A CAUSAL-COMPARATIVE STUDY OF THE WRITING MOTIVATIONAL CONSTRUCTS OF STUDENTS WITH AND WITHOUT ATTENTION-DEFICIT/ HYPERACTIVITY DISORDER IN ONLINE COLLEGE COMPOSITION COURSES

by

Michelle L. Bianco

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

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APPROVED BY:

Maryna Svirska-Otero, Ed.D., Committee Chair

Susan Stanley, Ed.D., Committee Member

ABSTRACT

The purpose of this quantitative, non-experimental, causal-comparative study is to determine if there is a difference in the writing motivation of students with attention-deficit/ hyperactivity disorder (ADHD) and students without ADHD in online college composition I courses. The study of writing motivation in relation to ADHD in online college composition courses is significant as writing motivation is a crucial predictor of academic success and persistence. Data was collected from a population of approximately 1685 students enrolled in online college composition I at an accredited online university within a larger midwestern land-grant public university system. Using the Writing Motivation Questionnaire and the self-reported results of the covariate (Personal Writing Assessment score), students without ADHD were compared to students with ADHD to determine how writing motivation construct scores differed between the groups. The data was analyzed using a one-way analysis of covariance controlling for the effect of the covariate, and the results demonstrated that this sample of online college composition students with ADHD had lower levels of writing motivation, which correlated with lower previous writing abilities. Further discussion included the impact of ADHD on writing motivation, academic success, and the link to early assessment. The implications of the research suggest a need for accommodation. Limitations, such as the time constraints of the survey combined with the assessment, were also addressed, and recommendations for further research using essay writing as the covariate were made.

Keywords: motivation, online college composition, writing, attention-deficit/hyperactivity disorder, ADHD, self-efficacy, motivational beliefs, and goal orientation.

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Dedication

I dedicate this dissertation to my husband Tom and children, Ashley and Thomas Robert. Thank you for being the arms that hugged me when in need, the ears that listened in my desperation, and the support when I needed to be carried. Without you, my accomplishments would mean nothing. I bask in the glow, knowing you were there with me.

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List of Abbreviations

Americans with Disabilities Act (ADA)

Attention-deficit/ hyperactivity disorder (ADHD)

Attention-deficit disorder (ADD)

Basic writers (BWs)

Community of inquiry (COI)

Grade point average (GPA)

Individuals with Disabilities Education Act (IDEA)

Learning disabilities (LD)

Learning management system (LMS)

National Center for Education Statistics (NCES)

National Center for Learning Disability (NCLD)

Online writing instruction (OWI)

Social cognitive theory (SCT)

Specific learning disability (SLD)

Statistical Package for the Social Sciences (SPSS)

University of Arizona's Strategic Alternative Learning Techniques (SALT)

Universal design (UD)

CHAPTER ONE: INTRODUCTION

Overview

The purpose of this quantitative, non-experimental, causal-comparative study was to determine if there is a difference in the writing motivation of students with attention-deficit/ hyperactivity disorder (ADHD) and students without ADHD in online college composition I courses. Chapter One provides a background for the topic of online college composition I courses, writing motivational constructs, and students with ADHD. Included in the background is an overview of the theoretical framework for this study and the scope of the recent literature on this topic. The problem statement examines the problem through the recent literature as specifically related to narrow the focus. The purpose of this study is followed by the significance of the current study. Finally, the research questions are introduced, and definitions pertinent to this study are provided.

Background

Of the 17.9 million students currently enrolled in post-secondary institutions, it is estimated the number of students with ADHD ranges from 3.5% to 8%, approximately 626,500 to 1,432,000 (Bodalski et al., 2023). ADHD is a common neurodevelopmental disorder that affects many individuals, including college students (NCLD, 2023). The study of students with ADHDin online college composition courses is an area of growing interest within the field of education (Cheng et al., 2022). Online college composition courses are becoming increasingly popular for adult learners, providing students with flexible and convenient ways to learn and earn college credits (Lefler et al., 2023). However, the online learning environment presents unique challenges and barriers for students with ADHD, such as difficulties with time management, self-regulation, and organization (McIntyre, 2023; Usher & Schunk, 2018). These challenges

may impact the academic success and persistence of students with ADHD in college composition courses, making it an important area of research (Ginapp et al., 2023).

Historical Overview

Historically, distant writing courses were correspondence courses with assignments and instructor feedback sent through the mail. The popularity of correspondence courses would eventually lead to national standards by 1915 (Wooten, 2013). Distance education, which primarily appealed to women, maintained a significant presence in higher education until the Great Depression of the 1930s. During this economic downturn, enrollment sharply declined, leading to the closure of approximately half of the for-profit educational institutions (Griffin & Minter, 2013). By the mid-20th century, composition courses transformed, shifting the focus toward teaching writing rather than rigid rules.

After World War II, introducing radio and television into the American household fostered educational television (Griffin & Minter, 2013). This innovation introduced college composition courses offered through telecourses, part of correspondence programs granting academic credit. The 21st century reshaped the landscape of college composition by introducing digital technologies. By 1993, the internet transformed distance education (Gershon, 2020). The first online college courses were launched in 1995 (Wooten, 2013). Soon after, online college composition courses became available in hybrid or fully online formats (Griffin & Minter, 2013).

The modern composition courses of the last decade incorporate digital technologies with live seminar lectures (Horowitz, 2023). Research estimates that 35% of university students will participate in online courses, and almost all students are required to take a first-year writing course (NCES, 2022b). Composition courses focus on critical thinking, research, and communication in writing for academic, personal, and professional modalities (Horowitz, 2023).

Online composition courses require students to be self-directed learners, motivated to learn, and willing to face challenges (Griffin & Minter, 2013). Some students, especially those with attention-related issues such as ADHD, could struggle in this environment (DuPaul et al., 2009).

ADHD is a more recent phenomenon that did not gain recognition or understanding until the late 1960s and early 1970s (Attention Deficit Disorder Association, 2023). Early on, students with ADHD were labeled difficult or disruptive because there was little understanding of the underlying neurological differences that contribute to these behaviors (Balbino et al., 2022). The educational community did not begin to recognize the disorder until the 1990s (DuPaul et al., 2009). More recent research delves into the symptomology that suggests students with ADHD may struggle with writing tasks due to difficulties with attention, organization, and time management (Cheng et al., 2022). The last decade has witnessed more research on accommodations and interventions to assist students with ADHD.

Society-at-Large

The number of adults identified with ADHD has steadily increased to a reported 4% to 4.5% of adults in the United States from 2016 to 2021 (Majarwitz & Perumareddi, 2023). In 2000, the American Psychological Association (APA) released the fourth edition of the DSM, which increased awareness of the neurodevelopment disorder and the accompanying symptomatology of inattention, hyperactivity, and impulsivity. This led to increased diagnoses, parental awareness, and expanded research into developmental factors (Attention Deficit Disorder Association, 2023). With increased research came a greater understanding of the negative impact on academic success (Toma et al., 2022).

Reported negative stereotypes or stigmatization of ADHD may lead to lower expectations, diminished self-confidence, or lower levels of self-efficacy, which can decrease the

students' task-specific perceptions (Balbino et al., 2022). Those perceptions include writing motivation or the general liking or disliking of writing (Latif, 2019). Studies have shown that accessibility barriers, such as inaccessible course materials or technology, may create negative perceptions and challenges for students with ADHD (Daffner et al., 2022). There are efforts to create inclusive learning environments that support and motivate diverse learners, including those with ADHD, to improve academic success (Balbino et al., 2022).

Higher education gives individuals the knowledge, skills, and credentials needed to succeed in their careers and make meaningful contributions to society (Bhati & Sethy, 2022). According to Weimer and Vining (2017), individuals with higher levels of education tend to earn higher salaries and have greater access to job opportunities, which can benefit not only themselves but also their families and communities. Encouraging students with ADHD to succeed in college will provide opportunities for personal growth, self-discovery, and self-improvement. Daffner et al. (2022) discusses the implications of students with ADHD developing critical thinking skills, creativity, and problem-solving abilities, which can benefit them throughout their lives.

The growing popularity of online education has broadened society's access to higher education (Panigrahi et al., 2021). According to the National Center for Education Statistics (2022b), 6.9 million students were enrolled in online courses. This number increased significantly due to the COVID-19 pandemic, and in the fall of 2020, some 75% or 11.8 million of all undergraduate students were enrolled in at least one online course (NCES, 2022a). The online learner ideally has strong time management skills, good organization, and is highly self-motivated to meet challenges and succeed in academic attainment (Zamecnik et al., 2022). The lack of face-to-face interaction and structure in online courses may present unique challenges

and negatively impact motivation for students with ADHD, such as difficulties with time management, self-regulation, and organization (Cramarenco et al., 2023).

Writing motivation is a critical factor within online courses that can impact student academic success (Philippakos et al., 2023). Motivated students are more likely to engage in difficult writing tasks. Students lacking writing motivation struggled to complete assignments, resulting in lower grades and the potential to drop out of the program or leave the course (Bembenutty et al., 2022). Motivation correlates with better grades, academic success, and personal growth (Camacho et al., 2021). Writing motivation can enhance critical thinking, communication skills, and creativity, which benefits students beyond the academic environment, enhancing reputations for institutions through completion rates and increased retention (Capps et al., 2023). A lack of writing motivation is correlated with a skills gap in the workforce that can hinder economic development (Latif, 2019). These individuals were less likely to engage in civic activities, leading to disengagement from societal issues and negatively impacting societal progress.

Theoretical Background

The theoretical framework that supports this research is Bandura's (1989) social cognitive theory (SCT), which focuses on cognitive processes and self-efficacy, or a student's belief that they can be successful. SCT is relevant to the study of students with ADHD in online college composition courses, as SCT can provide insights into the factors that influence the college success of these students. Developed by psychologist Albert Bandura, SCT emphasizes the role of cognitive processes, such as observation, attention, and memory, in shaping behaviors (Bandura, 1989). Bandura believed self-efficacy plays a central role in shaping behavior, as

individuals with higher levels of self-efficacy are more likely to approach challenges confidently and persist in the face of difficulties.

For this research, SCT will be focused on the importance of self-efficacy in determining behavior and performance (Bandura, 1989). Motivation and self-efficacy are particularly important to college success, as students with positive motivation and high levels of self-efficacy are more likely to persist in college, achieve higher grades, and experience greater satisfaction with the academic experience (Bhati & Sethy, 2022; Camacho et al., 2021). Students with ADHD may struggle with self-efficacy due to attention, organization, and motivation challenges, which can impact their ability to succeed in college, especially in online courses that require a high level of self-directed learning (Capodieci et al., 2019; DuPaul et al., 2021).

Writing motivation can be challenging in the context of online college composition courses, students with ADHD may struggle with motivation and self-efficacy due to challenges related to communication, time management, and organization (NCES, 2022a). Previous studies found that motivation extends its influence beyond the confines of the writing task, fostering invaluable self-regulation skills that empower students to proficiently manage their time, establish objectives, and vigilantly monitor their progress (Bruning & Kauffman, 2016; Capps et al., 2023; MacArthur et al., 2016). The favorable attitude cultivated by motivation becomes a cornerstone, shaping students' perceptions of writing into a positive pursuit (Philippakos et al., 2023). This research will further understand the factors of the writing motivational constructs of students with ADHD in online college composition courses. By examining the role of motivational constructs of goals, self-efficacy, beliefs, and affect in the academic success of students with ADHD in online college composition I courses, the study can provide insights into the college success of these students.

Problem Statement

Students develop beliefs and attitudes toward writing from specific experiences (MacArthur et al., 2022; Smith et al., 2023). Negative experiences create higher apprehension about writing, coinciding with lower self-efficacy and limiting goals (DuPaul et al., 2021; DuPaul et al., 2009). Students with more positive experiences may have greater confidence, motivation, self-efficacy, and writing performance (Cheng et al., 2022; Smith et al., 2023). Students with ADHD or attention-related issues often experience negative learning situations and develop apprehensions, especially toward writing (MacArthur et al., 2016; Philippakos et al., 2023).

College composition courses are required in almost all institutions of higher education; therefore, college composition is considered by many as a gateway or barrier to academic success (MacArthur et al., 2022). In most degree fields, college composition is a foundational course requiring students to communicate effectively for different purposes, genres, and audiences (Sides et al., 2022). Students must identify main ideas, summarize, synthesize, conduct research, and follow various styles and professional guidelines for referencing and citing. In general, DuPaul et al. (2021) found that writing is cognitively and meta-cognitively challenging for students with ADHD. Students displayed cognitive overload and feelings of inadequacy or disengagement. Feelings of self-confidence, self-efficacy, and motivation have been determined to influence writing performance and persistence levels directly. Cheng et al. (2022) went on to explain that online learning requires more self-discipline and motivation with solid time management skills, strong communication skills, adaptability, flexibility, and critical thinking skills because online learning involves more independent work and research. Students must be

comfortable with technology and be able to work with multiple tools, platforms, video conferencing, learning management systems, and online discussion forums.

Research has shown that students in online college composition courses struggle with self-efficacy and motivation (DuPaul et al., 2021). Weaver et al. (2022) found that first-year students in basic writing classes reported little control over their feelings of success, and many assumed they would fail because of a lack of writing ability. Students reported feeling isolated from the resources, overwhelmed, and deficient. Recent research has sought to understand the relationship between motivation and self-efficacy in writing performance (Philippakos et al., 2023). Previous research has concluded that students with ADHD may struggle with self-efficacy, self-regulation, and the time management required for online learning (DuPaul et al., 2021). Approximately 10 million adults have ADHD, and studies estimate that 3.5% to 8 % of college students have a formal diagnosis.

With the increased population of students with learning disabilities, there is a call for research on the relationship between self-efficacy, motivation, and essay writing within that population. The problem is that while the literature clearly supports the claim that there are statistically significant positive relationships between essay quality with all three self-efficacy scales and belief about the importance of substance to good writing (Philippakos et al., 2023), it is unclear if there is a relationship between motivation, goals, self-efficacy, and beliefs of essay writing in students with ADHD in online college composition I courses.

Purpose Statement

The purpose of this quantitative, non-experimental, causal-comparative study is to determine if there is a difference in the writing motivation of students with ADHD and students without ADHD in online college composition I courses. The independent variable is defined as

the group consisting of students with ADHD and students without ADHD. The National Center for Learning Disability defines ADHD as a neurodevelopmental disorder characterized by inattention, hyperactivity, and impulsivity symptoms that can impact academic success (2023). The dependent variable is the students' writing motivation, a multidimensional construct that includes self-efficacy for writing, achievement goals for writing, beliefs about writing, and affect toward writing (MacArthur et al., 2016; Philippakos et al., 2023).

The covariate is the students' previous writing ability. In week one of the course, the Personal Writing Assessment is an online multiple-choice assessment administered to all college composition I students at the host university (Green et al., 2021). It is considered a diagnostic tool to measure the students' writing ability and previous knowledge. This covariate provides a measure of students' overall performance and academic achievement, which may influence their motivation levels in writing. The population in this study would be students enrolled in online college composition I courses at an accredited online university within a larger midwestern land-grant public university system.

Significance of the Study

Online college composition courses are foundational to the higher education experience in that these courses train students in critical communication skills needed for academic and professional success (Stewart et al., 2022). The study of students with ADHD in online college composition courses is significant for several reasons. First, modern research has increased knowledge of learning disabilities. According to the American Psychological Association (APA, 2013), learning disabilities are neurological diseases characterized by severe delays in mastering particular academic or scholastic skills, especially those relevant to written or expressive language. Research estimates that as much as 8% of college students have a formal diagnosis of

ADHD (DuPaul et al., 2021). Understanding students' experiences with ADHD in college composition courses, particularly in the online learning environment, which is becoming increasingly common, is an important area of research (Sedgwick-Müller et al., 2022). There is limited research on the experiences of students with ADHD in online college composition courses. This study can help provide insights into the challenges and barriers faced by students with ADHD in this context and potential strategies for supporting their academic success. The study of academic self-efficacy and writing motivational constructs in relation to ADHD in online college composition courses is significant, as self-efficacy and motivation are crucial predictors of academic success and persistence. Understanding the relationship between academic self-efficacy, writing motivation, ADHD, and online learning environments can inform the development of targeted interventions, scaffolding, and accommodations that promote academic success among students with ADHD (Daffner et al., 2022).

The empirical significance of this study lies in its potential contribution to the research of the experiences of students with ADHD in college composition courses, specifically in online learning environments. This research can provide valuable insights into the challenges and barriers these students face and inform the development of effective interventions and accommodations. Further, the results of this study should provide specific data revealing the relationship between self-efficacy and writing motivation. Balbino et al. (2022) reported that student success is relevant to higher levels of self-efficacy. Dunn (2022) reported a significant link between accommodation and student persistence. Griffith and Faulconer (2022) reported a significant correlation between perceptions, motivation, and student end-of-course outcomes, specifically using end-of-course grades. However, no previous research correlated the level of

self-efficacy of students with ADHD with writing motivation among online college composition students.

Research Question

RQ1: Is there a difference in writing motivation scores among online college composition students with attention-deficit/ hyperactivity disorder and students without attention-deficit/ hyperactivity disorder when controlling for the students' previous writing ability?

Definitions

1. *Accommodations* - Accommodations are changes or modifications to the learning environment or assessment methods that allow students with disabilities to access education and demonstrate their knowledge and skills (U.S. Department of Education, 2022).
2. *Attention-deficit/ hyperactivity disorder (ADHD)* - Attention-deficit/ hyperactivity disorder is a neurodevelopmental disorder characterized by symptoms of inattention, hyperactivity, and impulsivity that can impact academic success (National Center for Learning Disability, 2023).
3. *Basic writers (BWs)* - Basic writers is a term used to describe students enrolled in first-year or basic writing courses that focus on fundamental writing skills and remediation (Otte & Mlynarczyk, 2010).
4. *Executive functioning* - Executive functioning is the cognitive processes that enable individuals to plan, organize, prioritize, and regulate behavior and emotions (Bandura, 1989).
5. *Grade point average (GPA)* - Grade point average is the numerical representation of academic performance for a specific period (U.S. Department of Education, 2022).

6. *Learning disabilities* - Learning disabilities is a group of neurodevelopmental disorders that impact the ability to learn and process information (NCLD, 2023).
7. *Learning Management System (LMS)* - Learning management system is a software application used to house, deliver and track educational content, assessment and progress (Greenhow et al., 2022).
8. *Previous writing ability*- A phrase that refers to the level of skill and experience that students have with writing before they enter course work (MacArthur et al., 2016).
9. *Writing motivation* - Writing motivation is a challenging, and multidimensional concept that includes the constructs of goal orientation, self-efficacy, beliefs, and affect, which is complex to measure (Philippakos et al., 2023).
10. *Self-efficacy* - Self-efficacy is an individual's belief in their ability to successfully complete a task or achieve a goal (Bandura, 1989).
11. *Self-determination* - Self-determination is an individual's ability to make choices and decisions about their own lives and to take control of their own learning and development (Tight, 2020).
12. *Universal design (UD)* - Universal design is an approach to course design that aims to create products and environments that are accessible and usable by people with a wide range of abilities and disabilities (Bolliger & Martin, 2021).
13. *504 plan* - 504 plan is a formal educational plan for students with disabilities that identifies how schools can support learning and grant equal access (NCLD, 2023).

CHAPTER TWO: LITERATURE REVIEW

Overview

A systematic review of the literature will be conducted to explore the experiences of students with ADHD in online college composition courses at an accredited online university within a larger midwestern land-grant public university system. This chapter offers a review of the research on this topic. The social cognitive theory will be discussed in the first section, followed by a review of recent literature on the history of distance education, post-secondary online writing instruction, attention-deficit/hyperactivity disorder, online course design, and accommodations. Finally, a gap in the literature is identified that there needs to be more research that addresses the experiences of students with attention-deficit/hyperactivity disorder in contemporary online college composition courses.

Theoretical Framework

This research is grounded in the social cognitive theory (SCT) of Albert Bandura (1989, 1993). Bandura's theory emphasizes individuals' pursuit of agency, belief, and ability to influence significant events through cognitive processes and self-regulation. Central to this theory is the concept of self-efficacy, the perceived capabilities to learn and perform actions (Bandura, 1993). This theory aids in understanding the experiences of post-secondary students with ADHD in online college composition courses. Students with learning disabilities like ADHD face many barriers to academic attainment (Hamilton et al., 2021). Self-efficacy is a key internal motivational process in social cognitive theory, and it is developed through self-evaluation and goal-oriented self-reflection (Bembenutty et al., 2022; Schunk & DiBenedetto, 2020). Students with ADHD can benefit from cultivating a positive perception of their capabilities and skills, allowing them to approach their learning experiences with confidence and

resilience. One assumption of this study is that students with ADHD can be successful in online composition courses if they have a strong sense of self-efficacy with a focus on student-centered learning and accessible course design. The social cognitive theory provides the framework for exploring the student experience based on perceived self-efficacy, self-regulation, goals, and motivation.

Social Cognitive Theory

Psychologist Albert Bandura (1989) proposed the social cognitive theory (SCT) as a psychological theory that elucidates the process of how individuals acquire behaviors, attitudes, and values through observation and imitation. The theory has proven valuable in comprehending various human behaviors, including aggression, addiction, and academic achievement. SCT emphasizes the significance of self-regulatory processes, such as motivation, self-efficacy, self-regulation, and human agency in the learning process. One cognitive pattern highlighted in Bandura's theory is self-efficacy, which refers to an individual's belief in their ability to perform specific tasks or achieve certain goals. Bandura asserted that individuals develop beliefs about their capabilities early on, impacting their accomplishments (Bandura, 1993). The foundation of human motivation, well-being, and personal achievement lies in perceived self-efficacy (Bandura, 1989). According to Bandura, those who possess a belief in their capacity to effect change and succeed are more likely to be successful.

Self-efficacy is influenced by past experiences, social persuasion, and psychological factors like anxiety and stress (Lin et al., 2021). Individuals with high self-efficacy are more inclined to engage in challenging tasks and persist in the face of obstacles (Bandura, 2001). One example explored by Lin et al. (2021) is that negative educational experiences can significantly impact an individual's self-efficacy beliefs. When students face repeated failures, harsh criticism,

or lack of support in their educational environment, their confidence in their ability to succeed can diminish. Bandura (1993) explained negative feedback or unfavorable social comparisons can undermine their belief in their capabilities. As a result, their self-efficacy may decrease, leading to reduced motivation, avoidance of challenging tasks, and decreased perseverance in the face of obstacles.

Cognitive patterns within Bandura's theory pertain to the mental processes through which individuals perceive, interpret, and respond to their environment (Bandura, 1989). These cognitive patterns are shaped by social learning experiences and have an impact on an individual's behavior, emotions, and thought processes (Bandura, 1993). Observational learning is a key cognitive pattern in Bandura's theory, involving the process of learning by observing and imitating the behaviors of others. Recent research by Lin et al. (2021) on the central role of observational learning in SCT highlights the influence of social modeling on an individual's cognitive patterns.

Cognitive appraisal, another important aspect, refers to an individual's subjective evaluation of a situation or event (Bandura, 1993). Cognitive appraisal can affect emotional responses, such as fear or anger, as well as behavioral responses, like avoidance or approach (Bandura, 1993). When faced with a particular circumstance, individuals engage in a cognitive process of assessing the situation, its meaning, and its potential consequences (Bandura, 2001). This evaluation influences not only individuals emotional responses but also their behavioral reactions.

Bandura (2001) explained that if a student perceives an academic task as challenging or threatening, they might experience anxiety or fear. Conversely, if they interpret the task as manageable or enjoyable, they may experience excitement or enthusiasm. Cognitive appraisal

thus acts as a filter through which individuals interpret and react emotionally to their experiences. Bandura further explained that cognitive appraisal also influences behavioral responses. After evaluating a situation, individuals determine how they should respond. This can manifest in various ways, such as approaching or avoiding a task or engaging in certain actions. For instance, if a student appraises the situation as threatening or irrelevant, they may exhibit avoidance behaviors, procrastination, or disengagement.

Human agency is a core principle in SCT, emphasizing the active role individuals play in shaping their behavior and influencing their environment (Bandura, 1989). Through human agency, individuals can actively engage in self-directed learning, pursue desired outcomes, and exert influence over their environment. Another cognitive pattern in Bandura's theory is self-regulation, which pertains to an individual's ability to monitor and control behavior. Self-regulation encompasses goal setting, progress monitoring, and behavior adjustment based on feedback. By engaging in self-regulation, individuals can effectively manage their actions, thoughts, and emotions to align with desired outcomes.

Bandura’s cognitive patterns, including self-efficacy, observational learning, cognitive appraisal, human agency, and self-regulation, underscore the significance of cognitive processes, social learning experiences, and individual volition in shaping behavior and achieving desired goals (2001). By understanding these principles, this research will gain a deeper understanding of how individuals acquire new behaviors, navigate their social environment, exercise agency, and shape their own lives.

Social Cognitive Theory and Motivation

Self-efficacy plays a crucial role in Bandura's (1993) SCT, which has implications for motivational outcomes. Learners who hold strong beliefs in their ability to learn are inclined to

engage in cognitive and behavioral activities that contribute to their learning advancement (Schunk & DiBenedetto, 2020). These activities encompass setting meaningful goals, utilizing effective learning strategies, actively monitoring and evaluating their progress toward those goals, and cultivating supportive physical and social learning environments. Self-efficacy, coupled with beliefs, goals, and motivation, forms a powerful combination that propels learners toward successful learning outcomes. Self-efficacy can be influenced by the consequences of one's actions, including perceived progress toward goals and achievements, as well as external factors such as social comparisons with peers and feedback from teachers and coaches (Bandura, 2001). These outcomes play a significant role in shaping an individual's self-efficacy beliefs and sustaining their motivation (Bembenutty et al., 2022; Schunk & DiBenedetto, 2020). Extensive literature supports the notion that self-efficacy, a core concept in social cognitive theory, significantly influences various aspects of individuals' learning experiences, including their choice of activities, level of effort, persistence, achievement, and self-regulation (Bandura, 1989; Schunk & DiBenedetto, 2020; Usher et al., 2019). Importantly, self-efficacy is not solely determined by internal factors but can also be influenced by the outcomes of one's achievement efforts.

In the context of social cognitive theory, researchers have explored how perceived similarity in age, gender, and ability levels can impact an individual's self-efficacy (Bandura, 1989). It is worth noting that perceived similarity can both elevate and diminish self-efficacy. When learners observe others who are similar to themselves experiencing failure, it can lead to lower self-efficacy, which is a significant personal influence on motivational outcomes. Schunk and DiBenedetto (2021) recognize that the influence of perceived similarity on self-efficacy underscores the social cognitive nature of the theory, as individuals' beliefs about their own

abilities can be shaped by their observations of others whom they perceive to be similar to themselves.

Outcome expectations are beliefs about the likely consequences of given actions based on prior experiences (Bandura, 1989). According to Bandura (1993), it is important to differentiate between outcome expectations and self-efficacy as they hold distinct meanings. Self-efficacy refers to an individual's belief in their own capabilities. At the same time, outcome expectations pertain to an individual's belief about the likely consequences that will follow after performing a specific action. However, it is worth noting that self-efficacy and outcome expectations are often closely related and intertwined. Students who possess a strong sense of self-efficacy, believing in their ability to perform well and achieve success, tend to exhibit higher levels of motivation compared to those who doubt their capabilities or question the possibility of long-term success (Schunk & DiBenedetto, 2020). This highlights the importance of students' beliefs in their ability to influence their own outcomes, as it can significantly impact their motivation and subsequent actions.

Bandura (1989) suggested that specific characteristics of models are believed to enhance motivation. Individuals tend to pay more attention to models they perceive as competent. Additionally, when there is a perceived similarity between the model and the observer, it can trigger social comparisons, which are personal processes that can influence motivational outcomes (Schunk & DiBenedetto, 2020). The achievement of goals requires self-regulation, which plays a crucial role in the process (Bandura, 1989). While motivational processes lay the foundation for goal attainment, it is through self-regulation that individuals take active control and make progress toward their goals (Schunk & DiBenedetto, 2020). In this sense, self-regulation becomes instrumental in facilitating the journey toward goal achievement. Bandura's

theory (1989) emphasized that motivational processes, such as goals, perceptions of progress, and self-efficacy, are dynamic and subject to change throughout the learning journey (Schunk & DiBenedetto, 2020). Studies have shown that improvements in self-efficacy are associated with enhanced motivational outcomes, including increased effort and persistence. This highlights the importance of recognizing the fluid nature of motivation and the potential for growth and development in learners' motivational processes over time.

For instance, self-efficacy has the potential to undergo rapid fluctuations and is not a fixed attribute that remains unchanged throughout a learning cycle (Schunk & DiBenedetto, 2020). Within a learning context, self-efficacy can shift as teachers transition from one activity to another. Individuals may assess their capabilities as highly capable, moderately capable, or not capable of accomplishing a specific task (Bandura, 2001). By closely monitoring these nuanced changes, researchers can shed light on how motivation fluctuates throughout the learning process and identify the influences, such as instructional, social, and personal factors, to which it is responsive (Schunk & DiBenedetto, 2020).

Within educational settings, Bandura's SCT is dedicated to a significant portion of social cognitive motivation research, which has primarily focused on the fundamental domains of mathematics, science, reading, and writing (Schunk & DiBenedetto, 2020). The term self-efficacy within the educational context encompasses various aspects, such as achieving specific grades in courses, attaining success in college, and experiencing feelings of competence in academic settings. Self-efficacy involves a wide range of academic outcomes and personal perceptions related to competence and achievement in school.

For instance, a recent study by Usher et al. (2019) examined the relationship between self-efficacy, grit, and academic achievement. The findings indicated that self-efficacy emerged

as the stronger predictor and mediated the relationship between grit and school outcomes. Studies like this, exploring the roles of social cognitive motivational influences, contribute to understanding their distinctiveness. It is important to note that online and asynchronous media operate differently compared to face-to-face contexts (Schunk & DiBenedetto, 2020). Researchers note that one should not assume that social cognitive and motivational processes will function in the same manner in both settings. In today's learning landscape, students regularly engage with online videos and connect with peers electronically through various platforms (Schunk & DiBenedetto, 2020). Notably, perceived similarity plays a critical role in motivation (Bandura, 2001). Researchers have also demonstrated that online tutors can assist students in developing self-regulatory skills, leading to enhanced self-efficacy, motivation, and achievement (Schunk & DiBenedetto, 2020).

Since its inception, SCT has been closely intertwined with the study of motivation. The theory's emphasis on motivational variables has received extensive research attention, and its theoretical predictions have generally been supported. However, the research agenda regarding motivation within the framework of social cognitive theory is still evolving. Suggestions have been proposed for further research areas, with the hope that the theory's motivation research will continue to expand and evolve in the future.

Within the framework of educational research, SCT has been used recently to study academic success and building self-regulation and self-efficacy crucial for students with learning disabilities, including those with ADHD. Research cited by Schunk and DiBenedetto (2021) involved case studies on postsecondary education programs that highlighted the significance of addressing students diagnosed with disabilities in mathematics, reading, short-term auditory memory, abstract reasoning, and ADHD. In a study by Mana et al. (2022), SCT was used to

research 2,113 students at 25 higher education institutions with ADHD, comorbidity (ADHD and a learning disability), and students without disabilities were examined to understand self-efficacy differences and motivation. The researchers measured self-efficacy and motivational attributions, exploring students' beliefs about perceived causes of outcomes (Mana et al., 2022). Findings revealed that students with ADHD tended to attribute failures to internal causes such as low ability and lack of motivation, while successes were attributed to external factors like luck (Mana et al., 2022). SCT clarifies academic motivation, self-regulation, and self-efficacy in students with ADHD and learning disabilities. By addressing these factors, educators and professionals can provide the necessary support to cultivate students' motivation, empowering them to overcome learning challenges and achieve academic success.

Related Literature

The advancement of technology and the widespread availability of the Internet have drastically changed the landscape of education, including the field of writing and composition (Johinke et al., 2023). Distance learning and online composition have become increasingly prevalent, offering students greater flexibility and accessibility in pursuing higher education (Johinke et al., 2023). However, the online learning environment also poses unique challenges, particularly for students with learning disabilities such as ADHD (DuPaul et al., 2021). A thorough review of the literature pertinent to the history of distance composition studies, current practices in online composition, the characteristics of online learners, and the specific writing characteristics of students with ADHD was completed. Additionally, the review highlights how course design can be adapted to accommodate the diverse needs of online college students with ADHD, ultimately highlighting the importance of creating inclusive and equitable learning environments for all learners.

Historical Background of Online Composition Studies

The earliest method of distant college composition studies was through correspondence courses, where students would receive and submit assignments through the mail (Wooten, 2013). This method dates to the late 19th century and was widely used before the advent of technology that enabled online learning. The vocational Pitman Shorthand training program was carried out via correspondence in 1852. Some of the earliest college-level correspondence courses were provided at Illinois Wesleyan University in 1874 and the University of Chicago in 1892. These early methods of writing instruction were based on traditional curriculums but became known for instructor feedback. Correspondence courses were provided by both post-secondary institutions and private companies, accounting for 20% of all annual enrollments, with one university engaging 24,555 distance students from 1906 to 1916. The National University Extension Association (NUEA) was established in 1915 to form quality standards for pedagogy, curriculum, and credits assigned. Wooten further explained that correspondence education was very popular with women and remained a strong presence in post-secondary education until the Great Depression of the 1930s, when enrollment fell severely, and half of the for-profit schools closed.

The early composition curriculum began to take on a more academic focus, emphasizing teaching students to write in various genres and styles (Wooten, 2013). This shift was influenced by the rise of literary criticism and the development of English studies. Wooten found that when students were on campus, the institution's values heavily influenced the curriculum. The shift to distant education composition and writing styles began to vary with less predictable outcomes since students were learning in their home environments. Some studies sought to understand the relationship between the traditional classroom and the distance between correspondence and

online education (DePew et al., 2006). Objectors called for writing courses to maintain the same content, structure, and institutional values but replicated in the home environment (Wooten, 2013). There is little discussion of academic resources for students in the early years of distance education. It is assumed that students who struggled with literacy most likely concluded their studies without succeeding.

During the mid-20th century, composition courses continued to evolve, emphasizing teaching writing as a process rather than just a set of rules (Griffin & Minter, 2013). Studies have shown writing workshops and peer reviews became popular teaching methods, and composition courses expanded to include writing for various disciplines and professions. Post-World War II brought radio and television into homes across America, and educational television prompted mixed media college composition courses via telecourses through correspondence programs for credit.

The early 21st century and the advent of the internet created the rise of digital technologies and online learning that again transformed college composition courses (Griffin & Minter, 2013). Today, composition courses often incorporate multimedia and digital literacies and may be offered in hybrid or fully online formats (Graham, 2019). The National Center for Education Statistics (NCES, 2022b) reported that 6.9 million students were enrolled in online courses in the fall of 2018, representing 35.4% of all higher education students. There is no definitive source for the exact number of students enrolled in college composition courses in the United States in 2021. However, based on enrollment data from previous years, it is estimated that hundreds of thousands of students take college composition courses each year in the US. For example, the NCES reported that in the fall of 2018, over 1.2 million students were enrolled in first-year writing courses in degree-granting post-secondary institutions. This number may have

changed slightly in the following years. However, college composition courses likely continue to be a requirement for a significant portion of United States undergraduate students (Graham, 2019). While these numbers do not specifically focus on college composition courses, they suggest that online learning is becoming increasingly popular among college students in general, including those taking composition courses.

Practices in Online Composition

Prior research has shown that most American College undergraduate students are required to complete foundational English composition courses to graduate (Graham, 2019). These composition courses ensure that students can effectively communicate in writing (Griffin & Minter, 2013). The research has focused on writing as a tool for academic, professional, and personal communication. Strong writing skills reflect student learning; in contrast, weaker writing skills often indicate lower learning outcomes (Stewart et al., 2022). In online composition courses, students can expect to develop their writing skills by completing various writing assignments, such as essays, research papers, and other forms of written communication (Griffin & Minter, 2013). Bowen et al. (2022) compared targeted feedback in writing courses, finding that students may also receive feedback on their writing from their instructors and peers through various online tools, such as comments and annotations on their work. Online composition courses may be offered in synchronous or asynchronous formats. Synchronous courses involve live, real-time sessions where students and instructors simultaneously participate in discussions and activities (Moorhouse & Wong, 2022).

On the other hand, asynchronous courses allow students to complete their coursework at their own pace and on their schedule (Moorhouse & Wong, 2022). While online composition courses offer students the convenience of working from anywhere and at any time, they may

require a high degree of self-discipline and time-management skills (Greenhow et al., 2022). Additionally, some students may miss the in-person interaction and support they would typically receive in a physical classroom setting.

According to Stewart et al. (2022), instructors are not only subject matter experts but must be accomplished community builders. Prior studies by Graham (2019) discovered that writing teachers needed to do more to address goals, motivation, and efficacy, which would be revisited in a more recent study of writing attitudes and beliefs. Concerns about the distance between students and facilitators have prompted numerous studies of collaboration and community building necessary to make writing courses effective (Bowen et al., 2022; Greenhow et al., 2022; Martin & Borup, 2022). A considerable amount of literature has been published on the online environment, and it allows students time to formulate and edit their responses (Mayberry, 2018). There is expected continuous engagement with text and classmates through written responses. One of the most significant current discussions involves applying the community of inquiry (COI) framework to online writing instruction (OWI). Stewart et al. (2022) discussed social presence in terms of the ability of students to establish and maintain a sense of connection with their instructor and peers through discussion forums and synchronous online meetings.

Students are encouraged to share their experiences, reflections, and opinions to establish a social presence. Stewart et al. (2022) noted that the study also considered that cognitive presence in OWI can be fostered through writing prompts encouraging students to analyze and evaluate different perspectives critically. Online discussions and peer review can also support cognitive presence by allowing students to collaborate. Finally, in OWI, teaching presence is supported by the design of clear and specific writing assignments, rubrics, and feedback that

align with course objectives (Weaver et al., 2022). Researchers may struggle to agree with methodology, but all agree that online college composition can be supportive and engaging while fostering critical thinking and effective writing practices (Sladek, 2022; Stewart et al., 2022; Weaver et al., 2022).

The Online Learner

Several key qualities make for a successful online learner, such as motivation, high self-efficacy, strong time management, and effective communication skills. Research has demonstrated that self-motivation is essential to online learning (Nguyen, 2022; Zamecnik et al., 2022). Online students can motivate themselves to stay engaged and focused even when not in a physical or face-to-face classroom environment (Litterio, 2018). Self-motivated students take responsibility for their learning and actively seek resources and support when needed (Zamecnik et al., 2022). Likewise, the researcher's review of the literature links high self-efficacy and motivational behaviors. The necessary motivation for online learners is the inward desire to achieve mastery of a subject or skill or purely the gratification that comes from new knowledge (Zamecnik et al., 2022). Students with high self-efficacy were noted as more likely to be motivated to take on challenging assignments and persist in their studies, even when faced with difficulties. Conversely, students with low self-efficacy may be less motivated to engage in challenging assignments or may give up more easily when faced with obstacles.

It has been conclusively shown that time management skills are essential to the online learner (Access Computing, 2021; Greenhow et al., 2022). The research described that more self-discipline was required than in traditional classroom learning, as students are responsible for managing their time to keep up with coursework (Greenhow et al., 2022). Successful online learners can prioritize their responsibilities and create a schedule that allows them to complete

assignments and participate in discussions on time (Borgman & McArdle, 2022; Litterio, 2018). The flexibility of distance education is attractive to many. However, students struggle to make time for work, school, and family, which can be challenging (Borgman & McArdle, 2022).

Other studies have considered the relationship between online education communication skills from students and a heavy emphasis on written communication (Bolliger & Martin, 2021; Wittstock, 2022). Surveys, such as those conducted by Litterio (2018), showed that communication is more critical in an online environment. One student noted the necessity to clearly articulate their thoughts and ideas in writing. In contrast, another student noted the requirement to be comfortable using technology tools to communicate with instructors and peers. Online learners must communicate any difficulties with understanding course content and must inherently derive meaning from materials accessed on the screen (Borgman & McArdle, 2022). The researchers explained that communication possibilities are exponentially greater in the online environment with the use of media and digital applications to increase inclusion and understanding (Access Computing, 2021).

Consequently, technology familiarity is crucial for online learners. One study sought to understand the student's familiarity with various digital tools and platforms, such as learning management systems, video conferencing software, and online collaboration tools, with student success (Benzie & Harper, 2020). Similarly, several studies concluded that advances in online education have led to an interconnectedness of technology, literacy, and successful learning (Weaver et al., 2022; Wittstock, 2022).

A detailed examination of online learning concluded that it often requires students to be more self-directed and to take a more active role in analyzing and synthesizing information (Cramarenco et al., 2023; Litterio, 2018). Cramarenco et al. (2023) suggested that successful

online learners can think critically and apply what they have learned to new situations. Overall, all the research examined found that a successful online learner is self-motivated, organized, communicative, familiar with technology, and able to think critically (Benzie & Harper, 2020; Griffin & Minter, 2013; Litterio, 2018). By possessing these qualities, the online learner is better equipped to succeed in academic attainment (Benzie & Harper, 2020).

Attention-Deficit/Hyperactivity Disorder

ADHD is a neurodevelopmental disorder that affects an individual's ability to concentrate and pay attention (Majarwitz & Perumareddi, 2023; Wu & Molina, 2019). Reports indicate a higher rate of what the DSM-5 refers to as attention-related disorders and symptomology (NCLD, 2023). ADHD can make it difficult for students to complete tasks, particularly those that require sustained focus or attention to detail (Weis et al., 2019; Wu & Molina, 2019). Post-secondary education can present additional challenges for individuals with ADHD as it requires self-motivation and the ability to stay organized and on track without the structure and support of a traditional classroom setting (Weis et al., 2019). Young adults with ADHD are reportedly less likely to enroll in post-secondary education (Hamilton et al., 2021; Teixeira Leffa et al., 2022). Although accommodations are available, many students studied reported barriers to their success, resulting in lower self-efficacy and low self-determination (Weis et al., 2019). Reported problems included time-test struggles, inability to complete assignments, a prolonged perception of working harder, and higher frustration levels (Sedgwick-Müller et al., 2022). College students with ADHD self-reported reasons for their poor performance, including inadequate academic strategies, poor organization and study skills, lack of time management, and cognitive impairments, including inattention, intrusive thoughts, and restlessness. The college matriculation rate for students with ADHD varies depending on the source and the specified

population being studied (Hotez et al., 2022). However, some studies suggested that college enrollment and completion rates for students with ADHD are lower than those without ADHD (Sedgwick-Müller et al., 2022).

Learning Disabilities

Learning disabilities (LD) is a broad term that refers to a range of neurological conditions that affect an individual's ability to acquire, process, store, and produce information. The American Psychological Association (APA, 2013) defines learning disabilities as neurological conditions marked by substantial deficits in acquiring specific scholastic or academic skills, particularly those associated with written or expressive language. Research recognizes that these conditions are unrelated to intelligence, motivation, or effort, and individuals with learning disabilities have average to above-average intelligence (Lefler et al., 2023). Learning disabilities can affect various aspects of learning, including reading, writing, math, and communication (Eden, 2021). Some of the most common learning disabilities include dyslexia, dysgraphia, dyscalculia, ADHD, and language-processing disorder (Kim & Kutscher, 2021). Learning disabilities can significantly impact an individual's academic performance, social skills, and self-esteem (Shea et al., 2018; Usher & Schunk, 2018).

The academic underperformance of students with LD can be associated with an inability to focus, concentrate, stay on task, remember information, and find social life overwhelming (Lefler et al., 2023). Studies have shown that students with learning disabilities can be as intelligent as their peers without these disabilities (Evmenova & Regan, 2019; Shea et al., 2018). The academic and social environment often fails to meet the needs of students with learning disabilities (Lefler et al., 2023). Research demonstrated that barriers to academic attainment existed in the design, delivery, and assessment of learning. It is argued that students with

learning disabilities not only belong in higher education but have contributed significantly to academic discourse by virtue of their perspectives and cognitive profiles (Ralston-Berg & Braatz, 2021; Shea et al., 2018). In 1975, the Individuals with Disabilities Education Act (IDEA) and the Americans with Disabilities Act (ADA) of 1990 provided protections for students with learning disabilities by qualifying them for special education and accommodations (U.S. Department of Education, 2022).

The subcategory of LD, known as a specific learning disability (SLD), refers to learning disabilities that affect specific areas of academic learning (NCLD, 2023). SLDs are defined under the IDEA, which is a federal law that provides support and services to individuals with disabilities and characterizes SLDS by a significant discrepancy between an individual's expected academic achievement and their actual achievement in a specific area. ADHD is considered a specific learning disability (SLD), which is a type of learning disability that affects academic learning and qualifies an individual for special education and accommodations. Under IDEA, students with ADHD may be eligible for accommodations if their symptoms impact their academic performance, such as their ability to focus, organize, complete assignments, and manage time (Lefler et al., 2023).

Post-Secondary Education and Students with ADHD

The number of students entering post-secondary education with ADHD is rapidly increasing. According to the National Center for Learning Disabilities (NCLD, 2023), approximately 10 million adults have ADHD. Studies have estimated that 3.5% to as many as 8% of college students have a formal diagnosis of ADHD (DuPaul et al., 2021; DuPaul et al., 2009). However, Hamilton et al. (2021) noted that many students may have received formal diagnoses in adolescence with accommodations, even 504 plans, while many others did not. A

504 plan is a formal educational plan for students with disabilities that identifies how schools can support learning and grant equal access (National Center for Learning Disability, 2023).

Data from several studies have identified that ADHD students can be highly successful academically and even linked to giftedness, so a diagnosis is not a guaranteed link to failure (Kim & Kutscher, 2021; Wu & Molina, 2019). Approximately 11% of all college students identified attention-related symptomology (DuPaul et al., 2021). It has been reported that 25% of all college students with disabilities have ADHD (Lefler et al., 2023; Sedgwick-Müller et al., 2022). The research demonstrates a growing population of university students with ADHD. According to NCLD (2023), students with ADHD presented difficulties maintaining attention, executive functioning, and working memory.

ADHD is characterized by inattentive, hyperactive, impulsive behaviors with deficits in executive functioning (DuPaul et al., 2021). Reports indicate difficulty sustaining attention, problems with organization, problems with forgetfulness, less resilience, and less self-efficacy (Fasciano et al., 2021; Hamilton et al., 2021; Wu & Molina, 2019). NCLD (2023) categorizes ADHD with learning disabilities defined by unexpected academic weakness in reading, writing, and mathematics. Research has shown that students report difficulty focusing during lectures and persisting on complex tasks with lower grades and even lower graduation rates (DuPaul et al., 2021; Lefler et al., 2023).

College Matriculation, Persistence, and Retention

Multiple studies found that young adults with ADHD are less likely to enroll in college. Those who obtained significantly lower GPAs withdrew from courses more frequently and were less likely to graduate than peers without ADHD (DuPaul et al., 2021). One study published in the *Journal of Attention Disorders* in 2014 found that 41% of college students with ADHD had

dropped out of college, compared to a 24% dropout rate for students without ADHD (Hotez et al., 2022; Lefler et al., 2023). In 2017, the *Journal of Learning Disabilities* found that college students with ADHD had a lower first-year retention rate of 70% compared to students without ADHD at 86% (NCLD, 2023). Difficulty with academic performance is linked to executive functioning deficits associated with ADHD (DuPaul et al., 2009; Hotez et al., 2022). Executive functioning is classified as a set of cognitive processes that enable students to plan, organize, initiate, manage time, pay attention, switch focus, regulate emotions, and complete tasks (DuPaul et al., 2021). Although studies have investigated the trajectory of children with ADHD, few have explored college functioning and academic performance (Takacs & Kassai, 2019). DuPaul et al. (2021) studied the trajectory of college students with ADHD, explicitly focusing on progress toward graduation by assessing the percentage of credits earned relative to credits needed, finding that students with ADHD had a lower persistence rate and retention. The study's conclusions varied based on levels of symptomology and medication. The group of students with ADHD on prescribed medication with accommodations persisted to graduation at a rate of 54%, and the group with no medication and no accommodations persisted at only 49%. Multiple studies demonstrated that college students with ADHD obtained significantly lower GPAs and reported less use of study skills strategies (Hotez et al., 2022; Lefler et al., 2023; Tatar & Cansız, 2022).

In contrast, more recent research indicated that students who did not receive medication but received academic services increased their GPA trajectory and demonstrated improved study skills (Lefler et al., 2023). For example, academic success training positively addressed executive functioning skills that directly affected organization, assignment tracking, and completion. The study also found that early intervention enhanced study skills and increased

student retention (DuPaul et al., 2021). Overall, students with ADHD are at a higher risk for poor academic achievement, failure, and withdrawal.

Students with ADHD in Online College Courses

Many universities and colleges across the United States have increased their online course offerings as students seek more flexibility and convenience (Hamilton et al., 2021). One survey asked students to agree or disagree with the following statement: "Online learning has allowed me to engage with my course more positively," with 59% of students with ADHD disagreeing (Sedgwick-Müller et al., 2022). Additionally, the research found that after twelve weeks of online learning, 71% of students with ADHD reported learning outcomes that were challenging to achieve. This means that course-specific learning outcomes and expectations were difficult for students with ADHD. While online college courses offer some students greater opportunities for attendance, engagement, and participation, students with ADHD reported a significant disconnect from much-needed services (Access Computing, 2021; He et al., 2021; Lefler et al., 2023). There are negative impacts of electronics, increased screen time, and online activity for students with ADHD (NCLD, 2023).

Most importantly, recent studies showed that online college students with ADHD faced greater distraction and inattention because electronic devices and online activities were stimulating and distracting (He et al., 2021; Sedgwick-Müller et al., 2022). Students found it hard to resist the temptation to check their social media, play video games, watch videos, or browse the Internet (Sedgwick-Müller et al., 2022). Limited research sought to understand electronic devices and blue light interference that led to sleep deprivation and increased symptoms of ADHD (NCLD, 2023). Multiple studies found that students with ADHD reported feelings of social isolation and a lack of collaborative learning (Kamperman, 2020; Sedgwick-

Müller et al., 2022). It is important to note that there is no preferred method of teaching students with ADHD, and academic attainment depends on the individual needs and strengths of the student (NCLD, 2023).

Writing Characteristics and ADHD

ADHD can have a significant impact on student's writing skills, which can make it difficult for them to express their thoughts and ideas effectively in academic attainment (Graham, 2019). Writing can be a difficult skill because it involves a variety of cognitive and affective processes (Capodieci et al., 2019). Experts have noted that the characteristics necessary for effective writing involve three processes: the first is the planning process, where the writer is engaged in preparing the content of the text by retrieving and organizing ideas from the writer's long-term memory. The second phase, often referred to as the translation process, deals with grammatically conceptualizing and structuring content with syntactic and lexicon abilities. The third phase is the revision phase, which allows the writer to compare the written text with mental versions of the intended content. Mentally, writers must master what Cheng et al. (2022) referred to as the writing environment and self-constraints, both linked to organization.

One of the main characteristics of students with ADHD is poor organization. Studies show that students with ADHD may struggle with organizing their thoughts and ideas, which can make it difficult for them to structure their writing effectively (Cheng et al., 2022; François et al., 2021). Students with ADHD demonstrated lower controls in writing ability, word complexity, and productivity (Ray & Graham, 2021). Najafi et al. (2021) concluded that students with ADHD wrote shorter essays of lower quality and frequently omitted essential essay elements. ADHD causes difficulty in executive functioning, and executive functioning assists in task representation, planning, execution, and evaluation (Ray & Graham, 2021).

One of the main obstacles for these students is difficulty with attention and focus. Research has shown that they may have trouble staying on task, which can make it challenging to complete writing assignments within a given time frame (François et al., 2021). They may also have difficulty with sustaining their attention to the task at hand, leading to frequent distractions and interruptions. In the comparative studies of students with ADHD to students without ADHD, competent writers were shown to pay attention to different actions simultaneously by calling upon working memory and regulating the correct execution at the appropriate time (Ray & Graham, 2021). Studies demonstrate a strong and consistent association between retaining ideas in their minds, acting upon and organizing ideas quickly, retrieving grammar, spelling, and punctuation rules from long-term memory, and manipulating information to organize in a logical sequence before reviewing and correcting errors (Cheng et al., 2022).

Ray and Graham (2021) examined aspects of coherence and poorly articulated compositions and college entrance exams. However, in translation process studies, the research indicated that students with ADHD often presented a lower number of sentences, subordinate clauses, functional words, and less sophistication of vocabulary (Cheng et al., 2022). In a pilot study conducted by Datchuk et al. (2020), the focus was on exploring the specific writing challenges faced by students with ADHD. The results of the study revealed that these students typically scored lower in terms of writing quality, with particular difficulties observed in sentence fluency. This finding suggested that individuals with ADHD may encounter specific obstacles when expressing their thoughts and ideas in written form. Perin (2020) explained that students with ADHD often struggle with spelling due to attention and focus issues, working memory limitations, executive functioning deficits, phonological processing difficulties, visual processing challenges, and reduced self-monitoring. Maintaining focus and attention is crucial

for accurate spelling, but ADHD can make it difficult to sustain concentration on individual letters and spelling patterns (Cheng et al., 2022).

Working memory limitations can hinder the ability to remember and apply spelling rules and patterns (Capodieci et al., 2019). The Capodieci et al. study provides valuable insights into executive functioning deficits and the impact on planning, organization, and self-monitoring, making it challenging to select the appropriate spelling strategies and proofread work. Difficulties in phonological processing affect the ability to break words into sounds and identify letter-sound correspondences. Several studies mention visual processing challenges impacting the recognition and reproduction of visual aspects of words (Capodieci et al., 2019; Cheng et al., 2022). Additionally, reduced self-monitoring and impulsivity may lead to careless errors and a lack of attention to spelling (Evmenova & Regan, 2019; François et al., 2021).

The study conducted by Datchuk et al. (2020) provides valuable insights into the long-term implications of ADHD-related writing difficulties. It highlights the fact that the attention, memory, and executive functioning skills challenges often persist from childhood into adolescence and adulthood. This notion is further supported by additional research studies conducted by François et al. (2021) and Evmenova and Regan (2019), which have also reported a high rate of writing difficulties in individuals with ADHD throughout different stages of life. Dunn (2022) studied accessibility in the writing class for students with disabilities, including ADHD. Online and technology-based learning can be helpful tools for students with ADHD (Sedgwick-Müller et al., 2022). Research showed that using educational applications and software that supported executive functioning skills, such as time management and organization, was highly successful for students with ADHD.

Writing Motivation, Self-Efficacy, Goal Orientation, Beliefs, and Affect

Several theoretical constructs have been explored in the study of writing motivation, including goal orientation, self-efficacy, beliefs, and affect (MacArthur et al., 2022; MacArthur et al., 2016; Philippakos et al., 2023). Self-efficacy has been extensively researched, while motivation was initially overlooked in early writing models but later recognized as being intertwined with cognitive processes and the task environment (Philippakos et al., 2023). It was Zimmerman and Bandura (1994) who sought to understand the link between a learner's perceived capability or self-efficacy and writing motivation. Writers' goals and priorities are influenced by their beliefs and attitudes, leading to varying levels of commitment and quality in their writing endeavors (MacArthur et al., 2022).

Self-efficacy, which refers to writers' belief in their ability to complete specific tasks successfully, has significantly impacted students' motivation and academic performance (Camacho et al., 2021). It has been suggested that writing instruction should explicitly address self-efficacy. Several studies have demonstrated a strong relationship between self-efficacy and writing performance, although not all research has found such a connection (Camacho et al., 2021; Limpo et al., 2020; Mana et al., 2022). Additionally, higher apprehension about writing has been linked to lower self-efficacy (Philippakos et al., 2023). Differentiated factors of self-efficacy may emerge when studying a broader range of students, as observed in recent work with high school and postsecondary learners.

Goal orientation theory, specifically achievement goal theory, has been applied to understanding motivation in writing (MacArthur et al., (2022). Learners' goal orientation refers to their inclination towards mastery goals, performance goals, and avoidance goals. Students with high self-efficacy tend to pursue mastery goals focused on understanding, learning, personal

growth, and self-improvement, while those with low self-efficacy often lean towards avoiding challenges (Schunk & DiBenedetto, 2021). However, Schunk and DiBenedetto consistently indicate that students across different grade levels prioritize performance goals and seek validation through grades rather than emphasizing mastery goals. Interventions that support systematic writing processes and goal setting have shown potential to increase mastery goal orientation among students (Sides et al., 2022). Positive relationships have been found between performance and mastery goals, while avoidance goals exhibit negative correlations with affect and self-efficacy (Philippakos et al., 2023).

Students' beliefs about the importance of writing can significantly impact their motivation and engagement. Philippakos et al. (2023) cited earlier works that explored the influence of implicit beliefs on writing performance, comparing transmissional beliefs (writing as knowledge transmission) with transactional beliefs (writing as a process of learning and revising). They found that students with higher transactional beliefs and lower transmissional beliefs produced higher-quality papers and demonstrated greater engagement. Low-skilled writers, including basic writers (BWs) and students with learning disabilities (LD), often prioritize grammar and basic skills over idea generation due to the salience of these challenges (Camacho et al., 2021). Najafi et al. (2021) found that students' beliefs about essay writing, including their perceptions of its value, purpose, and importance of different aspects, play a crucial role in shaping their motivation, engagement, and, ultimately, the quality of their written work. Finally, Philippakos et al. (2023) further developed the earlier work by MacArthur et al. (2016) using the term *affect*, referring to the emotions and attitudes writers have toward writing, which has been shown to have an impact on students' writing quality. These studies were explicitly measuring liking or disliking of writing. In the MacArthur et al. study involving basic writers (BWs), affect was

strongly correlated with self-efficacy and beliefs regarding the significance of substance/content in writing.

Online Course Design

Effective course design has significantly improved access to education by overcoming many of the traditional barriers to learning (Greenhow et al., 2022; Ralston-Berg & Braatz, 2021). A recent criterion study revealed that students valued well-designed course content, motivated interaction between the instructor and learners, fully supported faculty, online sense of community, advanced technology, as well as flexibility, accessibility, student-centered education, self-directed learning, collaborative learning, diversified learning, and technology application (Cramarenco et al., 2023). One quantitative analysis of student perceptions of online learning linked innovative technologies to students who embraced digitalization and mastered new skills. Multiple studies that sought to understand the student perspective of online education revealed a preference for blended learning (Tuiloma et al., 2022). Others stressed cognitive, social, and teacher presence as key factors to educational attainment (Cramarenco et al., 2023; Tuiloma et al., 2022). Learning management systems (LMS) have allowed institutions to incorporate asynchronous, as well as synchronous, learning environments (Borgman & McArdle, 2022). Over the past decade, researchers reviewed the effectiveness, flexibility, and accessibility of synchronous and asynchronous platforms (Ralston-Berg & Braatz, 2021). Research indicated that many students preferred the flexibility of online educational formats related to self-directed and self-regulated learning, which granted the learners a more balanced approach but relied heavily on levels of self-efficacy and executive functions (Borgman & McArdle, 2022; Cramarenco et al., 2023). All research indicated the importance and relevance of course design.

Universal design (UD) is an approach to course design that aims to create products and environments that are accessible and usable by people with a wide range of abilities and disabilities (Bolliger & Martin, 2021). UD principles can be applied to online course design to make courses more inclusive and accessible to all learners regardless of their abilities. The Dawson et al., (2021) research concluded that course design should focus on multiple formats of representation to provide content such as text, audio, and video to cater to different learning styles and abilities by providing transcripts and closed captions for all video and audio content. Selznick (2020) and Dawson et al. literature concluded the importance of allowing learners different modalities to express themselves, such as written assignments, collaborative projects, and multimedia presentations. Another study by Bolliger and Martin (2021) explored multiple means of engagement through discussion forums, peer-to-peer interactions, and interactive multimedia content with opportunities for collaboration and feedback. The results of Harwin's (2020) article indicated the importance of providing learners with flexible learning paths, allowing them to choose the order in which they complete assignments and assessments by adjusting the pace of the course to suit their learning needs. By applying the principles of UD, online course composition that course designers can create that are inclusive, accessible, and engaging (Edwards et al., 2022). This approach benefits learners with disabilities but provides a better learning experience for all learners. Accessibility ensures that course content is accessible to learners with disabilities by following accessibility guidelines such as the Americans with Disabilities Act (ADA), which resulted in the need to provide alternative text for images, contrasting colors for text, and ensure the course is easily navigated (Borgman & McArdle, 2022; Mehmet et al., 2019).

Accommodations for Students with ADHD

Only 49% of students with ADHD will graduate college, compared to 59% of students without ADHD (Norton, 2021). Research has demonstrated that students with ADHD are often underprepared for the academic rigor of post-secondary education (Fuermaier et al., 2021). The importance of academic support, such as accommodations for students with learning disabilities and specific learning disabilities such as ADHD, was stressed in multiple studies (DuPaul et al., 2021). According to a National Center for Learning Disability (NCLD) (2023) report, 94% of students with SLD received accommodations and support in high school settings; however, only 17% accessed these services in post-secondary education settings (Wu & Molina, 2019). Individuals with disabilities are guaranteed equal opportunity under two federal laws. College students with disabilities are protected by the Americans with Disabilities Act of 1990 (ADA), amended in 2008, and the Rehabilitation Act of 1973, specifically section 504 (Attention Deficit Disorder Association, 2023).

Universities typically offer a range of accommodations to support students with ADHD and help them succeed academically. Students with ADHD may have difficulty focusing and completing exams within the allotted time. Hence, institutions provide extended time to reduce stress and enable students to demonstrate their knowledge and skills (Kim & Kutscher, 2021). Research studies have shown that providing extended time on exams can benefit students with certain disabilities, including ADHD (Lagacé-Leblanc et al., 2022). However, the percentage of students who perform better with extended time on exams can vary depending on a variety of factors, including the severity of ADHD symptoms and the type of exam being administered. A study published in the *Journal of Learning Disabilities* revealed that students with ADHD who received extended time on standardized tests performed significantly better than those who did

not receive extended time. The effect size of extended time on exam performance was moderate to large, indicating a significant improvement in test scores for students with ADHD. Providing extended time on exams significantly improves the scores of college students with ADHD on both multiple-choice and essay questions (Edwards et al., 2022).

Students with ADHD may benefit from being seated at the front of the classroom or in a distraction-reduced environment (Edwards et al., 2022). More recent studies found that this can help reduce distractions and increase their focus on the presented material (Lagacé-Leblanc et al., 2022; McIntyre, 2023). Kim and Kutscher (2021) noted that students also benefited from note-taking assistance, while campus support services can provide copies of the instructor's notes or a lecture recording for later review. Many institutions implement study skills workshops, tutoring, or academic coaching to help students develop effective study habits and strategies. One study by Wu and Molina (2019) noted that the University of Arizona's Strategic Alternative Learning Techniques (SALT) Center is an academic support program that services students with learning and attention challenges (University of Arizona, 2023). According to the site, the primary services include four domains: (a) educational planning with a professional student support specialist, (b) content-specific tutoring, (c) educational technology support, and (d) in-house psychological services.

Research indicated that assistive technologies are available to help students with ADHD, such as text-to-speech software, speech-to-text software, and organizational tools (Harwin, 2020). Universities may provide access to these technologies or assist with the cost of acquiring them (Attention Deficit Disorder Association, 2023). Torres (2022) found that technology preference ranged among students with no definitive outcomes. Aside from technologies, universities can offer flexible deadlines for students to complete assignments to reduce stress and

enable students to complete assignments at their own pace. Many studies indicated the importance of counseling and mental health support for students with ADHD (Ginapp et al., 2023; Lefler et al., 2023). Kim and Kutscher (2021) reviewed the benefits students with ADHD received from counseling and mental health support to manage their condition's emotional and psychological impact.

Accommodation for students with disabilities is a continual area of concern in online course management (Ahlberg et al., 2023; Alenezi et al., 2023). It has been shown to be difficult to provide some of the recommended accommodations through the learning management systems (Lefler et al., 2023). One study found that some LMSs only allow one specific time duration for all students when setting up exams or quizzes (Borgman & Dockter, 2018). Access to accommodations and navigating online course portals are important to social cognitive behaviors and student persistence (Ginapp et al., 2023). The research emphasized developing positive learning experiences for students with disabilities in online programs by developing a stronger sense of community (Regan et al., 2021). Very little research exists looking specifically at the experiences of students with disabilities taking online courses (Stewart et al., 2022; Wu & Molina, 2019).

Summary

The theoretical framework examined social cognitive theory (SCT) with an understanding of self-efficacy and motivation (Bandura, 1989). Self-efficacy for writing was shown to consistently correlate to writing motivation and academic achievement. The literature explored the history of distant composition studies and the current practices in online composition. Central to this study, was the focus on the challenges faced by students with learning disabilities, particularly ADHD, in the online learning environment. Research highlights

the specific writing characteristics of students with ADHD and the importance of creating an inclusive learning environment that accommodates their needs. The writing characteristics of students with ADHD highlights the struggle to organize their thoughts and ideas clearly and coherently, as the students tend to wander off-topic or switch ideas frequently, make spelling and grammatical errors, write in a more impulsive or stream-of-consciousness style, and have a tendency to avoid writing tasks due to a lack of self-efficacy and writing motivation (François et al., 2021). Research revealed students with ADHD expressed fears of failure and an overall lack of self-efficacy. Literature recounted counterproductive ways of dealing with fear that included postponing or avoidance behaviors with low writing motivation (MacArthur et al., 2016).

Using SCT to guide understanding of this topic, self-efficacy and related constructs of self-concept and self-regulation were manifested in mastery and achievement (Bandura, 1989). The reviewed literature provides a comprehensive exploration of the historical context of online composition studies, online composition practices, the unique characteristics of online learners, and the specific challenges and considerations related to ADHD and other learning disabilities in the context of post-secondary education. This includes a focus on college matriculation, persistence, and retention, with an emphasis on students with ADHD in online college courses. The analysis also delves into the interplay between writing characteristics and ADHD, along with essential psychological factors, such as writing motivation, self-efficacy, goal orientation, beliefs, and affect. The discussion extends to the importance of effective online course design and the implementation of accommodations to support students with ADHD in their pursuit of academic success.

Much of the literature focused on basic writers and low-achieving writers at community colleges in developmental writing courses. A gap exists in the literature pertaining to online

college composition and students with attention-related disorders such as ADHD. By examining the experience of online college composition students with ADHD, practitioners can better understand the needs of these students.

CHAPTER THREE: METHODS

Overview

The purpose of this quantitative, non-experimental, causal-comparative study is to determine if there is a difference in the writing motivation of students with ADHD and students without ADHD in online college composition I courses. This chapter begins by introducing the study's design, including complete definitions of all variables. The research questions and null hypotheses follow. The participants and setting, instrumentation, procedures, and data analysis plans are presented.

Design

The researcher used a quantitative, non-experimental, causal-comparative research design to study the impact ADHD has on the writing motivation of students in online college composition courses. Creswell and Guetterman (2019) defined quantitative, non-experimental, causal-comparative design as a research design that investigates the relationships between variables that cannot be manipulated by the researcher. This type of design is useful when researchers want to compare existing groups and examine their differences (Gall et al., 2007). This research is considered quantitative because the researchers focused on variables that can be measured in quantifiable terms (motivation score and personal writing assessment) and involves the collection of data in the form of numbers and statistics with data obtained through surveys.

The study is considered non-experimental because the researcher did not manipulate variables, direct intervention, or control conditions. Instead, the researcher observed and analyzed the data derived from a questionnaire. One limitation of causal-comparative research is that the independent variable is hard to control, making it impractical to randomly assign groups as they are in true experimental research (Gall et al., 2007). The researcher cannot control

whether students will self-report having ADHD or not because students are randomly enrolled in sections of college composition I courses without any prior knowledge of this characteristic. This limitation further justified the use of causal-comparative research. Another limitation of the non-experimental research design is its inability to establish a true cause-and-effect relationship because the researcher cannot manipulate the independent variable.

The independent variable is the group or type of students in online college composition courses, categorized into two levels: students with ADHD and students without ADHD. The dependent variable is the writing motivation defined as a challenging, multidimensional, and complex to measure concept that includes the constructs of goal orientation, self-efficacy, beliefs, and affect (Philippakos et al., 2023). The covariate provides a measure of students' previous writing ability, which may influence their motivation levels in writing.

Research Question

RQ1: Is there a difference in writing motivation scores among online college composition students with attention-deficit/ hyperactivity disorder and students without attention-deficit/ hyperactivity disorder when controlling for the student's previous writing ability?

Hypothesis

The null hypothesis for this study is:

$H_0$1: There is no difference in writing motivation, as measured by the Writing Motivation Questionnaire, among students with attention-deficit/ hyperactivity disorder and students without attention-deficit/ hyperactivity disorder in online college composition I when controlling for the student's previous writing ability as measured by the Personal Writing Assessment.

Participants and Setting

This section will include a description of the population and the participants. The

sampling technique and the sample size will be described. The section concludes with a description of the setting.

Population

The sample was drawn from an accredited online university within a larger Midwestern land grant public university system that can be described as having a diverse range of characteristics and potential challenges that could impact the student's academic experiences and success. The institution consists of approximately 32,500 undergraduate students (College Factual Website, 2023). The overall student population consists of a relatively high portion of non-traditional students, with 58% of the students over the age of 30. Additionally, 62% of the students are female, suggesting a possible imbalance in the sample. The population includes a significant number of military-affiliated students, with 30% of the student population having a military background.

It is reported that 48% of the students had neither parent attend college, suggesting a relatively high portion of first-generation college students. Additionally, 52% of the students have a child or other dependent, indicating a potential challenge for balancing school and family responsibilities. According to the College Factual Website (2023), the undergraduate racial and ethnic diversity of the online program includes 48% of the undergraduate population as White. Black or African American students comprise 18% of the student body, while Hispanic or Latino students comprise 16%. Two or more races and Asian students each represent 7% and 5% of the student body, international students represent 3% of the undergraduate population, while American Indian or Alaska native and native Hawaiian or other Pacific Islander students represent 1% each.

Finally, the assumed learning disability rate ranges from 3.5% to 8% (National Center for Learning Disability, 2023). Since many students in post-secondary education do not formally report learning disabilities, it would be impossible to define the exact number of students with ADHD. This information reflects the undergraduate population as a whole. It may not necessarily reflect the sample of students from online college composition I courses.

Participants

The participants for this study were drawn from a convenience sample of online college composition I courses. The program consisted of three tracks (A, B, and C), with staggered start dates throughout the year. Each track typically runs 70 sections of college composition I online. Each section maintains approximately 30 to 35 students, thus creating a convenient student population of approximately 1685 to draw a sample from. For comparison, students were grouped based on self-reported classification of students with ADHD and students without ADHD. According to Gall et al. (2007), 126 students is the required minimum for a one-way analysis of variance (ANOVA) with two groups when assuming a medium effect size with a statistical power of .7 at the .05 alpha level. The process of determining the minimum sample sizes for analysis of covariance (ANCOVA) follows a similar approach to that used for a one-way ANOVA.

The sample was invited to participate by email through the Learning Management System (LMS) delivered to approximately 1685 college composition I students. All enrolled students of College Composition I in the current term were sent an invitation to the study. The email requested participation, and students agreeing to participate self-identified age, ethnicity, gender, and disability by selecting the appropriate box on page one of the online survey questionnaire. The sample was not introduced to any concepts pertaining to writing motivation to

avoid any influence on responses. The participants, a convenience sampling of current students enrolled in online composition I, consisted of 63 males, 64 females, and 3 non-disclosed; ages ranged from 19 to 42 with a mean age of 27; 40% reported as White, 22% Black, or African American, 19% Hispanic or Latino, 10% Asian, 4.6% International Students and 4% reported as other and all students were first-year composition students.

The groups were naturally occurring as they were based on the students' self-identification of ADHD status. The group of students with self-reported ADHD status consisted of 43 males, 33 females and 2 did not disclose; therefore, 55% of participants in the group are male, 42% are female and 2.6% are non-disclosed. The ethnic profile of students with ADHD is as follows: 41% of students are White, 21% are Black, or African American, 23% are Hispanic or Latino, 6.4% are Asian, 6.4% Other Pacific Islander, and 2.6% identified as other and all students reported first-year status. The group without ADHD included 20 males, 31 females, and 1 non-disclosed; therefore, 39% of participants in the group are males, 60% are females and 1.9% are non-disclosed. The ethnic profile of students without ADHD is as follows: 38.5% of students are White, 25% are Black or African American, 13.5% Hispanic or Latino, 15.4% are Asian and 8% are International Students and all students reported first-year status.

Setting

The setting for this study is online college composition I courses at an accredited online university within a larger Midwestern land grant public university system. The Higher Learning Commission (HLC) accredited the school in 2018. The HLCommission.org is an institutional accreditation agency recognized by the United States Department of Education. The courses are administered through a learning management system (LMS) with weekly synchronous live seminars. The course contains learning material and third-party technology to deliver course

content with formative and summative assessments. Student communication is maintained through school-wide email within the LMS.

Instrumentation

Two instruments were used for this study. The writing motivation questionnaire (WMQ) was used to measure the dependent variable, writing motivation (Philippakos et al., 2023). The Personal Writing Assessment score was used to measure the students' previous writing ability, the covariate.

Writing Motivation Questionnaire

The Writing Motivation Questionnaire (WMQ) was first developed by MacArthur et al. (2016) to measure the motivation of basic writers using the subconstructs of self-efficacy, achievement goals, beliefs, and affect. The WMQ was developed because there was no validated instrument for studying how motivation facilitates or hinders writing development (MacArthur et al., 2016). Zimmerman and Bandura (1994) first developed a self-efficacy scale for college students grounded in Bandura's social cognitive theory, focusing on self-efficacy and motivation. The process of developing the WMQ started with conceptualization and review of existing literature on writing motivation. Some items in the questionnaire were adapted from prior research (Bruning et al., 2013; Kauffman et al., 2010; MacArthur & Philippakos, 2010; White & Bruning, 2005). MacArthur et al. (2016) generated a pool of potential questions based on motives designed to capture the aspects of intrinsic, extrinsic, and self-regulatory motivations. A pilot study was conducted to assess item clarity and relevance, and experts offered feedback to refine the questionnaire. The subscales (goals, self-efficacy, beliefs, and affect) were derived from previous studies combined with a more focused intention on self-efficacy. The WMQ research study was conducted as part of a larger federally funded project to design and evaluate a

writing curriculum for basic writing students (MacArthur & Philippakos, 2012, 2013). For the purposes of this study, the researcher used the Philippakos et al. (2023) version of the WMQ to measure the writing motivation of students with and without attention-deficit/ hyperactivity disorder in college composition I courses (see Appendix A). MacArthur et al. (2016) focused on low-achieving community college writers. The instrument was used to study writing motivation and validated in numerous studies (Limpo et al., 2020; Perin, 2020; Philippakos et al., 2023; Rocha et al., 2019).

Some studies translated the WMQ or eliminated some of the original 2016 questions (Rocha et al., 2019). The Portuguese study explained a 65% variance on three factors, ultimately deciding to eliminate them (Limpo et al., 2020). It is important to note that MacArthur et al. (2016) and Limpo et al. (2020) included an essay writing component in the study to examine the correlation between scales and writing performance. No critiques of the instrument were located, and some critiques of the 2016 study stated the limitations of only testing basic writing courses and limited data on students with learning disabilities (Perin, 2020; Philippakos et al., 2023).

The instrument subscales' validity score is the correlation coefficient between each subscale and the total score of the measure. The subscales validity score ranged from 0.62 to 0.87, indicating that the subscales were moderately to highly related to the overall measure of writing motivation (MacArthur et al., 2016). Affect, self-efficacy, and content beliefs were all positively correlated with a range of .45 to .60. Mastery goals were positively correlated with performance goals at .44 and content beliefs at .38. Content beliefs were positively correlated with self-efficacy, mastery goals, and affect ranging from .38 to .60 (MacArthur et al., 2016).

The reliability score for performance-avoidance goals was negatively correlated with self-efficacy at -.38 and affect -.32. MacArthur et al. (2016) concluded that all five writing

measures were significantly correlated with each other ($p < .01$, range = .36- .56). The original MacArthur et al. (2016) instrument had a high Cronbach's α of .90, and the more recent Philippakos et al. (2023) revision Cronbach's alpha ranged from .72 for goals with factors of social performance, avoidance, and mastery orientations; .95 for efficacy for factors of strategy, grammar, and self-regulation; .80 for beliefs with factors about importance and mechanics; and .89 for Affect (Philippakos et al., 2023).

The first scale (Goals) contains 14 items pertaining to goal orientation for writing, the second scale (Self-Efficacy) contains 22 items measuring self-efficacy for writing, the third scale (Beliefs) contains 12 items measuring beliefs about writing, and the fourth scale (Affect) contains 5 items measuring affect. Goal orientation for writing used a five–point Likert-type scale that ranged from Does Not Describe Me At ALL to Describes Me Perfectly. Responses were as follows: Does Not Describe Me At All = 1 to 2, Somewhat Describes Me = 3 or 4, Describes Me Perfectly = 5. Goal orientation measured items such as "When writing in this class, I am trying to be a better writer than my classmates" and avoidance items such as "When writing in this class, I am trying to hide how nervous I am about writing" and mastery items such as "When writing in this class, I am trying to become a better writer" (Philippakos et al., 2023). The self-efficacy scale runs from 0% (No chance) to 20% (some chance), 50% (50/50 chance), 70% (good chance), to 100% (completely true) and measures efficacy subscales for tasks and strategies (Philippakos et al., 2023).

The self-efficacy scale contains questions such as "I can write complex sentences without making grammatical errors" and "I can organize paragraphs with ideas to support the topic sentence" and the self-efficacy scale was derived from the social cognitive theory (SCT) (Bandura, 1993). The Beliefs About Writing scale used a five-point Likert-type scale that ranged

from Strongly Agree to Strongly Disagree. Responses are as follows: Strongly Agree =5, Agree =4, Neither agree not disagree = 3, Disagree = 2, and Strongly Disagree= 1 and contains items such as "Revising is mostly about fixing errors in my grammar" and "Writing is one of the best ways to explore new ideas." The Affect Scale (How I Feel About Writing) is also a five-point Likert-type scale that ranges from Strongly Agree to Strongly Disagree. Responses were as follows: Strongly Agree =5, Agree =4, Neither agree nor disagree = 3, Disagree = 2, and Strongly Disagree= 1 with items such as "I usually enjoy writing" and "I try to avoid writing as much as possible" (Philippakos et al., 2023). The Affect Scale contains two negative statements and was reversed coded for higher scores correlating with positive feelings toward writing.

All measures are on a scale of 1 to 5, except for self-efficacy, with a scale 0 to 100. The online survey scores automatically populated an Excel spreadsheet and were averaged. The combined possible score on the WMQ (Philippakos et al., 2023) ranges from 31 to 177 points. A score of 31 points is the lowest possible score, meaning that the student has lower confidence and motivational beliefs in their ability to write, and a score of 177 points means the student has higher confidence and motivational beliefs toward writing.

The administration and completion of the questionnaire took no more than 15 min. Instructions were included in the email (see Appendix A). Results of the WMQ (Philippakos et al., 2023) populated into an Excel worksheet with summation and averages gathered by the researcher. Permission to use the survey instrument of WMQ was obtained from Dr. Zoi A. Philippakos (see Appendix B for permission letter).

Personal Writing Assessment

The purpose of the Personal Writing Assessment is to analyze a student's prior knowledge of writing. The host university developed the Personal Writing Assessment in 2018 to

measure students' writing ability and previous knowledge (Green et al., 2021). The college composition curriculum was customized to begin with a Personal Writing Assessment to evaluate a student's skills and deliver content based on individual needs. Faculty can analyze student outcomes, recommend tutoring, or customize seminar content to adjust student learning. Faculty can access the Personal Writing Assessment and view results for individual students or the entire class. It was developed by composition faculty members as subject matter experts and constructed multiple-choice questions based on writing, organization, sentence structure, thesis statements, audience, purpose, tone, and structure. The instrument was used in previous studies (Bianco & Fussell, 2021; Green et al., 2021).

It is an online multiple-choice assessment administered in week one of the course. It consists of 44 questions worth 2 points each, totaling 88 points. A score of 20 points is a low score, meaning that the student has not mastered the content and will require more directed engagement. A score of 88 points is the highest, meaning the student has mastered the content and will require more advanced concepts to prepare for high-level writing. It is a diagnostic tool to measure the student's curriculum needs (Green et al., 2021).

The assessment is administered within the learning management system (LMS). The researcher had no contact with the assessment or results, and students were asked to self-report their scores. This data cannot be obtained without personal identifiers; therefore, students were asked to self-report the score. This score was the covariate because it may influence their motivation levels in writing. Permission to use this data is included in the IRB application to the host university.

Procedures

The approval to conduct the present study was obtained from the Liberty University Institutional Review Board (see Appendix C). Once approval was received, the researcher contacted the host university and obtained IRB permission to conduct the study of the students taking online college composition I enrolled during the B, and C tracks during the Spring of 2024 (see Appendix D for site approval). Students were contacted through the Learning Management System (LMS) email system, with participation invitations only sent to enrolled students (see Appendix E). The email included a link to the survey informing students of the purpose of the study. Participants were informed that their participation was voluntary, and they could withdraw from the study at any time without penalty. Because participants are of adult age (18 and older), respondents acknowledge privacy rights, and informed consent was granted through the electronic survey process before beginning the survey.

An affirmative response to consent redirected the student to an electronic version of the Writing Motivation Questionnaire (WMQ) (Philippakos et al., 2023). The questionnaire was administered through secure class email during the second week of the Spring term. Directions and consent forms were included in the email. Faculty were asked to announce the study during the live unit 2 seminar by explaining the study would help better understand the motivation of postsecondary learners and the relationship between motivation and writing and ask students to expect communication via email. Students were told that participation was voluntary and in no way affected their grades. No faculty training is necessary, and a written statement was emailed to faculty with the following message. “Students, you have been invited to participate in a study to help better understand the motivation of postsecondary learners and the relationship between

motivation and writing. If you choose to participate, please see your emailed invitation for further instructions."

The participants were asked to first self-identify as a student with ADHD or a student without ADHD, self-report their Personal Writing Assessment score, and then complete the WMQ (Philippakos et al., 2023), which includes four subscales: goals, efficacy, beliefs, and affect. The Personal Writing Assessment is an online multiple-choice assessment administered to all college composition I students in week one of the course at the selected site for this study (Green et al., 2021). This data cannot be obtained without personal identifiers; therefore, students were asked to self-report the score to preserve anonymity. This score was the covariate.

The participants were asked to complete the questionnaire at their convenience. Participants completed the online survey questionnaire on a secure online platform from their personal devices, such as cell phones, tablets, or personal computers. No training is required to support delivery or completion. The instrument did not collect email addresses, student names, identification numbers, or personal identifiers to maintain that the participants' responses were anonymous. The researcher stored all data collected for the study on a password-protected drive to which only the researcher has access. The researcher will delete and shred the remaining data three years after the research report has been presented and approved.

Data Analysis

The research question was analyzed using a one-way analysis of covariance (ANCOVA) with two groups (with ADHD and without). The one-way ANCOVA statistically reduces the effects of initial differences between groups before analyzing the main effects of each independent variable and their interaction effect on the dependent variable (Gall et al., 2007; Warner, 2021). The covariate in this analysis was the students' previous writing ability as

measured by the Personal Writing Assessment score, which is a continuous variable. Controlling for the effect of the covariate (assessment score) is important to examine the specific impact of ADHD on writing motivation scores while accounting for any potential influence of the student's performance on the Personal Writing Assessment.

Data screening was conducted on each group's dependent variable. The researcher sorted the data on each variable and scanned for inconsistencies. No data errors or inconsistencies were identified. If an error in data entry is discovered then a review of the data will be conducted to either correct the error or delete the data if a student has self-reported a number that is impossible to achieve (Laerd Statistics, 2017). Before presenting inferential data, the researcher provides descriptive statistics for the data, which includes the mean and standard deviation for each group. The alpha level for the hypothesis was set at $p < .05$. Eta squared will be used to report each effect size.

Before running the analysis of a one-way ANCOVA, it is important to examine the data for statistical assumptions (Warner, 2021). The first assumptions are verified by the design: (a) the dependent variable is measured at the continuous level; (b) the independent variable consists of two independent categorical groups; (c) there is one covariate measured at the continuous level: (d) there is an independence of observations (Laerd Statistics, 2017). The dependent variable is verified continuous as the averaged combined possible score on the Writing Motivation Questionnaire (Philippakos et al., 2023) ranging from 31 to 177 points.

The independent variable is the categorical group self-reported as ADHD or without ADHD. The covariate is the students' previous writing ability as measured by the Personal Writing Assessment, considered continuous data and an interval scale because a score of 0 does

not indicate the absence of knowledge but rather the lowest possible score out of a possible 88 points (Warner, 2021).

The remaining six assumptions pertain to the suitability of the data for fitting the one-way ANCOVA model and can be assessed using SPSS Statistics (Laerd Statistics, 2017). The fifth assumption or assumption of linearity will be tested to confirm the linear relationship between the covariate (previous writing ability) and the dependent variable (writing motivation questionnaire) for each level of the independent variable (two groups). To test this assumption, the researcher will plot a groups scatterplot of the dependent variable against the covariate and grouped on the independent variable. The sixth assumption or assumption of homogeneity of regression slopes will be examined for interaction between the covariate and the independent variable. The researcher will view the regression lines on the scatterplots completed in assumption of normal distribution. The lines should all be parallel with the same slope.

The researcher will use Statistical Package for the Social Sciences (SPSS) Statistics to examine the seventh assumption or assumption of normal distribution using the Shapiro-Wilk test for normality (Laerd Statistics, 2017). The dependent variable should be approximately normally distributed for each independent variable group. To test the eighth assumption, homoscedasticity, the researcher will plot a scatterplot of the standardized residuals against the predicted values to determine the error variances within each group and that error variances are equal. The ninth assumption is the assumption of homogeneity of variance, and it will be tested using Levene's test of equality of variances. Finally, the tenth assumption will be tested by employing a box-and-whisker plot to confirm the absence of outliers that could significantly influence the group means. These assumptions needed to be met for the ANCOVA analysis to be valid.

By conducting a Bonferroni post hoc test, one can identify specific group differences, and by calculating partial eta squared, one can determine the magnitude or strength of the observed effects in the ANCOVA analysis (Laerd Statistics, 2017). The significance level for the hypothesis will be established at $p < .05$. In a one-way ANCOVA, the null hypothesis will be rejected if the means for both groups are not equal when controlling for the covariate (Laerd Statistics, 2017). Partial eta squared will be utilized to quantify the effect size for each analysis. $\eta^2 = 0.01$ indicates a small effect, $\eta^2 = 0.06$ indicates a medium effect and $\eta^2 = 0.14$ indicates a large effect (Warner, 2021). Following the execution of the assumption tests mentioned earlier, the researcher conducted the analysis of covariance (ANCOVA) and reported the outcomes, including the following information: the total number of participants (*N*), the number of participants per cell (*n*), degrees of freedom within and between groups (*df* within and *df* between), observed *F* values (*F*), significance level (*p)*, and power.

CHAPTER FOUR: FINDINGS

Overview

Chapter Four begins with a presentation of the descriptive statistics of the dataset. Following that presentation, the researcher outlines the data screening procedures for the analysis of the covariance (ANCOVA). The remaining sections of the chapter inform about the results of the null hypotheses, which include testing the assumptions and a discussion of the ANCOVA for the students with and without attention-deficit/ hyperactivity disorder when controlling for the student's previous writing ability.

Research Question

RQ1: Is there a difference in writing motivation scores among online college composition students with attention-deficit/ hyperactivity disorder and students without attention-deficit/ hyperactivity disorder when controlling for the student's previous writing ability?

Null Hypothesis

$H_0$1: There is no difference in writing motivation, as measured by the Writing Motivation Questionnaire, among students with attention-deficit/ hyperactivity disorder and students without attention-deficit/ hyperactivity disorder in online college composition I when controlling for the student's previous writing ability as measured by the Personal Writing Assessment.

Descriptive Statistics

Descriptive statistics were obtained on the covariate (previous writing ability), and the dependent variable (writing motivation), for each group (students with ADHD and students without ADHD). Tables 1 – 3 provide the descriptive statistics.

Table 1

Descriptive Statistics: Covariate: Student's Previous Writing Ability

Group	*n*	Min	Max	*M*	*SD*
1- Students with ADHD	78	54.00	72.00	61.72	4.29
2- Students without ADHD	52	58.00	88.00	74.62	6.18

Table 2

Descriptive Statistics

Dependent Variable: Writing Motivation

Group	*n*	Min	Max	*M*	*SD*
1- Students with ADHD	78	97.00	140.40	116.80	10.54
2- Students without ADHD	52	117.40	159.00	140.45	10.25

Table 3

Descriptive Statistics

Dependent Variable (Adjusted Means): Writing Motivation

Group	*n*	Min	Max	*M*	*SE*
1 – Students with ADHD	78	97.00	140.40	119.53	1.46
2 – Students without ADHD	52	117.40	159.00	136.56	1.95

Note. Covariates appearing in the model are evaluated at the following values: Students' previous writing ability = 66.8769.

Results

Data screening

Data screening was conducted on each group's covariate and dependent variable. The researcher sorted the data on each variable and scanned for inconsistencies. Eleven data errors or inconsistencies were identified. Students began the survey but failed to complete the Writing Motivation Questionnaire. The 11 data errors were removed. Box and whisker plots were used to detect extreme outliers on the dependent variable. No extreme outliers were identified for the covariate (previous writing ability) or the dependent variable (writing motivation). Inspection of the data set shows that there are no standardized residuals greater than +3 or -3 standard deviations with -2.54 being the largest standardized residual. Thus, there were not significant outliers in the data, as assessed by no cases with standardized residuals than ±3 standard deviations (Laerd statistics, 2017). See Figure 1 and Figure 2 for box and whisker plots.

Figure 1

Box and Whisker Plots (covariate)

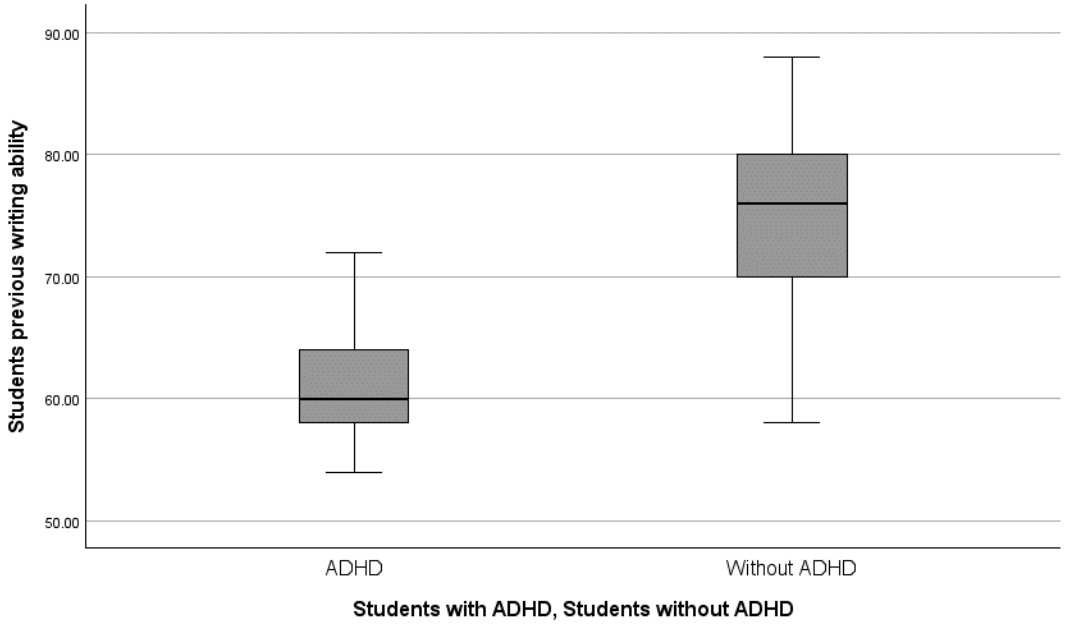
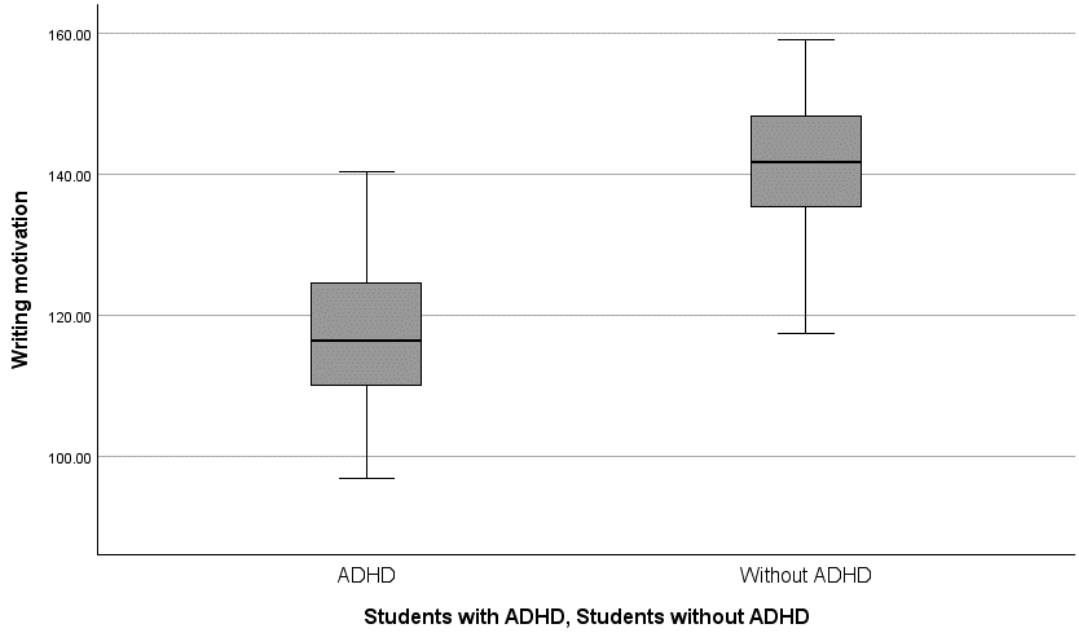


Figure 2

Box and Whisker Plots (dependent)



Assumptions

An ANCOVA was used to test the null hypothesis. The ANCOVA required that the assumptions of normality, linearity, bivariate normal distribution, homogeneity of slopes, and homogeneity of variance be met.

Normality was examined using a Shapiro-Wilk test. No violations of normality were found for writing motivation. However, the results for previous writing ability violated normality with a significance level that was less than .05 ($p < .05$) at ($p < .001$). There, a second method to test for normality was used and the standardized residuals for the overall model were normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$) (Laerd Statistics, 2017). Since the ANCOVA is considered a robust test and the sample size was large the violation was considered non-problematic (Laerd Statistics, 2017). See Table 4 for tests of normality.

Table 4

Tests of Normality

	Groups	Shapiro-Wilk Statistic	*df*	Sig.
Previous writing ability	1 – Students with ADHD	.926	78	<.001
	2 – Students without ADHD	.898	52	<.001
Writing motivation	1 – Students with ADHD	.982	78	.348
	2 – Students without ADHD	.958	52	.062
Standardized Residuals for Post	1- Students with ADHD	.983	78	.376
	2- Students without ADHD	.968	52	.171

Note. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The assumption of linearity and bivariate normal distribution were tested using scatter plots for each group. Linearity was met. The scatter plots confirmed that there was a straight-line relationship between the variables, satisfying the assumption of linearity (Laerd Statistics, 2017). Bivariate normal distributions were tenable as the shapes of the distributions were not extreme. The distributions of the data points appeared approximately normal without any extreme deviations, supporting the assumption of bivariate normal distribution (Laerd Statistics, 2017). Figure 3 and Figure 4 include the scatter plot for each group.

Figure 3

Scatter Plot for Students with ADHD

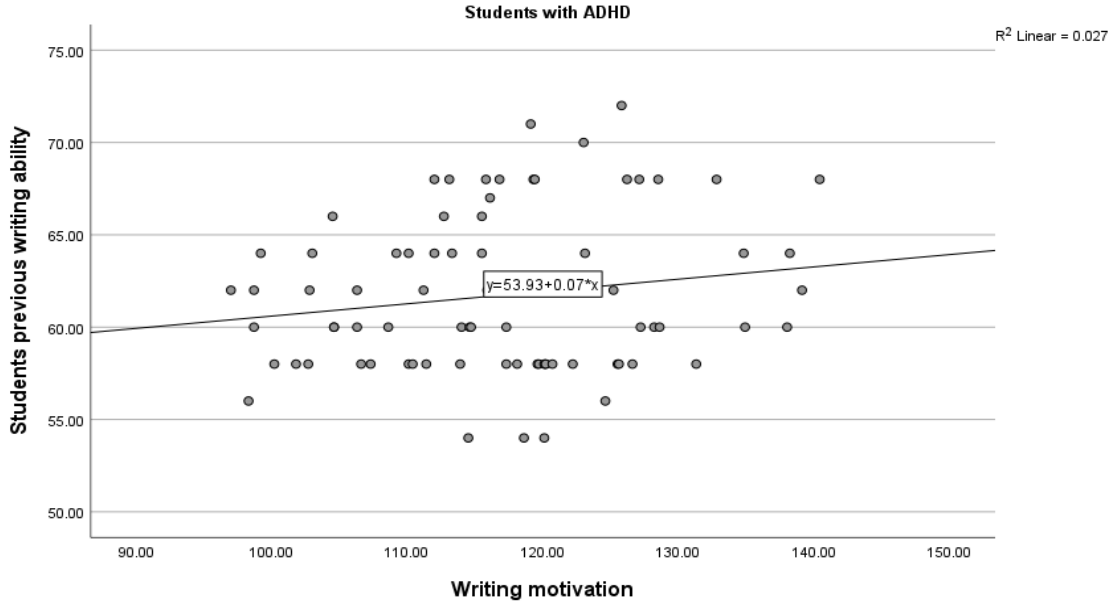
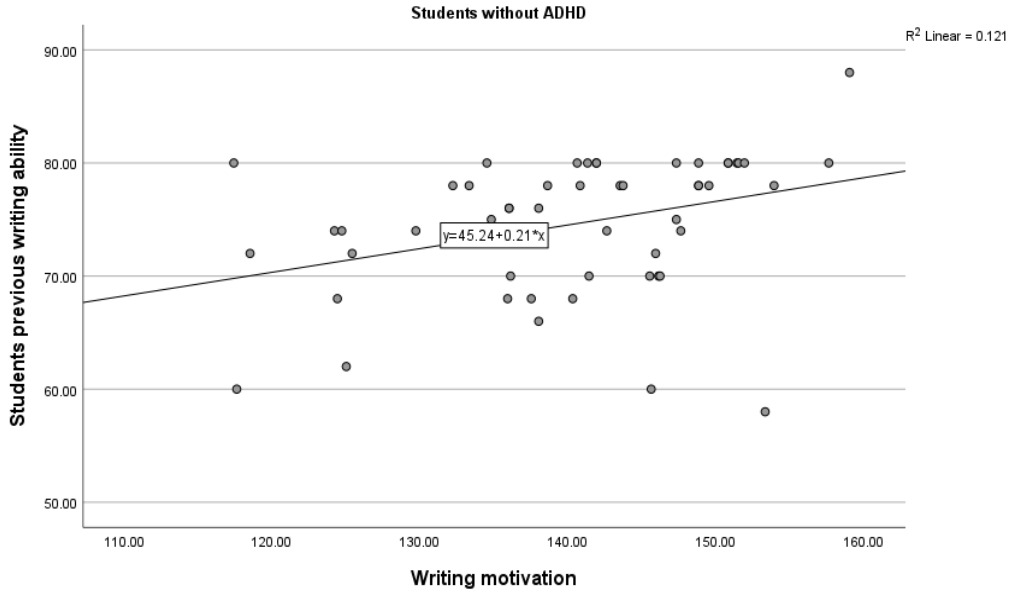


Figure 4

Scatter Plot for Students without ADHD



The assumption of homogeneity of slopes was tested between the covariate of the student's previous writing ability and the independent variable or group (students with ADHD and students without ADHD). There was homogeneity of regression slopes as the interaction term was not statistically significant, $F(1, 126) = .241$, $p = .624$. Therefore, the assumption of homogeneity of slope was met. See Table 5 for tests of between-subjects effects. There was homoscedasticity as assessed by visual inspection of the standardized residuals plotted against the predicted values. The assumption of homogeneity of variance was examined using Levene's test. No violation was found where $p = .432$. The assumption of homogeneity of variance was met. See Table 6 for Levene's test of equality of error variances.

Finally, the tenth assumption was tested during data screening by employing a box-and-whisker plot to confirm the absence of outliers. For the ANCOVA analysis to be valid these assumptions were met with a minor violation of normality. Since the ANCOVA is considered robust and the sample was large the researcher chose to continue with the analysis. See Table 5 for the tests of between-subjects effects.

Table 5

Tests of Between-Subjects Effects

Dependent Variable: Writing motivation

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Corrected Model	18322.280[a]	3	6107.427	59.000	<.001	.584
Intercept	6438.622	1	6438.622	62.199	<.001	.330
Group	5.343	1	5.343	.052	.821	.000
Pre	785.060	1	785.060	7.584	.007	.057
Group * Pre	24.949	1	24.949	.241	.624	.002
Error	13043.028	126	103.516			
Total	2103822.200	130				
Corrected Total	31365.308	129				

Note. a. R Squared = .584 (Adjusted R Squared = .574)

Table 6

Levene's Test of Equality of Error Variances[a]

Dependent Variable: Writing motivation

F	*df1*	*df2*	Sig.
.622	1	128	.432

Note. Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Pre + Group

Results for Null Hypothesis

An ANCOVA was used to test the null hypothesis regarding the difference in writing motivation, as measured by the Writing Motivation Questionnaire, among students with

attention-deficit/ hyperactivity disorder and students without attention-deficit/ hyperactivity disorder in online college composition I when controlling for the student's previous writing ability as measured by the Personal Writing Assessment. The null hypothesis was rejected at a 95% confidence level where $F(1, 127) = 35.15$, $p = .005$, $\eta_p^2 = .217$. The effect size was very large. Because the null was rejected, post hoc analysis was conducted using a Fisher's LSD (Warner, 2021). There was a significant difference between the ADHD group ($M_{adj} = 119.40$, $SE = 1.46$) and the without ADHD group ($M_{adj} = 136.56$, $SE = 1.95$). See Table 7 for multiple comparisons of groups.

Table 7

Multiple Comparisons of Groups

Pairwise Comparisons

Dependent Variable: Writing motivation

(I) Students with ADHD, Students without ADHD	(J) Students with ADHD, Students without ADHD	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
ADHD	Without ADHD	-17.165*	2.895	<.001	-22.895	-11.436
Without ADHD	ADHD	17.165*	2.895	<.001	11.436	22.895

Note. Based on estimated marginal means

* The mean difference is significant at the .05 level.

b Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

CHAPTER FIVE: CONCLUSIONS

Overview

The purpose of this quantitative, non-experimental, causal-comparative study was to determine if there is a difference in the writing motivation of students with attention-deficit/ hyperactivity disorder (ADHD) and students without ADHD in online college composition I courses. The final chapter begins with a discussion of the study's findings with a comparison to those presented in the literature of Chapter Two. The discussion is followed by the implications, limitations, and recommendations for future research.

Discussion

The purpose of this quantitative, non-experimental, causal-comparative study was to determine if there is a difference in the writing motivation of students with ADHD and students without ADHD in online college composition I courses. The researcher used the Writing Motivation Questionnaire (WMQ) (Philippakos et al., 2023) to measure the dependent variable, writing motivation, which includes the constructs of goal orientation, self-efficacy, beliefs, and affect. Previous writing ability was assessed by the Personal Writing Assessment at the beginning of the course as the covariate. The independent variable was categorical and was composed of two groups of online college composition students with ADHD and students without ADHD.

The WMQ uses the constructs of goal orientation, self-efficacy, beliefs, and affect and can be analyzed between the constructs and the groups. The researcher, however, collected and analyzed the mean score of the entire survey. The survey has undergone validity and reliability studies and is, therefore, recognized as a valid instrument for measuring writing motivation (Philippakos et al., 2023). The courses in which the study was set already developed and

deployed a previous writing ability assessment (Personal Writing Assessment) to assess students' prior knowledge and monitor student progress within the online college composition course, therefore the research was able to use the self-reported data to answer the research question.

For the research question, the researcher sought to measure the writing motivation of students with ADHD and students without ADHD when controlling for previous writing ability. The social cognitive theory of Bandura (1989) formed the theoretical framework for this investigation. Bandura emphasized that self-efficacy is crucial in influencing behavior, as individuals with greater self-efficacy are more motivated to tackle challenges confidently and continue striving despite obstacles. Bhati and Sethy (2022) and Camacho et al. (2021) related this concept directly to college success, suggesting that students with positive motivation and high levels of self-efficacy persist, achieve higher grades, and experience greater satisfaction from the academic experience.

The results of the current study demonstrated that this sample of online college composition students with ADHD had lower levels of writing motivation and that correlated with lower previous writing abilities. Previous writing ability, when used as a covariate, provides a baseline to understand the writing motivation of students with ADHD (Graham, 2019). The previous writing ability isolates the effect of ADHD on motivation by accounting for the initial skills, revealing a more accurate picture of how ADHD impacts writing motivation. Students with poorer initial writing skills demonstrated lower writing motivation. There was a significant difference between the writing motivation of students with ADHD and students without ADHD in online college composition. While the research of Schunk and DiBenedetto (2021) applied social cognitive theory to students with learning disabilities, the current study extended the application of the theory to online college composition students with ADHD.

The current study also supported the Smith et al. (2023) findings, which suggested that academic motivation decreases for students with ADHD. MacArthur et al. (2016, 2022) and Philippakos et al. (2023) presented research that associated self-efficacy with writing motivation. Their research found statistically significant positive relationships between essay quality and the three self-efficacy scales. Similar to this research, they observed a negative relationship with avoidance goal orientation and the belief in grammar and mechanics. Essentially, Philippakos et al. (2023) found higher self-efficacy was associated with better writing quality and motivation. This correlated with the work of MacArthur et al. (2022) study suggesting that in comparison students with higher writing motivation performed better on writing tasks and demonstrated strong self-efficacy.

This research suggested when students view writing as meaningful and essential, they tend to be more motivated and engaged, resulting in better outcomes. Najafi et al. (2021) found that students' beliefs about essay writing, including perceptions of its value, purpose, and the importance of various elements, significantly influence students' motivation, engagement, and overall quality of their written work. This suggested that students with lower writing motivation scores lacked self-efficacy and performed poorly on writing tasks.

The work of Camacho et al. (2021) and Limpo et al. (2020) both suggested that the writing motivation of students with learning disabilities differed from students without learning disabilities. This research supported those results and addressed the gap in the literature by focusing on students in online college composition courses. The sample of previous studies did not include students with ADHD. However, this current study specifically examined the writing motivation of students with ADHD compared to students without ADHD. This study highlights the unique impact ADHD has on writing motivation when controlling for previous writing ability

compared to prior research that primarily focused on learning disabilities. By applying social cognitive theory, this study explored how internal motives influence behaviors in individuals with ADHD. The practical significance of this study is associated with a better understanding of students with ADHD and their academic challenges.

Unlike the current study, MacArthur et al. (2022) and Philippakos et al. (2023) measured writing abilities from essay content. If those studies had used an assessment similar to the Personal Writing Assessment (a multiple-choice test) to assess previous writing ability, their results might have aligned more closely with the results of this study. In contrast to those studies, Limpo et al. (2020) found a connection both positive and negative between writing motivation and quality. The results of this study supported the findings of Schunk and DiBenedetto (2021), which suggests the impact of learning disabilities on a student's motivation and self-efficacy. While the findings of this study support the notion that students with ADHD experience a lack of writing motivation and self-efficacy compared to those without ADHD, additional research is needed to understand why this is and how this can be remedied.

Implications

This research study emphasized the need for a multimodal support approach that enhances self-efficacy, motivation, and academic success through personalized learning strategies, early assessment interventions, and collaborative support systems while highlighting the potential legal and educational ramifications of inadequate accommodations for the growing population of students with ADHD in online education. Administrators can utilize the findings to shape faculty professional development programs, enhancing faculty-to-student support for those struggling with ADHD. Strategic plans to support goals, self-efficacy, beliefs, and affect could be developed at all levels to improve retention rates and overall academic success.

Sedgwick-Müller et al. (2022) found that a multimodal approach to supporting learners with ADHD and faculty was the more successful approach by offering timely access to educational support and adjustments while impacting motivation through successful academic performance and achievements.

Faculty can leverage the questionnaire at the beginning of the course to measure goals, self-efficacy, beliefs, and affect to better understand the student's predisposition towards writing and develop strategies to enhance accommodation. By providing personalized online learning, faculty can help reduce attrition and improve academic outcomes by creating student-centered lessons (Zamecnik et al., 2022). The positive impact of individualized learning suggested a correlation between the students' goals, self-efficacy, beliefs, and how students felt about the task of writing. Motivation was directly linked to self-regulation and a student's belief that they could complete the task (Philippakos et al., 2023). Further, the extensive literature review demonstrated that there is a necessity to support learners with ADHD. As the population of students with ADHD continues to grow and more knowledge of their needs becomes more available, the question of accommodation versus a one-size-fits-all online education becomes apparent.

The importance of researching ADHD and online composition courses indicates the greater need for accommodations. If the only manner of assessment in online courses is writing ability, known to be problematic, there could be legal ramifications for the university if not addressed (U.S. Department of Education, 2022). The overall effect of self-efficacy, along with the relationship between motivation and writing ability, would help course designers gain valuable insights into how students with ADHD develop confidence, motivation, and the potential negative impact of early assessment, allowing them to tailor course materials to better support these students. This study showed a relationship between early assessment and ADHD

students' beliefs about writing. The early intervention could focus more on identifying those beliefs, goals, and affect to impact motivation and self-efficacy (Philippakos et al., 2023).

Furthermore, this study implies that strategies focusing on stress reduction and anxiety, while reducing ADHD symptoms, were shown to be very helpful. The research of Bodalski et al. (2023) supported this strategy. Course designers could be working with counselors and student accessibility services to implement new technologies for student assistance to increase access and promote motivation (Borgman & Dockter, 2018). The implications of this research indicating a connection between previous writing ability and lower writing motivation scores suggest that students who perceive themselves as poor writers may experience decreased motivation and self-efficacy. This implies the necessity for addressing students' self-perception and confidence levels in their writing skills (MacArthur et al., 2016). Faculty and course designers should consider scaffolding support, offering constructive feedback, and encouraging successes to increase confidence, beliefs, and the emotional impact of affect.

Similar to Balbino et al. (2022), which used previous learning experiences to identify academic outcomes much like the previous writing ability assessment scores used by this research, both identified ADHD as an impact. However, early negative experiences were considered highly relevant. Overall, the implication that the early assessment negatively impacted the students with ADHD indicates that while early assessment of previous writing ability is important, it is more important that the results be blind or withheld from the students. Faculty could see the results and use this to customize lessons based on student needs, but the students would not be exposed to the score which, as the covariate, indicated a negative impact on the writing motivation of students with ADHD.

Limitations

This study was limited by several factors, such as the sample population, time commitment, gathering data at the beginning, the independent variable, and the problematic covariate. One limitation that threatens internal and external validity is the sample population of online college composition students. Internal validity is threatened if the sample of 78 students with ADHD is not truly representative of the population (Laerd Statistics, 2017). Since only 52 students without ADHD participated, it suggests a much higher concentration of ADHD in the population. External validity is threatened if the sample does not reflect the diversity of the population. Since the survey did not ask for more choices of ethnicity, the results could be over-generalizing the data. The length of the survey with 53 items combined with the assessment of 44 items would be a challenge. At best, a student needs 25 to 30 minutes total. This would possibly negatively influence students' decision to participate.

Another limitation presented is that data was gathered only at the beginning of the course. College composition I students are new to the online platform and, for many returning to school after a long period, these students may feel vulnerable and less motivated by the anxiety of the situation. Thus, the researcher was unable to detect changes in motivation due to confidence gained through time spent on the actual platform. Further research could use an exit survey to test the data difference in motivation before and after gaining confidence in using the online educational platform. Another limitation of the design was the lack of control of the independent variable. It was impossible to predict which students would self-report as having ADHD. Also, it was unclear whether this included only those students with official medical confirmation or also students who believed they might have symptoms.

Results were limited in that some students misunderstood the necessity of taking the Personal Writing Assessment (an optional assessment that some students avoid because it

presents as intensive and time-consuming). A stronger covariate could use data from writing assignments, such as the former experimental study of basic writers who found an increase in self-efficacy and mastery goals (MacArthur et al., 2016). Also, former studies looked at the interactions of motivational constructs among the groups, whereas this study was limited to the mean score of the survey. Using only the mean score of the entire survey did not provide insight into the correlation between each of the scales. There is a possible positive or negative correlation between self-efficacy for writing, achievement goals for writing, beliefs about writing, and affect toward writing (MacArthur et al., 2016; Philippakos et al., 2023).

Recommendations for Future Research

The following are recommendations for further research.

1. A qualitative analysis is recommended to further this study, focusing on participants' historical educational experiences with writing. This approach theorizes that past negative experiences may limit students' confidence and self-efficacy (Bandura, 1993). An interview-style qualitative study might achieve a better understanding of the results obtained on the Writing Motivation Questionnaire and if there was a connection to previous academic success or failures in terms of writing ability.
2. Some institutions have launched academic coaching for students with ADHD, and future studies could compare the success rate of those programs with traditional online programs.
3. Previously, researchers have assessed writing outcomes of basic writers who have ADHD compared to those of students without ADHD (MacArthur et al., 2016). However, more research is needed to study the writing outcomes of students in online

college composition courses with ADHD specifically by analyzing essays for quality, output, elements, vocabulary, spelling, and sentence structure.

4. It is recommended that future research take a closer look at the level of symptomology, diagnosis, and medications when addressing ADHD and students in online composition courses as discussed by Regan et al. (2021). More insight could be gained from understanding the exact struggles with symptoms, how much if any medication was in use by the population, as well as what types of diagnosis of participants.

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APPENDIX A: Writing Motivation Questionnaire

Writing Motivation Questionnaire (Philippakos et al., 2023).

"Removed to comply with copyright"

APPENDIX B: Instrument Permission

[External] Re: Formal permission to use the WMQ

Zoi Philippakos [redacted]
Wed 9/20/2023 10:10 AM
To:Bianco, Michelle [redacted]

[EXTERNAL EMAIL: Do not click any links or open attachments unless you know the sender and trust the content.]

Hello Michelle:

Thank you for using our motivation scale in your work. You have permission to use this scale in your research and acknowledge the authors by citing their work. We will also appreciate it if you share your findings.

Thank you,

--
Zoi A. Traga Philippakos, Ph.D.

Associate Professor
University of Tennessee Knoxville
College of Education, Health, and Human Sciences
Department of Theory and Practice in Teacher Education
[redacted]

APPENDIX C: IRB Approval

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

March 20, 2024
Michelle Bianco
Maryna Svirska-Otero
Re: IRB Exemption - IRB-FY23-24-1247 A CAUSAL-COMPARATIVE STUDY OF THE WRITING MOTIVATIONAL
CONSTRUCTS OF STUDENTS WITH AND WITHOUT ATTENTION-DEFICIT/ HYPERACTIVITY DISORDER IN ONLINE COLLEGE COMPOSITION COURSES
Dear Michelle Bianco, Maryna Svirska-Otero,
The Liberty University Institutional Review Board (IRB) has reviewed your application per the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data-safeguarding methods described in your IRB application, and no further IRB oversight is required.
Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d): Category 2.(i). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met: The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects; For a PDF of your exemption letter, click on your study number in the My Studies card on your Cayuse dashboard.
Next, click the Submissions bar beside the Study Details bar on the Study Details page. Finally, click Initial under Submission Type and choose the Letters tab toward the bottom of the Submission Details page. Your information sheet and final versions of your study documents, which you must use to conduct your study, can also be found on the same page under the Attachments tab.
This exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.
If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at irb@liberty.edu.
Sincerely,
G. Michele Baker, PhD, CIP
Administrative Chair
Research Ethics Office

APPENDIX D: Site IRB Approval

Expedited Review – Final Approval

March 20, 2024

Ms. Michelle Bianco
[redacted]

Re: Protocol #24-09 – **"A Causal-Comparative Study of the Writing Motivational Constructs of Students With and Without Attention-Deficit/Hyperactivity in Online College Composition Courses."**

Dear Ms. Bianco:

Your proposed project was reviewed by the [redacted] Institutional Review Board (IRB) for the protection of human subjects under an Expedited Category. It was determined that your project activity meets the expedited criteria as defined by the DHHS Regulations for the Protection of Human Subjects (45 CFR 46), and is in compliance with this institution's Federal Wide Assurance 00010056.

Please notify the IRB immediately of any proposed changes that may affect the expedited status of your project. You should report any unanticipated problems involving risks to human subjects or others to the IRB.

If you have any questions or need additional information, please contact feel free to contact me at [redacted] I wish you well with your project!

Sincerely,

[redacted]

Susan B. Pettine, Ph.D., CBM
IRB Chair
[redacted]

APPENDIX E: Recruitment Email

Participant Recruitment Email

Dear [redacted] Student:
As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree, and I would truly value your assistance.
The purpose of my research is to determine if there is a difference in the writing motivation of students with attention-deficit/ hyperactivity disorder (ADHD) and students without ADHD in online college composition I courses. I am writing to invite eligible participants to join my study.
You are receiving this email because you are 18 years of age or older and enrolled in a [redacted] College Composition I course online in a 2024 term, and I gladly invite you to participate in my study.
Are you:

- 18 years of age or older?
- Currently enrolled in [redacted] College Composition I online?
- Willing to participate?
- **If so, first, let me thank you! Participating will be easy:**
- You will be asked to complete the Personal Writing Assessment as part of your [redacted] Course (This score will not be included in the course grades; the score will not be included as part of your academic record. The assessment is a [redacted] College Composition I diagnostic tool to assess your previous writing ability.) It should take approximately ten minutes to complete the assessment. **Click here** to begin the Personal Writing Assessment. **The second step is to complete the survey** direct link is included below.
- You will be asked to respond to a brief survey regarding your motivation and beliefs regarding writing. You will **self-report your score** from the Personal Writing Assessment
- It should take approximately ten to fifteen minutes for you to complete the survey.
- Your participation will be completely anonymous. No personal, identifying information will be collected.
- You may exit the survey at any time if you wish to end your participation.

Let me assure you no one will try to contact you due to your participation. However, please feel free to contact me at [redacted], or my faculty advisor, Dr. Maryna Svirska-Otero, at [redacted] if you have any questions.
To participate in the survey, and I so hope you do, please click on the link provided below.
https://form.jotform.com/233332786661057
A document containing the study information is available on the first page of the survey. The information document contains additional information about my research. After you have read this document, please proceed to the survey. Doing so will indicate that you have read the information and would like to take part in the study.
Sincerely,
Michelle Bianco, M.A.
Doctoral Candidate, Liberty University

APPENDIX F: Information Sheet

ELECTRONIC INFORMATION SHEET
(SIGNATURE NOT REQUIRED)

A CAUSAL-COMPARATIVE STUDY OF THE WRITING MOTIVATIONAL CONSTRUCTS OF STUDENTS WITH AND WITHOUT ATTENTION-DEFICIT/ HYPERACTIVITY DISORDER IN ONLINE COLLEGE COMPOSITION COURSES

Michelle Bianco, M.A.
Liberty University
School of Education

You are invited to take part in a valuable research study of the writing motivation of students. You were selected as a possible participant because you are enrolled in a CM 107 College Composition I online course through [redacted]. Michelle Bianco, a doctoral candidate in the School of Education at Liberty University, is conducting this study. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research. Please feel free to ask any questions you may have before responding to the linked survey.

Background Information: The purpose of this study is to determine if there is a difference in the writing motivation of students with attention-deficit/ hyperactivity disorder (ADHD) and students without ADHD in online college composition I courses.

Procedures: If you agree to be in this study, I will ask you to do the following:

1. Start by completing the Personal Writing Assessment (an assigned task for unit 1 of coursework and a direct link included in the participation email). Completion of the assessment should take no more than ten to fifteen minutes. Your score **will not** be included in your graded assignments and your score **will not** be reported as part of your academic record. It is a [redacted] diagnostic tool to assess your previous writing ability. You will self-report the score in the anonymous survey as part of the study and the researcher will have no interaction with this assessment, or the score. You will simply fill in the score as part of the survey.
2. Respond to the Writing Motivation Questionnaire (Philippakos et al., 2023). Your responses are completely anonymous, and you may exit the survey at any time. You can expect the survey to take ten to fifteen minutes to complete. Upon entering the survey, you will be asked to self-identify as a student with ADHD or a student without ADHD, and other demographics. Participants from each group are needed.

Risks and Benefits of Participation: Your email will not be linked to your responses, and no one will attempt to contact you based on your participation. The expected risks from participating in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

Participants should not expect to receive a direct benefit from taking part in this study. Benefits to society include improving distance/online learning environments for students with attention related disorders and all nontraditional adult students.

Confidentiality: The records of this study will be kept private. Research records will be stored securely, and only the researcher will have access to the records.

- Participant responses to the online surveys will be anonymous.
- Data will be stored on a password-locked computer. The researcher will delete the remaining data three years after the research report has been presented and approved.

Voluntary Nature of the Study: Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time prior to submitting the survey.

How to Withdraw from the Study: If you choose to withdraw from the study, please exit the survey and close your internet browser. Your responses will not be recorded or included in the study.

Contacts and Questions: The researcher conducting this study is Michelle Bianco, M.A. If you have any questions now or in the future, **you are encouraged** to contact her at [redacted]. You may also contact the researcher's faculty advisor, Dr. Maryna Svirska-Otero at [redacted].

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the IRB. Our physical address is Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA, 24515; our phone number is 434-592-5530, and our email address is irb@liberty.edu.

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent: Before agreeing to be part of the research, please be sure that you understand what the study is about. You can print a copy of the document for your records. If you have any questions about the study later, you can contact Michelle Bianco using the information provided above.

Please notify the researcher if you would like a copy of this information for your records.

The Writing Motivation Questionnaire (WMQ) (Philippakos et al., 2023) and its derivates are used with permission.