cumulative GPA and Fall 2020 Online GPA by Previous Online Experience at a High Research University in the Southeastern United States

GPA		Fall Online GPA¹	Strength of Relationship	Fall Online GPA²	Strength of Relationship
Spring 2020 Cumulative GPA	R	0.59	Substantial	0.62	Substantial
	Significance ³	< 0.001		< 0.001	
¹ Denotes students with previous online experience. ² Denotes students without previous online experience. ³ Significance determined through a two-tailed test.					

The relationships between students' discipline of study and Fall 2020 Online GPA are presented in Table 4.15. Enrollment in UCFY had the strongest, negative relationship ($R = -0.21$, $p < 0.001$), while enrollment in HSE ($R = 0.11$, $p < 0.001$) produced the strongest, positive relationship. Overall, however, the strengths of the relationships were negligible to low at best and little variability in the relationships when considering previous online experience.

Table 4.15. Correlation Output for Student Discipline of Study and Fall 2020 Online GPA by Previous Online Experience at a High Research University in the Southeastern United States

Discipline of Study		Fall Online GPA	Strength of Relationship	Fall Online GPA	Strength of Relationship
UCAC	R	-0.04*	Negligible	-0.04	Negligible
	Significance ³	0.06		0.05	

cont'd.

Discipline of Study		Fall Online GPA	Strength of Relationship	Fall Online GPA	Strength of Relationship
ADSN	R	-0.01 [*]	Negligible	-0.01 [*]	Negligible
	Significance ³	0.72		0.49	
AGRI	R	-0.01 [*]	Negligible	-0.07	Negligible
	Significance ³	0.69		<0.001	
BADM	R	0.10	Low	0.08	Negligible
	Significance ³	<0.001		<0.001	
ENGR	R	-0.03 [*]	Negligible	-0.01 [*]	Negligible
	Significance ³	0.15		0.69	
HSE	R	0.11	Low	0.10	Low
	Significance ³	<0.001		<0.001	
HSS	R	0.04	Negligible	0.04	Negligible
	Significance ³	0.05		0.03	
MCOM	R	0.09	Negligible	0.09	Negligible
	Significance ³	<0.001		<0.001	
MDA	R	0.01 [*]	Negligible	0.03 [*]	Negligible
	Significance ³	0.58		0.11	
SCE	R	0.01 [*]	Negligible	0.02 [*]	Negligible
	Significance ³	0.50		0.31	
SCI	R	0.09	Negligible	0.16	Low
	Significance ³	<0.001		<0.001	
UCFY	R	-0.21	Low	-0.23	Low
	Significance ³	<0.001		<0.001	
¹ Denotes students with previous online experience. ² Denotes students without previous online experience. ³ Significance determined through a two-tailed test. [*] Not significant at the $\alpha = 0.05$					

Relationships to Fall 2020 Online Course Completion Percentage

Table 4.16 compares the relationship between gender and Fall 2020 Online Course Completion Percentage for both student groups – those with and those without previous online learning experience. In both instances there was a low relationship between the two variables; however, the relationship was negative for male students ($R = -0.09$, $p < 0.001$) when compared to female students ($R = 0.09$, $p < 0.001$). The difference in the strength of the relationship for

students with and students without previous online learning experience was negligible; however, in both instances, the relationship was slightly stronger for students without previous online experience (± 0.09 versus ± 0.10).

Table 4.16. Correlation Output for Gender and Fall 2020 Online Course Completion Percentage by Previous Online Experience at a High Research University in the Southeastern United States

Gender		Fall Online Completion Percentage ¹	Strength of Relationship	Fall Online Completion Percentage ²	Strength of Relationship
Female	R	0.09	Negligible	0.10	Low
	Significance ³	< 0.001		< 0.001	
Male	R	-0.09	Negligible	-0.10	Low
	Significance ³	< 0.001		< 0.001	
¹ Denotes students with previous online experience. ² Denotes students without previous online experience. ³ Significance determined through a two-tailed test.					

Table 4.17 compares the relationship between Fall 2020 Online Course Completion Percentage and students' reported race. Note that the category of "other", which was a combination of the smallest cohorts in the sample, was excluded from this analysis as it would not yield any valid conclusions given the grouping of different, unrelated cohorts. White students ($R = 0.13$, $p < 0.001$) had the only positive relationship between race and Fall 2020 Online Course Completion Percentage. Black students ($R = -0.18$, $p < 0.001$) had the strongest, negative relationship between the two variables. The relationship between race and Fall 2020 Online Course Completion Percentage was stronger for students with previous online experience than for those without. Additionally, the relationship between Hispanic students and Fall 2020 Online Course Completion for students that had previous online experience was not statistically significant.

Table 4.17. Correlation Output for Race and Fall 2020 Online Course Completion Percentage by Previous Online Experience at a High Research University in the Southeastern United States

Race		Fall Online Completion Percentage¹	Strength of Relationship	Fall Online Completion Percentage²	Strength of Relationship
White	R	0.13	Low	0.08	Negligible
	Significance ³	<0.001		<0.001	
Black	R	-0.18	Low	-0.08	Negligible
	Significance ³	<0.001		<0.001	
Hispanic	R	-0.01*	Negligible	-0.04	Negligible
	Significance ³	0.55		0.00	
¹ Denotes students with previous online experience. ² Denotes students without previous online experience. ³ Significance determined through a two-tailed test. *Not significant at the $\alpha = 0.05$					

Using males as a reference group, Table 4.18 explores the relationship between race and gender and the outcome of Fall 2020 Online Course Completion Percentage.

Table 4.18. Correlation Output by Race and Gender with Fall 2020 Online Course Completion Percentage by Previous Online Experience at a High Research University in the Southeastern United States¹

Race		Fall Online Completion Percentage¹	Strength of Relationship	Fall Online Completion Percentage²	Strength of Relationship
White	R	-0.10	Low	-0.16	Low
	Significance ³	<0.001		<0.001	
Black	R	-0.22	Low	-0.12	Low
	Significance ³	<0.001		0.017	
Hispanic	R	-0.10*	Low	-0.01*	Negligible
	Significance ³	0.16		0.91	
¹ Males used as reference group. ² Denotes students with previous online experience. ³ Denotes students without previous online experience. ⁴ Significance determined through a two-tailed test. *Not significant at the $\alpha = 0.05$					

While results across race and gender were not significant for the group of Hispanic students, the relationships for White and Black students were both negative. Black males had a stronger negative relationship with course completion percentage ($R = -0.22$, $p < 0.001$) when gender was a factor.

Previous academic performance as measured through students' cumulative GPA earned through the Spring 2020 semester had the strongest, positive relationship with Fall 2020 Online Course Completion Percentage ($R = 0.39$, $p < 0.001$). The results of the analysis, found on Table 4.19, also indicated that the strength of the relationship was slightly stronger for students without previous online learning experience ($R = 0.42$, $p < 0.001$).

Table 4.19. Correlation Output for Spring 2020 Cumulative GPA and Fall 2020 Online Course Completion Percentage by Previous Online Experience at a High Research University in the Southeastern United States

GPA		Fall Online Completion Percentage¹	Strength of Relationship	Fall Online Completion Percentage²	Strength of Relationship
Spring 2020 Cumulative GPA	R	0.39	Substantial	0.42	Substantial
	Significance ³	< 0.001		< 0.001	
¹ Denotes students with previous online experience. ² Denotes students without previous online experience. ³ Significance determined through a two-tailed test.					

The relationships between students' discipline of study and Fall 2020 Online Course Completion Percentage are presented in Table 4.20. Enrollment in UCFY had the strongest, negative relationship ($R = -0.14$, $p < 0.001$), while enrollment in HSE and BADM ($R = 0.08$), $p < 0.001$) produced the strongest, positive relationship. Overall, however, the strengths of the relationships were negligible to low at best. Several disciplines did not have significant

relationships with the outcome of Fall 2020 online GPA. There was also little to no variability in the relationships when comparing students with and those without previous online experience.

Table 4.20. Correlation Output for Student Discipline of Study and Fall 2020 Online Course Completion Percentage by Previous Online Experience at a High Research University in the Southeastern United States

Discipline of Study		Fall Online Completion Percentage¹	Strength of Relationship	Fall Online Completion Percentage²	Strength of Relationship
UCAC	R	0.02*	Negligible	0.02*	Negligible
	Significance ³	0.39		0.40	
ADSN	R	-0.01*	Negligible	-0.01*	Negligible
	Significance ³	0.63		0.637	
AGRI	R	-0.03*	Negligible	-.06	Negligible
	Significance ³	0.17		0.003	
BADM	R	.08	Negligible	.07	Negligible
	Significance ³	<0.001		<0.001	
ENGR	R	-0.03*	Negligible	-0.01*	Negligible
	Significance ³	0.17		0.52	
HSE	R	.08	Negligible	.07	Negligible
	Significance ³	<0.001		<0.001	
HSS	R	0.01*	Negligible	0.01*	Negligible
	Significance ³	0.50		0.75	
MCOM	R	.04	Negligible	.06	Negligible
	Significance ³	0.04		<0.001	
MDA	R	-0.02*	Negligible	-0.002*	Negligible
	Significance ³	0.32		0.91	
SCE	R	-0.02*	Negligible	-0.001*	Negligible
	Significance ³	0.43		0.95	
SCI	R	.04	Negligible	.09	Negligible
	Significance ³	0.03		<0.001	
UCFY	R	-.14	Low	-.14	Low
	Significance ³	<0.001		<0.001	
¹ Denotes students with previous online experience. ² Denotes students without previous online experience. ³ Significance determined through a two-tailed test. *Not significant at the $\alpha = 0.05$					

Research Question Three Results

Research question three was: *Is there a model that explains a significant portion of the variance in the GPA earned among students enrolled in online coursework for the first time and those that have previously enrolled in online coursework at the institution?* This question required a series of exploratory regressions, the first with the dependent variable established as the 2020 Fall Online GPA and with the independent variables of age, gender, race, the GPA earned through the completion of the Spring 2020 semester, ACT composite scores, the discipline of the students' declared program of study, and whether or not the student had previous online learning experience at the institution.

The second exploratory regression used Fall 2020 Online Course Completion Percentage as the dependent variable and the independent variables of age, gender, race, the GPA earned through the completion of the Spring 2020 semester, ACT composite scores, the discipline of the student's declared program of study, and whether or not the student had previous online learning experience at the institution.

The a priori alpha level was established at $p < 0.05$ to fit a model that explained the greatest variability in the dependent variable using the R^2 statistic. This was accomplished by ensuring that each of the beta coefficients were statistically significant at $p < 0.05$. Tolerance levels were used to test for multicollinearity using 0.10 as the threshold tolerance value.

The research hypothesis for the regression analysis was:

$$H_0 = \beta_1 = \beta_2 = \cdots = \beta_k = 0$$

$$H_a = \beta_1 = \beta_2 = \cdots = \beta_k \neq 0$$

Fall 2020 Online GPA Regression Model

Table 4.21 presents the results of the first analysis to fit a predictive model for Fall 2020 Online GPA. The significance of the slope was tested ($F = 184.32$, $p = 0.00$) and found to be significant; thus, there was enough evidence to conclude that the slope of the resulting line was not zero. The first model produced a Pearson's R value of 0.63 and the resulting R^2 value of 0.40 indicated that 40% of the variance in Fall Online 2020 GPA was explained through the resulting model. Examination of the tolerance levels (range from 0.51 to 0.97) did not raise a serious concern about multicollinearity. Examination of the beta coefficients, however, indicated that age ($t = 0.73$, $p = 0.47$) was not a significant predictor of Fall 2020 Online GPA. Previous online experience was also not a significant predictor in this iteration of the model. Although not all were significant, each of the dummy variables for IPED reported race, and discipline of students' declared program of study remained in the model. This was done because the goal of the regression was to determine the influence of the variable on the dependent variable of the study.

Table 4.21. First Regression Results of Fall 2020 Online GPA and Selected Demographic Variables for Students in a High Research University in the Southeastern United States

Model			Sum of Squares	df	Mean Square	F	Sig.
Fall 2020 Online GPA	Regression		1698.418	19	89.39	184.31	.000
	Residual		2544.693	5247	0.49		
	Total		4243.111	5266			
Model Summary							
Model		R	R Square	Adjusted R Square		Std. Error of the Estimate	
Fall 2020 Online GPA		0.63	0.40	0.40		0.70	
Coefficients							
Model: Fall 2020 Online GPA		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics
Variables		B	Std. Error	Beta	t	Sig.	Tolerance VIF
(Constant)		-0.11	0.34		-0.34	0.73	

cont'd.

Variables	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
Age	0.01	0.02	0.01	0.73	0.47	0.97	1.03
Spring 2020 Cumulative GPA	0.84	0.02	0.56	43.40	0.00	0.69	1.45
ACT Comp	0.01	0.00	0.06	4.48	0.00	0.69	1.46
Gender Dummy	-0.09	0.02	-0.05	-4.12	0.00	0.84	1.19
Dummy Black	-0.19	0.03	-0.07	-6.30	0.00	0.85	1.18
Dummy Hispanic	-0.06	0.04	-0.02	-1.52	0.13	0.96	1.05
Dummy Other	-0.01	0.03	0.00	-0.26	0.80	0.95	1.06
Dummy ADSN	-0.06	0.06	-0.01	-0.97	0.33	0.82	1.22
Dummy AGRI	-0.15	0.05	-0.04	-3.10	0.00	0.74	1.36
Dummy BADM	0.10	0.05	0.02	1.84	0.07	0.78	1.28
Dummy ENGR	-0.22	0.04	-0.09	-6.01	0.00	0.52	1.91
Dummy HSE	0.14	0.04	0.04	3.19	0.00	0.69	1.44
Dummy HSS	0.04	0.04	0.02	1.10	0.27	0.57	1.76
Dummy MCOM	0.22	0.06	0.04	3.51	0.00	0.84	1.19
Dummy MDA	-0.08	0.08	-0.01	-1.00	0.32	0.90	1.11
Dummy SCE	0.11	0.13	0.01	0.85	0.40	0.96	1.04
Dummy SCI	0.05	0.05	0.02	1.19	0.23	0.63	1.59
Dummy UCFY	-0.04	0.03	-0.02	-1.26	0.21	0.51	1.98
Previous Online Experience	0.04	0.02	0.02	1.97	0.05	0.93	1.07

Table 4.22 presents the results of the second regression analysis once the age variable was removed. When the age variable was removed, the beta coefficient for previous online experience became significant and was added back into the model. The significance of the slope was tested ($F = 194.55$, $p = 0.00$) and found to be significant; thus, there was enough evidence to conclude that the slope of the resulting line was not zero. The resulting Pearson's R value of 0.63 and R^2 value of 0.40 indicated that 40% of the variance in Fall Online 2020 GPA was explained through the resulting model, unchanged from the first regression model. Examination of the tolerance levels (range from 0.51 to 0.96) did not raise a serious concern about multicollinearity. Examination of the beta coefficients again indicated that some of the IPED race dummy variables and discipline of students' declared program of study proved to not be significant;

however, each of the dummy variables remained in the model. This was done because the goal of the regression was to determine the influence of each variable on the dependent variable of the study.

Table 4.22. Second Regression Results of Fall 2020 Online GPA and Selected Demographic Variables for Students in a High Research University in the Southeastern United States

Model			Sum of Squares	df	Mean Square	F	Sig.
Fall 2020 Online GPA	Regression		1698.16	18	94.34	194.55	0.00
	Residual		2544.95	5248	0.49		
	Total		4243.11	5266			
Model Summary							
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate			
Fall 2020 Online GPA	0.63	0.40	0.40	0.70			
Coefficients							
Model: Fall 2020 Online GPA	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Variables	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	0.12	0.09		1.39	0.16		
Spring 2020 Cumulative GPA	0.84	0.02	0.56	43.41	0.00	0.69	1.45
ACT Comp	0.01	0.00	0.06	4.43	0.00	0.69	1.45
Gender Dummy	-0.09	0.02	-0.05	-4.07	0.00	0.85	1.18
Dummy Black	-0.19	0.03	-0.07	-6.35	0.00	0.85	1.17
Dummy Hispanic	-0.06	0.04	-0.02	-1.54	0.12	0.96	1.05
Dummy Other	-0.01	0.03	0.00	-0.26	0.79	0.95	1.06
Dummy ADSN	-0.06	0.06	-0.01	-1.00	0.32	0.82	1.21
Dummy AGRI	-0.15	0.05	-0.04	-3.12	0.00	0.74	1.36
Dummy BADM	0.10	0.05	0.02	1.82	0.07	0.78	1.28
Dummy ENGR	-0.22	0.04	-0.09	-6.03	0.00	0.52	1.91
Dummy HSE	0.14	0.04	0.04	3.17	0.00	0.69	1.44
Dummy HSS	0.04	0.04	0.02	1.09	0.28	0.57	1.76
Dummy MCOM	0.21	0.06	0.04	3.50	0.00	0.84	1.19
Dummy MDA	-0.08	0.08	-0.01	-1.00	0.32	0.90	1.11
Dummy SCE	0.11	0.13	0.01	0.86	0.39	0.96	1.04
Dummy SCI	0.05	0.05	0.02	1.18	0.24	0.63	1.58

cont'd.

Variables	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
Dummy UCFY	-0.04	0.03	-0.02	-1.29	0.20	0.51	1.97
Previous Online Experience	0.04	0.02	0.02	2.01	0.04	0.94	1.07

Prior to establishing a linear equation to explain variance in the selected dependent variable, the researcher performed a stepwise regression to validate the results of the exploratory regression and confirmed proper inclusion of variables. The resulting linear equation was $y = 0.12 + 0.84X_1 + 0.01X_2 - 0.09X_3 - 0.19X_4 - 0.06X_5 - 0.01X_6 - 0.06X_7 - 0.15X_8 + 0.10X_9 - 0.22X_{10} + 0.14X_{11} + 0.04X_{12} + 0.21X_{13} - 0.08X_{14} + 0.11X_{15} + 0.05X_{16} - 0.04X_{17} + 0.04X_{18}$. Therefore, the predicted Fall 2020 Online GPA for a Hispanic female student who earned a 3.0 GPA through the Spring 2020 Semester, scored a 25 on the ACT, studied in MCOM and had previous online learning experience is 3.08.

Fall 2020 Completion Percentage of Online Courses Regression Model

Table 4.23 presents the results of the first analysis to fit a predictive model for completion percentage of Fall 2020 online courses. The significance of the slope was tested ($F = 63.95$, $p < 0.001$) and found to be significant; thus, there was enough evidence to conclude that the slope of the resulting line was not zero.

Table 4.23. First Regression Results of Fall 2020 Online Course Completion Percentage and Selected Demographic Variables for Students in a High Research University in the Southeastern United States

Model		Sum of Squares	df	Mean Square	F	Sig.
Fall 2020 Online Course Completion Percentage	Regression	46.36	19	2.44	63.95	<.001
	Residual	200.87	5265	0.04		
	Total	247.23	5284			
Model Summary						

cont'd.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate			
Fall 2020 Online Course Completion Percentage	0.43	0.19	0.19	0.20			
Coefficients							
Model: Fall 2020 Online Course Completion Percentage	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Variables	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	0.44	0.09		4.67	0.00		
Age	0.00	0.01	0.01	0.46	0.65	0.97	1.03
Spring 2020 Cumulative GPA	0.15	0.01	0.42	27.76	0.00	0.69	1.45
ACT Comp	0.002	0.00	-0.04	-2.69	0.01	0.69	1.46
Gender Dummy	-0.01	0.01	-0.03	-2.03	0.04	0.84	1.19
Dummy Black	-0.04	0.01	-0.06	-4.50	0.00	0.85	1.18
Dummy Hispanic	-0.01	0.01	-0.01	-1.04	0.30	0.96	1.05
Dummy Other	0.00	0.01	-0.01	-0.47	0.64	0.95	1.06
Dummy ADSN	-0.03	0.02	-0.03	-1.98	0.05	0.82	1.22
Dummy AGRI	-0.05	0.01	-0.06	-3.94	0.00	0.74	1.36
Dummy BADM	0.01	0.02	0.01	0.49	0.62	0.78	1.28
Dummy ENGR	-0.06	0.01	-0.09	-5.49	0.00	0.52	1.92
Dummy HSE	0.01	0.01	0.01	0.71	0.48	0.69	1.44
Dummy HSS	-0.02	0.01	-0.04	-2.23	0.03	0.57	1.76
Dummy MCOM	0.002	0.02	0.00	0.10	0.92	0.84	1.19
Dummy MDA	-0.07	0.02	-0.04	-3.25	0.00	0.90	1.11
Dummy SCE	-0.04	0.04	-0.02	-1.23	0.22	0.96	1.04
Dummy SCI	-0.01	0.01	-0.02	-1.16	0.25	0.63	1.58
Dummy UCFY	-0.02	0.01	-0.04	-2.15	0.03	0.51	1.98
Previous Online Experience	0.01	0.01	0.03	2.09	0.04	0.93	1.07

The first model produced a Pearson's R value of 0.43 and the resulting R^2 value of 0.19 indicated that 19% of the variance in the completion percentage for Fall online 2020 courses was explained through the resulting model. Examination of the tolerance levels (range from 0.51 to 0.97) did not raise a serious concern about multicollinearity. Examination of the beta

coefficients, however, indicated that age ($t = 0.46$, $p = 0.65$) was not a significant predictor of Fall 2020 Course Completion Percentage. While some were not significant, each of the dummy variables for IPED reported race and discipline of student declared program of study remained in the model. This was done because the goal of the regression was to determine the influence of the variable on the dependent variable of the study.

Table 4.24 presents the results of the second regression analysis once the age variable was removed. The significance of the slope was tested ($F = 67.50$, $p < 0.001$) and found to be significant; thus, there was enough evidence to conclude that the slope of the resulting line was not zero. The resulting Pearson's R value of 0.43 and R^2 value of 0.19 indicated that 19% of the variance in Fall 2020 Online Course Completion Percentage was explained through the resulting model, unchanged from the first model. Examination of the tolerance levels (range from 0.51 to 0.97) did not raise a serious concern about multicollinearity. Examination of the beta coefficients again indicated that some of the IPED race dummy variables and discipline of student declared program of study variables proved to not be significant; however, they remained in the model because the goal of the regression was to determine the influence of the variable on the dependent variable of the study.

Table 4.24. Second Regression Results of Fall 2020 Online Course Completion Percentage and Selected Demographic Variables for Students in a High Research University in the Southeastern United States

Model		Sum of Squares	df	Mean Square	F	Sig.
Fall 2020 Online Course Completion Percentage	Regression	46.35	18	2.75	67.50	<.001
	Residual	200.88	5266	0.04		
	Total	247.23	5284			
Model Summary						

cont'd.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate			
Fall 2020 Online Course Completion Percentage	0.43	0.19	0.19	0.20			
Coefficients							
Model: Fall 2020 Online Course Completion Percentage	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Variables	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	0.48	0.02		19.73	<.001		
Spring 2020 Cumulative GPA	0.15	0.01	0.42	27.76	<.001	0.69	1.45
ACT Comp	-0.002	0.00	-0.04	-2.74	0.01	0.69	1.45
Gender	-0.01	0.01	-0.03	-1.99	0.05	0.85	1.18
Black	-0.04	0.01	-0.06	-4.54	<.001	0.85	1.17
Hispanic	-0.01	0.01	-0.01	-1.06	0.29	0.96	1.05
Other	0.004	0.01	-0.01	-0.48	0.64	0.95	1.06
ADSN	-0.03	0.02	-0.03	-2.00	0.05	0.82	1.22
AGRI	-0.05	0.01	-0.06	-3.95	<.001	0.74	1.36
BADM	0.01	0.02	0.01	0.48	0.63	0.78	1.28
ENGR	-0.06	0.01	-0.10	-5.50	<.001	0.52	1.91
HSE	0.01	0.01	0.01	0.70	0.49	0.69	1.44
HSS	-0.02	0.01	-0.04	-2.23	0.03	0.57	1.76
MCOM	0.002	0.02	0.00	0.09	0.93	0.84	1.19
MDA	-0.07	0.02	-0.04	-3.26	0.00	0.90	1.11
SCE	-0.04	0.04	-0.02	-1.23	0.22	0.96	1.04
SCI	-0.02	0.01	-0.02	-1.17	0.24	0.63	1.58
UCFY	-0.02	0.01	-0.04	-2.18	0.03	0.51	1.97
Previous Online Experience	0.01	0.01	0.03	2.12	0.03	0.94	1.07

Prior to establishing a linear equation to explain variance in the selected dependent variable, the researcher performed a stepwise regression to validate the results of the exploratory regression and confirmed proper inclusion of variables. The resulting linear equation was $y = 0.48 + 0.15X_1 - 0.002X_2 - 0.01X_3 - 0.04X_4 - 0.01X_5 + 0.004X_6 - 0.03X_7 - 0.05X_8 + 0.01X_9 -$

$$0.06X_{10} + 0.01X_{11} - 0.02X_{12} + 0.002X_{13} - 0.07X_{14} - 0.04X_{15} - 0.02X_{16} - 0.02X_{17} + 0.01X_{18}.$$

Therefore, the predicted Fall 2020 Online Course Completion Percentage for a Hispanic female student who earned a 3.0 GPA through the Spring 2020 Semester, scored a 25 on the ACT, studied in MCOM and had previous online learning experience would be 0.88 or 88% of their online course load.

Chapter Summary

This chapter established the appropriateness of the sample as compared to the population from which it was taken. After stating the null and alternative research hypothesis, results for each of the research questions were provided. The results for Research Question One indicated that the GPA earned in online courses in the Fall 2020 semester dropped for each cohort, when compared to their cumulative GPA earned through the 2020 Spring semester. Research Question Two established the relationship between learning outcomes and selected demographic variables, with previous academic performance as measured by cumulative GPA earned through the 2020 Spring semester having the greatest relationship to those learning outcomes. The results also indicated that Black students exhibited a negative relationship with the learning outcomes, with a stronger negative relationship for those with previous online experience. Finally, the results of Research Question Three produced two regression models, one for each of the learning outcomes of the study. The models accounted for 40% of the observed variance in Fall 2020 Online GPA and for 19% of observed variance in the Fall 2020 Fall Online Course Completion Percentage. A discussion of the results and the implications of the outcomes follows.

CHAPTER 5. SUMMARY AND CONCLUSIONS

Introduction

This chapter summarizes the findings and provides a discussion around the study's three objectives. It begins with a final summary of the study's objectives and research methods before providing a review of the data results by research objective. The chapter then segues into a dialogue around each research objective's findings, linking those to the extant literature and the theoretical framework of this study. Next, the implications of the findings are discussed and recommendations for higher education stakeholders are presented. As the chapter concludes, limitations of the study and considerations for future research are presented.

Summary of Purpose and Specific Objectives

The primary purpose of this study was to determine the impact of selected academic and personal demographic characteristics on the successful completion of online coursework by students enrolled in a campus-based academic program at a high-research university in the Southeastern United States during the Fall of 2020. The concept of crisis learning (Pace et al., 2020) was presented to help frame the online learning that resulted from a sudden transition experienced by all students. Specific questions analyzed in the study were the following:

Research Question 1: Is there a statistically significant difference in student learning performance in online coursework for students who have previously taken online courses and those who have not?

Research Question 2: Is there a statistically significant difference in student learning performance by demographic group for students in online courses who have had prior online course experience?

Research Question 3: Is there a model that explains a significant portion of the variance in student learning performance among students enrolled in online coursework for the first time and those that have previously enrolled in online coursework at the institution?

Summary of Procedures and Methodology

The researcher conducted a quasi-experimental study whereby data from the spring and fall 2020 semesters were analyzed for differences. The ex-post facto design allowed for the population samples to be compared for differences in performance along the identified demographic and academic characteristics. The lack of treatment by the researcher made the quasi-experimental design appropriate, as the pandemic and resulting online instruction acted as the treatment, which was experienced by the full population and sample of the study.

The sample for this study was defined as all students beginning their second year of studies and taking at least one online class while enrolled in a campus-based academic program during the Fall 2020 semester at a high-research university in the United States. While all enrolled students were accessible to the researcher, second year students at the institution were targeted to abate impacts standard first year experiences are shown to have on retention and completion rates (Millea et al., 2018; Pascarella and Terenzini, 2005).

Data utilized for this study was obtained directly from the institution's student information system. The data was originally collected by the institution prior to and during the Fall 2020 semester. For this study, the data was compiled from the following:

1. The demographic variables were self-reported by the student during the application and admissions processes. Additionally, metrics on academic readiness, including standardized test scores, were collected from the student prior to initial enrollment.

2. The academic variables related to performance in collegiate courses were collected and stored in the student information system throughout each student's academic career. This data was entered into the system by administrative units on campus, faculty teaching courses, and directly by students in the form of transaction logs. This data includes the dependent variables of course completion and academic GPA, which collectively inform the concept of student success.

After describing the population, the researcher conducted dependent sample, or paired sample, t-tests to determine if differences exist between students with prior online learning experiences and those without. A pair of independent samples t-tests were used to determine if the mean cumulative GPA through the end of the Spring 2020 semester and the Online Fall 2020 GPA earned by students with previous learning experience and those without previous learning experience were different. The researcher then analyzed the groups based on a series of academic and demographic variables using a series of correlation coefficients. Finally, a series of exploratory regressions using online GPA and online course completion percentage in the Fall 2020 semester as the dependent variables were conducted to develop a predictive model that explained the greatest level of variance present in both dependent variables.

Summary of Major Findings

This study explored three objectives. The summary of the major findings of the study are discussed by objective.

Research Question One

The first objective was to determine if there is a statistically significant difference in student learning performance in online coursework taken during the Fall 2020 semester for students who had previously taken online courses and those who had not. The results of the study

indicated that the GPA earned in online courses in the Fall 2020 dropped for both student cohorts, those with and without prior online learning experience. Students with previous online experience, however, saw a smaller drop in their Fall Online 2020 GPA when compared to those students who had no previous online experience.

Going into the Fall 2020 semester, students with previous online learning experience had earned a lower cumulative grade point average ($\bar{x} = 3.19$, $SD = 0.58$) than students with no previous online learning experience ($\bar{x} = 3.31$, $SD = 0.59$). An independent samples t-test confirmed that these variations in Spring 2020 cumulative GPAs were statistically significantly different ($t = 7.965$, $p = < 0.001$) from one another. Moreover, students with no previous online learning experience achieved a higher-grade point average ($\bar{x} = 3.13$, $SD = 0.91$) than students with previous online learning experience ($\bar{x} = 3.07$, $SD = 0.89$) in their Fall 2020 online courses. An independent samples t-test confirmed that the values were statistically significantly different ($t = 2.749$, $p = 0.006$) from one another.

The means between the cumulative GPA earned through the completion of the Spring 2020 semester and the earned Fall 2020 online GPA were compared for both cohorts using a dependent-samples t-test. The results of the dependent-samples t-test for the cohort with previous online learning experience indicated that the 2020 Fall semester online GPA was statistically significantly lower than ($t = 9.07$, $p = < 0.001$) the cumulative GPA earned through the completion of the Spring 2020 semester. The results of the dependent-samples t-test for the cohort with no previous online learning experience indicated that the 2020 Fall semester online GPA was also statistically significantly lower ($t = 13.55$, $p = < 0.001$) than the cumulative GPA earned through the completion of Spring 2020 semester.

Research Question Two

The second research question considered if there was a statistically significant difference in student learning performance by demographic group for students in online courses who had previously experienced online coursework. Student learning performance was measured by Fall 2020 Online GPA and Fall 2020 Online Course Completion Percentage. The results here indicate that females, those with and those without previous online learning experience, exhibited a low, positive relationship with learning performance, when compared to the low, negative relationship exhibited by males. Further, White students were the only cohort to exhibit a positive relationship with learning performance, with Black students exhibiting a negative relationship. This negative relationship was stronger for Black students with previous online experience than for those Black students without previous online experience. Finally, the relationships between students' chosen academic discipline and learning performance were negligible and mostly insignificant.

Research Question Three

The third research question asked if there exists a model that explains a significant portion of the variance in learning performance as measured by earned Fall 2020 online GPA or the online course completion percentage of students enrolled in online coursework for the first time and those that have previously enrolled in online coursework at the institution. A significant model that accounted for 40% for the observed variance in Fall 2020 Online GPA was developed in addition to a significant model that accounted for 19% of the observed variance in Fall 2020 Online Course Completion Percentage. In both models, students' previous academic performance, as measured by students' cumulative GPA earned through the Spring 2020 semester, had the strongest relationship with learning outcomes. Specifically, every one-point

increase in students' cumulative GPA earned through the Spring 2020 semester resulted in a 0.84-point increase in their Fall 2020 Online GPA. Further, the model indicated the challenges of being a Black or Hispanic and male, as these variables had a negative impact on learning outcomes, with a greater observed impact on Fall 2020 Online GPA. Additionally, students' enrollment in an academic discipline that relied heavily on STEM education, specifically ENGR and AGRI had a negative impact on Fall 2020 Online GPA. Previous online experience impacted GPA by 0.04 points and raised online course completion percentage by 1%.

Linking Findings to Existing Literature

Schlossberg's Transition Theory (1981) was the basis for the theoretical framework of this study given that an individual's familiarity and proficiency with a changed environment can influence an individual's ability to successfully adapt to their new environment. The results here are supported through this lens. While both student cohorts, those with and those without previous online experience, saw a drop in their Fall 2020 online GPA, those students with previous online experience saw a smaller drop in performance outcomes than their peers who were experiencing online learning for the first time. This may be an indication that the new environment may not have been novel and was one to which students with prior online learning experiences could more easily adjust into. Furthermore, the findings showed that other factors, including race and gender, can impact the influence prior experiences have on transitions.

The results here are aligned with the work of Xu and Jaggars (2014) who examined 500,000 courses taken over 40,000 technical and community colleges. Their research found that all students performed worse in online courses than in face-to-face courses. This followed an earlier study by Xu and Jaggars (2011) which examined 24,000 community college students and found that those students were more likely to either fail or withdraw from online courses than

face-to-face courses. Johnson et al., (2015) reported similar results as online courses had higher failing and incomplete grades when compared to traditional classroom courses. Finally, these results are similar to Hart, Friedmann, and Hill (2018), who concluded that student performances in online courses were lower than those for traditional learning environments. While aligned with these findings, it is important to note that this study considered outcomes during a period of crisis learning.

The novelties of a new learning environment can be a difficult adjustment for any student. Fatoni et al., (2020) specifically detailed the most common student complaints about online learning during the Covid-19 pandemic and noted that network instability, a lack of unilateral interaction, and a reduced ability to concentrate in an online setting were the most common pieces of feedback. It is possible that students involved in an online course for the first time experienced these barriers for the first time and lacked the ability to adjust their mental frameworks. Additionally, difficulties adjusting may have been exacerbated by the stresses and social isolation of the global pandemic. Collectively, or independently, these could explain the drop in GPA performance across all students from spring to fall seen in this study.

The first strategy Simplicio (2019) shared to improve online student success was to make sure students are ready for online courses, specifically calling out the academic background of students and their familiarity with the technology. The results of this study highlight the importance of academic preparedness and draw a connection between prior academic results and online performance.

The results here may also correlate to those of Nieuwoudt (2020), who found a positive relationship between student outcomes and the amount of time in which the student engaged with the LMS of the course. Students with previous online experience may have a better

understanding of the requirements and limitations of an online environment and therefore be better prepared for the online experience. This could explain why students with previous online experience at the institution performed slightly better (in the form of a smaller drop in GPA) when compared to those students with no previous online experience.

The results of this study may also be underscored by the work of Garrison (2007) and the importance of cognitive presence. The lack of social presence, or the diminishment of social presence when compared to a face-to-face course, may make the transition to online learning more difficult for a student with no previous online experience. Social presence has a direct impact on cognitive presence through the promotion of critical thinking (Garrison, Anderson, & Archer, 1999) and on the overall educational experience by increasing learner engagement and performance. The lack of immediate feedback, learner to learner engagement, and need for self-direction may decrease an individual's social presence in an online course. This challenges students to be more intrinsically motivated and in greater control of their own learning. Outside of the realities that the global pandemic caused for all learners, this can help explain the drop in student performance from the Spring 2020 semester to the Fall 2020 semester. This effect could also be exacerbated for students experiencing an online learning environment for the first time.

Xu and Jaggars (2014) reported that individual level of self-directed learning, a hallmark of online courses, varies depending on the age, gender, ethnicity, and education level of students, with the most successful students tending to be white females and those with a higher level of academic performance, as measured by GPA. The results of this study support Xu and Jaggars' findings and indicate that a gender gap exists as females demonstrated a positive relationship with learning performance. Female students entered the Fall 2020 semester with a higher earned cumulative mean GPA of 3.32 than males at 3.16, further helping frame the measure of

association and the impact of educational attainment. To this end, female students completed their Fall 2020 Online Courses with a 3.21 GPA compared to a 2.96 for males, confirming the impact of previous academic performance on subsequent online course success.

In addition to the impact of gender on student performance, race differences also were observed. White students had a positive relationship with learning performance, while students of color were found to have a negative relationship with learning performance. Black students demonstrated the strongest, negative relationship with learning performance, and the relationship was stronger for students with previous online learning experience. These results are similar to Xu and Jaggar (2014) who also reported that Black students performed lower in online courses than their peers. Black students entered the Fall 2020 semester with a lower mean GPA, 2.94, than their peers. Subsequently, they also performed worse in their Fall 2020 online courses. Black students also had the largest drop in GPA, 0.27-point decline, when compared to their non-Black peers who had an average 0.14-point decline in their GPA from the Spring 2020 semester to their Fall 2020 Online courses.

This was a significant decline in the performance of Black students from the Spring to Fall 2020 semester, as noted in their GPA. Salvo, Shelton, and Welch (2019) studied the success of African American students, specifically male students, and found that factors such as financial assistance, prior academic achievement, previous information technology training, and the use of handheld digital devices all impacted Black student performance in online courses. Access to computers and reliable internet access are a persistent problem for minority populations (Pearson, 2002; Barber et al., 2021). This points to a digital divide that potentially impacts populations of color disproportionately from White populations. These realities may be

responsible for the decline in performance noted here, as Black students may have struggled to keep pace with their courses due to accessibility issues and internet reliability.

The model developed by this study explained 40% of the observed variance in Fall 2020 Online GPA. This is a significant portion of the variance in student performance. The most significant predictor of student performance in online courses during the Fall 2020 semester was a student's own previous academic performance, as measured by their cumulative GPA through the Spring 2020 semester. Access to online courses has been considered a right as part of enrollment at an institution. Many colleges and universities have invested millions of dollars in online learning to increase student enrollment and create alternative streams of revenue. This model, however, indicates that not all students may be suited for online learning. This may be especially true for periods of crisis learning. There is a strong link between demonstrated academic ability and performance in an online setting during a time of crisis learning, and the model here explicitly brings this connection to the forefront. Students with a higher GPA may have higher levels of self-motivation, be more intrinsically motivated to perform, and may have a higher level of cognitive presence in online courses. These all translated to a higher performance in the Fall 2020 online performance.

Implications for Policy and Future Research

There are several takeaways from this study that both support prior research and provide opportunities for practitioners to better understand and support learners.

Key Findings and Implications

Previous experiences in online coursework are important and may impact transitions, but academic ability and gender play a larger role in the success of online learners. Furthermore, race is an important variable impacting student success in online coursework; this relationship and

support services for Black male students pursuing online coursework should be explored. This population, more than any other, was shown to experience a disproportionately negative impact on their academic performance in online studies, regardless of prior online experience.

Prior academic performance stood out amongst the variables being researched as explaining the most variance in GPA and online course completion percentage in the online modality. For practitioners and policymakers, this suggests that qualifications on who enrolls in online coursework may be valuable in setting students up for successful experiences. Limitations on enrollment to high-achieving students only should be seen as a last resort; rather, additional research in to why the performance gap expands in online courses could help practitioners to better prepare and support existing populations that currently perform at a deficit to their high-performing peers.

The performance of Black and other minority students is a key finding of this study. Universities should ensure that all populations have access to computers and reliable internet during periods of crisis learning. If this cannot be guaranteed, administrators should work with professors to ensure their online content is accessible via hand-held devices. The realities of the digital divide cannot be ignored, and universities should help ensure equity in access across all populations. Practically, university administrators must consider this digital divide in times of crisis. Administrators should consider policies that allow free usage of laptops or tablets, thus providing economically challenged students access to the platforms needed to fully participate in online learning at times of crisis.

Another key finding of this study is that some academic disciplines may not be conducive to online education or may require tailored support to make a successful transition to the online modality. Select Science, Technology, Engineering, and Math (STEM) curricula saw the largest

drops in GPA, and in addition to Music curricula, which are highly experiential, these disciplines had the lowest course completion percentages. Course completion may be seen as a stronger predictor of performance given the ability of students to drop a class in order to avoid having grades posted for courses in which they are struggling. The notion that these curricula, which are reliant on complex subject matter and experiential learning, are more difficult to transition to a remote medium is not novel. Wladis, Hachey, and Conway (2014) noted the performance decline for STEM courses when comparing face-to-face delivery to online. However, it is important to note that not all STEM curricula saw lower academic performance metrics; disciplines in the College of Science saw a positive relationship to course completion and earned GPA. This may be due to course design or instructor preparedness to offer online instruction. Universities should invest in faculty resource/technology centers that keep instructors up to date on evolving tools and pedagogical strategies that can be utilized in a digital classroom. These investments should happen during traditional times of learning and should not be reserved for times of crisis learning only.

Perhaps most significantly, this study was able to replicate the results of prior research conducted in technical and community colleges by Xu and Jagers (2014). Online performance (as measured by GPA) has been shown to lag behind the performance of students in face-to-face settings (Xu & Jagers, 2011; Xu & Jagers, 2014; Hart et al., 2018). This study reproduced those results at a high-research university and during a time of crisis learning, when the transition to the online modality was forced. This suggests that the lower performance of students in online courses is not the result of self-selection or choice by the student to enroll in the modality; rather, the inferior performance could be tied to the modality itself.

Opportunities for Future Research

This ex-post facto study found that online performance during a time of crisis learning is impacted by a myriad of factors, and prior online experience, while significant, is not the primary determinant of success. As such, this research has shed light on several promising areas for further investigation.

The first area for additional inquiry is that of course design. As indicated in this study, academic disciplines can impact a student's transition to online learning. This study was driven by student characteristics, including demographics and variables focused on academic preparedness. Future research establishing the impacts of course content and design on student transitions to the online modality could help to better understand how instructional materials and pedagogical strategies can impact this population.

Learner engagement in online courses is another area in which future research should be conducted to learn more about the student experience. Given existing literature highlighting the significance of engagement on learning outcomes (Garrison et al., 2010), coupled with the results of this study showing the impact gender and race have on online course success, further research on how engagement impacts and can be nurtured for students from varying backgrounds could help to frame targeted support services that seek to promote student engagement. Additional research in this vein may also help to bring forth barriers to student engagement that may not be easily diagnosed based solely on demographic characteristics of the population.

An additional area for further research centers on crisis learning and how learning in a time of additional pressures may impact one's performance. Specifically building upon the work of Hachey et al. (2014) that found first experiences in the online modality to be predictive of future success, further research could be conducted to study how students perform in subsequent

courses taken through the online modality when their first experience was delivered in a time of crisis. In addition to studying how performance in their first course predicts future success in the online modality, research could be conducted to learn more about how an initial experience with the online modality occurring during a time of crisis impacts students' likelihood to reengage voluntarily with the modality.

Limitations of the Study

As with any study, this research does come with limitations that may abate the ability for some findings to be generalizable to other populations. While the sample was shown to be representative of the population, variables highlighting socioeconomic status and remote access to resources were not included. Studies have shown that given a lack of broadband service and a computer, access to remote learning resources for some populations is limited to their cellphone and a wireless signal. This can certainly be a contributing factor to a reduction in academic performance and may impact certain demographic groups more significantly than others, especially at a time of crisis learning when access to these resources may become even more limited.

Additionally, as with any study focused on crisis learning outcomes, there are additional influences unique to each crisis that may impact outcomes. It is difficult to make inferences on online learning given that this study was focused on the modality during a time of crisis. The Covid-19 pandemic caused additional stresses in the form of social isolation, potential lost wages, and the physical care for oneself and family members that may have experienced illness during the term under investigation. These stresses may also impact select demographic groups at a higher frequency than others and impact the ability of those individuals to perform academically at a high level. Furthermore, these stresses may also impact faculty

disproportionately, and some faculty may have been better equipped to serve students than others.

These limitations, while certainly present, must be considered within the lens of this study. The primary driver of this research was to learn about how prior online experiences may have better prepared individuals to succeed in a time of crisis learning. With that in mind, it is important to remember that the crisis in question was experienced by all and, therefore, serves as both a treatment in the study and a limitation to generalizability of the findings to normal periods of instruction.

Conclusion

The reality is that crisis learning is different from learning in a conventional time. Whether the learning is occurring online or face-to-face, learning in a time of crisis presents a myriad of additional stresses and considerations that combine to drastically influence the way students learn. In this study, students were evaluated to determine if there was a link between prior online experience and preparedness for taking online courses during a time of crisis. While statistically significant, the findings of this study showed that the impacts on GPA and online course completion percentage were negligible and may have been influenced in a greater capacity by other student demographics. This highlights the need for additional research to determine strategies to close the gap and to increase opportunities for success for all students in the online modality.

**APPENDIX. LOUISIANA STATE UNIVERSITY INSTITUTIONAL
REVIEW BOARD APPLICATION FOR EXEMPTION FROM
INSTITUTIONAL OVERSIGHT**



TO:

FROM:

DATE: RE: TITLE:

SUBMISSION TYPE: Review Type:

Risk Factor:

Review Date:

Status:

Approval Date:

Approval Expiration Date:

Exempt Category:

Requesting Waiver of Informed Consent: Re-review frequency:

Number of subjects approved:

LSU Proposal Number:

Clay Benton

LSUAM | EM and SS | Admissions and Student Aid | CC00378

Alex Cohen

Chairman, Institutional Review Board

21-Jul-2022

IRBAM-22-0637

TRANSITIONING IN A TIME OF CRISIS: UNDERSTANDING THE IMPACT STUDENTS'
PRIOR ONLINE LEARNING EXPERIENCES HAVE ON ONLINE COURSE
ACHIEVEMENT

Initial Application Exempt

Minimal 21-Jul-2022 Approved 21-Jul-2022 20-Jul-2025

4b

No

Three Years 15000

By:

Continuing approval is CONDITIONAL on:

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.

Alex Cohen, Chairman

4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
7. Notification of the IRB of a serious compliance failure.

**8. SPECIAL NOTE: When emailing more than one recipient, make sure you use bcc.
Approvals**

will automatically be closed by the IRB on the expiration date unless the PI requests a continuation.

** All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at <http://www.lsu.edu/research>*

Louisiana State University 131 David Boyd Hall Baton Rouge, LA 70803

O 225-578-5833

F 225-578-5983 <http://www.lsu.edu/research>

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