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Effectiveness of Testing Accommodations for Postsecondary Students with Learning Disabilities

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Abstract

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Learning disabilities (LDs), which are the most common diagnosis of students entering colleges, are found in approximately 3% of first-year college students. Little information is available, however, on the role of classroom accommodations on these students' academic performance. The purpose of this study was to determine whether academic performance, self-efficacy, and motivation of postsecondary LD students were influenced by extended testing time. Social cognitive theory and expectancy-value theory were used to frame the study. Fifty-three participants from a community college in the Southeastern United States who were approved to receive classroom accommodations completed a demographic questionnaire and measures of motivation and self-efficacy. Independent sample *t* tests indicated a significant relationship between extended time and self-efficacy, but extended time did not affect academic performance and there was no significant predictive relationship between extended time, motivation, self-efficacy, and academic performance. Findings focus a spotlight on the typical methods of addressing the success of college students with disabilities, and suggest that providing extra time may not have the intended effect of increasing their academic performance in the classroom. Results may be used to support additional means of increasing self-efficacy among college students with disabilities.

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Chapter 1: Introduction to the Study

Students with disabilities are attending college in increasing numbers, representing a 17% increase between 1987 and 2003 (Wagner, Newman, Cameto, Garza, & Levine, 2005). Some of the students seek services from the colleges' disabilities office to provide testing accommodations based on their disability, while others attempt to complete coursework without assistance from the disabilities office. The goal of this study was to explore the academic performance of two groups of postsecondary students who had been diagnosed with LD and had been approved for the testing accommodation of extended time. The first group consisted of registered Disabilities Resource Center (DRC) students approved to use extended time, and the second group consisted of registered DRC students approved to use extended time but who did not request the accommodation. I also explored whether self-efficacy and motivation had improved for either group at the end of the semester.

This chapter is divided into 11 sections including the background, statement of the problem, and purpose of the study. Additionally, this chapter presents the nature of the study, the research questions and hypotheses, the theoretical framework, and the operational definitions. Finally, the chapter includes the assumptions, limitations, delimitations, and significance of the study.

Background

Increasingly, students with LD are graduating from high school and making the decision to attend college, increasing their opportunities for employment, earnings, and social capital (Tinto, 1993). According to the United States Department of Education,

National Center for Education Statistics, National Postsecondary Student Aid Study 1999-2000 (NPSAS:2000) reports approximately 11% of all undergraduates reported having a disability, and 7.1% of those were students with LD. Study findings vary, however, with respect to the number of students enrolling in college with LD. For example, Strawser and Miller (2001) reported that approximately 45% of individuals with LD who graduate from high school are entering postsecondary institutions. Wagner et al. (2005) estimated that 23% of students diagnosed with LD are enrolled in two-year college programs, while 11% of students are attending four-year institutions. Students with LD transitioning to college are more likely to select two-year colleges based on the feeling that there is a better opportunity for success (Murray, Goldstein, Nourse, & Edgar, 2000). Other studies indicate an increase in enrollment in recent years (Gaddy, 2008; Quinn, Ratey, & Maitland, 2000; Wedlake, 2002).

Under Section 504, Subpart E, of the Americans with Disabilities Act of 1990, eligible students are able to receive reasonable accommodations once they have self-identified with their colleges' disabilities office. According to Stodden (2001), in the postsecondary educational setting rights for students with disabilities stem from regulations accompanying statutory laws such as the Americans with Disabilities Act of 1990 (ADA) and Section 504 of the Rehabilitation Act of 1973 which most of the 3,000 postsecondary schools in the United States provide accommodations to students with disabilities through student support services.

Regardless of whether the disability is physical or hidden, the student ultimately needs to decide whether to self-identify with the disabilities office for support services in

the classroom. Once the student has self-identified with the disabilities office, a professional staff member determines whether the student meets eligibility requirements to receive reasonable accommodations based on the documentation provided and the school's guidelines for services. The determination of accommodations varies from institution to institution.

College students with LD tend to have significant difficulties in multiple academic disciplines (Vogel & Adelman, 1992; Wilczenski, 1994) such as reading, writing, math, and foreign language study. Research suggests that students are at risk for failure in their courses and are at increased risk for dropping out of college beyond their freshman year compared to their nonlearning disabled peers (Vogel & Adelman, 1992; Wilczencki, 1994). According to McGlaughlin, Knoop, and Holliday (2005), college math appeared to be a likely reason for students with learning disabilities to drop out of college. Students with learning disabilities tend to spend a tremendous amount of time working on math; however, their severe deficits in math achievement persist, often leading to overall academic failure and attrition (Jones, Wilson, & Bhojwani, 1997).

For students with disabilities transitioning to the postsecondary educational setting, the most consistent educational service offered is testing accommodations (Tagayuna, Stodden, Chang, Zeleznik, & Whelley, 2005). The most frequent testing accommodation provided to students is extended time for tests, although there are other requests such as minimal disturbance testing rooms away from peers and computer-based testing (Farrell, 2003; Lancaster, Mellard, & Hoffman, 2001). Janiga and Costenbader (2002) reported that accommodation rates varied: 88% of all institutions offered extended

time, 77% provided tutors, 69% supplied note takers, 62% made class registration assistance available, 55% offered text on tape, 58% provided adaptive technology, and 45% made sign language interpreters available. Extended time is the most frequently requested accommodation, and researchers have supported that individuals with LD typically take longer to complete timed tasks, including timed tests (Alser, 1997; Hill, 1984; Jarvis, 1996; Ofiesh, 2000; Runyan, 1991a, 1991b; Weaver, 2000). Additionally, when extended time is provided, many students with LD are able to complete the test and make significant improvements in their test scores (Alser, 1997; Hill, 1984; Jarvis, 1996; Ofiesh, 2000; Runyan, 1991a, 1991b; Weaver, 2000).

As students request services from the disabilities office, accommodations are provided to increase their chances for academic success. Students with disabilities entering postsecondary institutions are required to self-identify to receive the most appropriate services based on their documented disability. This is the first contact that the student will have with the Disabilities Resource Center. However, some students make the decision not to register with the DRC, which could possibly be a result of the stigma of disabilities. For students with disabilities, the stigma of disabilities is complex and often involves interpersonal and intrapersonal aspects of feeling misunderstood. Self-misunderstanding (intrapersonal) often manifests as beliefs of being stupid (Cawthorn & Cole, 2010; Ferri, Connor, Solis, Valle, & Volpitta, 2005; Trammell & Hathaway, 2007) or experiencing the imposter phenomenon, which involves feeling inadequate as a college student (Shessel & Reiff, 1999).

Although services are available for students with disabilities, many students with LD face additional problems that may negatively impact their academics, such as motivation, attribution, self-esteem, and affective responses (Borkowski, 1992; Borkowski, Carr, Rellinger, & Pressley, 1990; Borkowski, Johnston, & Reid, 1986; Borkowski & Murtukrishna, 1992). Motivational beliefs, which are influential task approaches that affect development and metacognitive skills, are impacted by a student's learning disabilities (Butler, 1998a). In addition, affect the ability to analyze task requirements to select, implement strategies, monitor and adjust performance (Butler, 1998b).

According to Klassen (2002), self-efficacy perceptions influence choice of activity, task perseverance, level of effort expended, and likelihood of success for students with LD. To date, there has been no comprehensive, critical review of the role self-efficacy beliefs in the academic functioning of individuals with learning disabilities (Klassen, 2002).

The purpose of this study was to identify the academic effectiveness of testing accommodations for postsecondary students diagnosed with LD, including examining whether academic performance is influenced and exploring self-efficacy and motivation. The findings from this study may promote global and local awareness for students with LD transitioning to postsecondary institutions and for those working with students diagnosed with LD. In addition, results may provide individuals with a better understanding of working with college students diagnosed with LD using testing

accommodations and how self-efficacy and motivation may be influenced in the postsecondary setting with or without accommodations.

Statement of the Problem

There has been a rapid increase of students with disabilities transitioning to postsecondary education. However, the academic success rate has been limited for students diagnosed with LD (Gordon, Lewandowski, Murphy & Dempsey, 2002; National Council on Disability, 2003; Palombi, 2000). Nationally, students with LD have a dropout rate near 70% compared to peers without disabilities, obtain lower GPAs, are more likely to take leave of absence, and tend to change to easier programs that prepare them for less lucrative careers (Anctil, Ishikawa, & Scott, 2008; Henderson, 1999; Horn & Berktold, 1999; Murray et al., 2000; Newman, L., Wagner, M., Cameto, R., Knokey, A., Shaver, D., & Yen, S.J. (2010).

According to the National Longitudinal Transition Study (NLTS-2, as cited in Lightner, Kipps-Vaughan, Schulte, & Trice, 2012), only 35.5% of postsecondary students with LD considered themselves to have a disability and informed their institution of the disability, a majority (56.7%) did not consider themselves to have a disability, while 7.8% thought they had a disability but chose not to inform their schools (Newman et al., 2009).

The accommodation extended time was selected for this study due to it being the most requested and granted accommodation by colleges and universities for students with disabilities. Although researchers previously explored the effects of extended time for students with LD, findings were inconsistent. For example, Alster (1997) found no

significant differences in algebra test scores between college students with learning disabilities in the extended time condition and students without learning disabilities in both time and extended-time conditions. In contrast, Medina (2000) found that participants benefited from extended time. Both types of students with learning disabilities and their nondisabled peers benefited with the use of more time.

Purpose of the Study

The purpose of this study was to identify the academic effectiveness of the testing accommodation extended time for postsecondary students diagnosed with LD approved to use accommodations. I examined whether academic performance was influenced by self-efficacy and motivation. Results from the study provided a better understanding of how to provide services to students with disabilities and the impact of students with disabilities not using testing accommodations, if approved.

There has been a great deal of research conducted on the number of students with disabilities accessing postsecondary education; however, there is limited research on the influence of accommodations on academic success (Allsopp, Minskoff, & Bolt, 2005).

A quantitative approach was used to explore the academic performance of postsecondary students' diagnosed with LD and whether students who chose to use the testing accommodation, extended time, had higher motivation and self-efficacy at the end of the semester.

Nature of the Study

I conducted a quantitative study to measure the relationship between the accommodation extended time, self-efficacy, and motivation of postsecondary students

registered with the DRC diagnosed with LD. Additionally, I measured the academic performance of the students at the end of the semester using the appropriate measurement scales. The results from this study may provide improved understanding of the effectiveness of using the testing accommodation extended time and its influence on self-efficacy and motivation of postsecondary students. Information from the study will be shared globally through videos, PowerPoints, and presentations to provide awareness regarding students with LD transitioning to postsecondary education.

Participants were recruited from developmental math classes and the Disabilities Resource Center (DRC). Each participant completed a demographic information sheet addressing age, race, socioeconomic status, and gender. The information sheet also included whether the student was registered with the DRC and whether the student was using services and/or had used accommodations in a previous setting.

Research Questions and Hypotheses

Research Question 1

Does the use of the testing accommodation, extended time, improve the academic performance of postsecondary students diagnosed with LD within a semester?

$H_0$1: Students diagnosed with LD who use the testing accommodation extended time do not differ in their academic performance at the end of the academic semester as measured by final course review of scores compared to students with LD who use their accommodations.

H1: Students diagnosed with LD who use the testing accommodation extended time differ in their academic performance at the end of the academic semester as

measured by final course review of scores compared to students with LD who do not use their accommodations.

Research Question 2

Is there a relationship between using the testing accommodation, extended time, and self-efficacy for postsecondary students diagnosed with LD?

$H_0$2: There is no relationship between students using the testing accommodation, extended time, and self-efficacy as measured by the Generalized Self-Efficacy Scale (GSE) for postsecondary students diagnosed with LD.

H2: There is a relationship between students diagnosed with LD who use the testing accommodation, extended time, and self-efficacy as measured by the Generalized Self-Efficacy Scale (GSE) for postsecondary students diagnosed with LD.

Research Question 3

Is there a predictive relationship between using the testing accommodation extended time, and motivation and academic performance?

$H_0$3: There is no predictive relationship between students diagnosed with LD using the testing accommodation extended time, and motivation and academic performance.

H3: There is a predictive relationship between students diagnosed with LD using the testing accommodation extended time, and motivation and academic performance.

Theoretical Framework

Two theoretical frameworks were used for this study based on the premise that the academic performance of students diagnosed with LD would improve using the

testing accommodation extended time. I used self-efficacy based on Bandura's social cognitive theory, which suggests that learners who have experienced numerous academic failures will have low self-efficacy (Margolis and McCabe, 2004). According to Bandura (1997), a person's belief in his or her abilities is critical to how he or she feels, thinks, behaves, and motivates him or herself.

Motivation was used based on the expectancy-value theory focusing how a person's capabilities to complete a task and the value assigned to the task interact to predict behavior, levels of engagement, and academic achievement (Pintrich & Schunk, 2002). Behavior is a function of the expectations one has and the values of the goal toward which one is working; therefore, when there is the potential to have more than one possible behavior (e.g., to use the testing accommodation or not), the behavior selected will be the one that has the greatest combination of expected success and value for a student. The expectancy-value theory model allows a student with LD to make choices for their expected success and value. Both self-efficacy and motivation will be discussed in more detail in Chapter 2.

Operational Definitions

Key terms used throughout the study are defined below.

American Disabilities Act of 1990 (ADA): The Americans with Disabilities Act (ADA) 1990 provides civil rights protection and is designed to remove barriers for individuals with disabilities from accessing the same educational and employment opportunities as persons without disabilities. Regarding higher education, the Americans with Disabilities Act also prohibits discrimination against a qualified individual with a

disability in regards to admission to educational institutions or vocational training programs (public or private).

Extended testing time: An approved testing accommodation for DRC students with a documented disability such as LD. The time allotted for extended time for the purpose of this study was time and a half, which students added to their regular classroom exam; for example, if a class was granted 1 hour to complete an exam, the student approved for extended time was allotted 1 hour 30 minutes to complete the exam.

Individuals with Disabilities Education Act (IDEA): The Individuals with Disabilities Education Act is federal law that ensures that individuals with disabilities are entitled to a free and appropriate public education to meet their needs and prepare them for further education, employment, and independent living. In the 1990s the IDEA was amended to include transition of services, which meant that the 504 established for students with disabilities in secondary schools would better prepare students for higher education.

Learning disabilities (LD): This is a discrepancy between general intellectual ability and academic achievement in a subject area (Kavale, 2002). If a student is unable to learn a basic academic skill (e.g., reading) despite adequate general intellectual ability, LD is a reasonable explanation of the student's failure to acquire the skill, and achievement test scores substantially below a student's IQ score are taken as evidence of LD. According to Lerner (1997), LD encompasses a relatively broad group of learning difficulties that involve a disorder in one or more of the basic psychological processes presumed to be related to central nervous system dysfunction. This disorder creates

problems in speaking, listening, writing, reading, and/or mathematics, and reflects a severe discrepancy between apparent potential for learning and actual level of achievement.

Reasonable accommodations: Reasonable accommodations are modifications or adjustments to the tasks, environment, or way things are usually done that enable individuals with disabilities to have an equal opportunity to participate in an academic program or a job (U.S. Department of Education, 2007). Also, the term was used interchangeably as academic adjustments and/or accommodations to an activity or setting that removes a barrier presented by a disability so a person can have access equal to that of a person without a disability (Byrnes, 2000). Students are granted testing accommodations if they are granted approval from the DRC office when appropriate documentation is provided.

Assumptions

I assumed that participants were honest and motivated to complete their college career with the use of testing accommodations once they had self-identified with the DRC. I made the assumption that using the testing accommodation extended time would consistently be applied across classes and that the measure of motivation and self-efficacy was accurate for students who participated in the study.

Limitations

The limitations of this study included using a sample from a single college, which may not be generalizable to other college students. Other limitations included using only one approved accommodation (extended time). In addition, I included students who

volunteered for the study, so results may not be generalizable to all students with the diagnosis of LD.

Delimitations

Delimitations included participants registered with the DRC based on the diagnosis of LD and those who were approved for the testing accommodation extended time during examinations. I confined the study to college students registered with the DRC, to those who had been diagnosed with LD, and to those who resided in a medium size university town in Southeast Florida. I also examined college students registered with the DRC who had been diagnosed with LD using the testing accommodation extended time, and those who chose not to use the accommodation extended time.

Significance of the Study

Studying the academic performance of students who had been diagnosed with LD and whether using the testing accommodation extended time improved their academic performance, self-efficacy, and motivation may contribute to positive social change by providing the opportunity to implement educational sessions for students with disabilities and bring awareness of the need for self-advocacy to benefit from the use of accommodations. Additionally, I gathered information on the impact of using testing accommodations to determine whether there was an increase in academic performance and whether motivation played a factor in academic performance with or without the use of testing accommodations.

Results of the study will be presented at local colleges and universities to raise awareness among faculty, staff, and students regarding factors related to academic success for students with disabilities.

Summary

Chapter 1 included definitions of key terms and laws pertaining to students with disabilities. The increased number of students with LD transitioning to postsecondary schools and the effectiveness of using the testing accommodation extended time and how a student's self-efficacy and motivation is impacted were addressed. The purpose of this quantitative study was to determine the effectiveness of using the testing accommodation extended time for postsecondary students diagnosed with LD. Social cognitive theory and expectancy-value-theory provided the framework to explore the increase or decrease of academic performance of students with disabilities. Chapter 2 presents a review of relevant theories and the literature pertaining to learning disabilities, testing accommodations, self-efficacy, and motivation.

Chapter 2: Literature Review

Students with disabilities such as LD are considered the invisible scholars (Stage & Milne, 1996) with the same aspirations as nondiagnosed students transitioning to colleges and universities. Unfortunately, their struggles sometimes make things more complex for them to strive, to remain motivated, and to complete college. Students with LD have some of the same academic characteristics, which are primarily in the areas of executive functioning. Additionally, they demonstrate a gap between intelligence and achievement (Turnbull, Turnbull, & Wehmeyer, 2010). More students with disabilities are transitioning to higher education; the population has tripled and by some estimates quadrupled over the past 25 years (Olney, Kennedy, Brockelman, & Newsom, 2004; Palombi, 2000) despite the historic underrepresentation (Beilke & Yssel, 1999; Shevlin, Kenny, & McNeela, 2004). Two pieces of legislation that may be credited with the increase in higher education are the Americans with Disabilities Act (ADA) and the Individuals with Disabilities Education Act (IDEA) (Konur, 2006; O'Day & Goldstein, 2005; Rooco, 2002; Thomas, 2002; Wolf, 2001). The amendments of IDEA of 1997 included postsecondary education as a major postschool outcome for students attending school and section 504 of the Rehabilitation Act of 1973. The Rehabilitation Act mandates access to postsecondary education for students with disabilities.

In knowing and understanding the laws, postsecondary institutions are confronted with increased enrollment (Wilczenski & Gillespie-Silver,1992) of students with disabilities, which is resulting in students seeking services/resources based on their disability. Although there has been an increase in enrollment of students with disabilities,

students must provide appropriate documentation and self-identify to receive the services they request from the office of disabilities, which determines the most appropriate testing accommodations. Typically, there are offices on every campus to provide services to students, especially with schools being guided by Section 504 of the Rehabilitation Act of 1977 (as cited in Adelman & Vogel, 1993) and the Americans with Disabilities Act (ADA) of 1990. Although there is different reporting of students with disabilities transitioning to college, it should be noted that to generate an accurate count of students with disabilities in college, all individuals must self-identify to the DRC.

This chapter addresses the etiology of LD based on empirical data and the *Diagnostic Statistical Criteria* manual, which is important due to how LD has evolved over the years. The laws that were established for postsecondary students and accommodations provided to students that self-identified to the DRC with appropriate documentation. Additionally this chapter discussed the steps a student would need to take in order to register with the colleges DRC. The purpose of this study was to determine whether academic performance, self-efficacy, and motivation of students diagnosed with LD were impacted by the testing accommodation extended time.

Literature Review Strategy

A comprehensive literature search strategy was used to locate articles pertaining to adult college students with LD. The publication years that were included ranged from 2001to 2012. I searched the PsycArticles, PsycInfo, ERIC, and ESBCO databases using the following key terms: *college students with learning disabilities*, *students with*

disabilities, *college students using accommodations*, and *college students with disabilities*.

Theoretical Framework

Two theoretical frameworks were used in the study: Social Cognitive theory in regards to self-efficacy and Expectancy Value theory in regards to motivation. The selection of the social cognitive theory was based on how people acquire and maintain certain behaviors, while also providing a basis for intervention strategies (Bandura, 1997). The expectancy value theory selection was based on the amount of effort students expend on a task, the degree to which success is expected, and the degree to which one values the task success (Green, 2002).

Self-efficacy refers to individuals' belief that they can control their performance and their environment in a specific context (Bandura, 1997). Also, self-efficacy impacts students in many ways, influences the environment in which students place themselves and how they handle failures (Jackson, 2002).

Numerous studies suggest that self-efficacy correlates highly with college achievement (Bong, 2001b; Chemers, Hu, & Garcia, 2001; Gore, 2006; Multon, Brown, & Lent, 1991; Zajacova, Lynch, & Espenshade, 2005), which has been described as essential for successful learning (Zimmerman, 2000). Other research has shown that academic self-efficacy is positively associated with grades in college (Bong, 2001a; Brown, Lent, and Larkin, 1989; Hackett, Betz, Casas, and Rocha-Singh, 1992; Lent, Brown, and Larkin, 1984; Multon et al., 1991) as well as with persistence (Lent et al., 1984, Lent, Brown, & Larkin, 1986; Lent, Brown, & Larkin, 1987; Zhang & RiCharde,

1998). Torres and Solberg (2001) found a positive association between academic self-efficacy and the number of hours students spend studying. Students with high self-efficacy tend to participate more readily, work harder, pursue challenging goals, spend more effort toward fulfilling identified goals, and persist longer in the face of difficulty (Bandura, 1997; Pajares, 2003; Schunk, 1991). Some students with LD experience academic struggles; however, some students will seek support, which is important to be successful. The higher the sense of self-efficacy, the greater the effort, persistence, and resilience of the student.

The expectancy value models theories focusing on motivation, in which one must assume that the expectancy-related beliefs and subjective task values are most directly linked to an individual's choice, persistence, and related achievement behaviors (Atkinson, 1964). Although there is not a single expectancy-value model, the one researched the most in regards to school achievement is the model developed by Eccles, Wigfield, and their colleagues (Eccles, 1983; Wigfield & Eccles, 2000). With the expectancy theory model, students' achievement performance, amount of effort exerted, persistence, and choice of achievement tasks is influenced by their expectancy-related beliefs and task values, which are attached to the achievement tasks (Eccles, Futterman, Goff, Kaczala, Meece, & Midgley (1983).

Research has indicated (Chapman, 1988; Kistner & Osborne, 1987; Kistner, Haskett, White, & Robbins, 1987; Renick & Harter, 1988, 1989) that, according to the expectancy value models, students with LD have lower self-concepts and lower perceptions of physical competence than peers without a disability.

Both frameworks were critical for this study in regards to students with LD making a choice to use their approved testing accommodation extended time, which could impact their self-efficacy and motivation. Exploring self-efficacy in greater depth could help determine how one is able to execute specific academic behavior in a given context (Bandura, 1993; Schunk & Zimmerman, 1997; Zimmerman, 2000). The beliefs of self-efficacy include the impact of behavior; for example, self-efficacy affects the choices and resulting courses of action adopted (Bandura, 1997; Pajares, 2002). Also included is the engagement in tasks in which competency is perceived to be greatest, while avoiding those perceived to be less competent in achieving. When students avoid learning, feel inadequate, and become frustrated when faced with the possibility of failure, they are experiencing low self-efficacy. Regarding the expectancy value model, the assumption is that an activity of choice could occur in the context of multiple options. For example, "expectations or probability for success, values attached to success and failure on a task, gender-role schemata, and perceptions of the characteristics of the task" (Bandura, 1986, p. 319).

Laws for Students With Disabilities

Public and private postsecondary institutions (excluding those that are controlled by religious organizations) must abide by ADA guidelines (1990) due to institutions receiving federal funds (Latham, 2007). Section 504 of the Rehabilitation Act of 1973 was the first law established that required colleges to provide students with disabilities accommodations and access while at the same time protecting them from discrimination (Simmon, 2000). The law was later strengthened with the passing of the ADA in 1990

and its reauthorization in 2008 (Simmon, 2000). Laws for students with disabilities transitioning to postsecondary are no longer the same as the secondary system; for example, postsecondary rights are available under Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 (ADA), which set expectations for colleges and universities to provide reasonable modifications, accommodations, or auxiliary aids that enable qualified students to have access to, participate in, and benefit from the full range of educational programs and activities that are offered to all students on campus (Hadley, 2006).

Students enrolling in a college, university, or vocational school are protected by both federal and state laws (Norton, 1997) and may not be denied admission because of their disabilities; postsecondary institutions must make reasonable modifications in academic requirements when necessary to provide full educational opportunities for students with disabilities (California Association of Postsecondary Educators for the Disabled, 1992).

Empirical Definition of LD and Diagnostic Criteria

Often the term learning disabilities is used in the educational field; however, it is difficult to formulate one concrete definition that all in the field agree upon; for example, in 1998, Gadbow and Dubois researched the definition of LD stating that LD was not a single disorder. Professional organizations such as The National Center for Learning Disabilities (NCLD) define LD as a neurological disorder that affects the brain's ability to receive, process, store, and respond to information. LD also affects the individual in the areas of listening, speaking, reading, writing, or mathematics (NCLD, 2005). The

Office of Special Education & Rehabilitative Services Administration (2002) define LD as a disorder in which one or more of the central nervous system processes involved in perceiving, understanding, and/or using concepts through one's verbal (spoken oral written) language or nonverbal abilities. The disability manifests with a deficit in one or more of the following areas: attention, reasoning, processing, memory, communication, reading, writing, spelling, calculation, coordination, social competence, and emotional maturity.

The regulations for Public Law (P.L.) 101-476, the Individuals with Disabilities Education Act (IDEA), formerly P.L. 94-142, and the Education of the Handicapped Act (EHA) define a learning disability as a disorder in one or more of the basic psychological processes involved in understanding or in using spoken or written language, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell or to do mathematical calculations. The Individuals with Disabilities Education Act (IDEA) further states that learning disabilities include "such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia." According to the law, learning disabilities do not include learning problems that are primarily the result of visual, hearing, or motor disabilities; mental retardation; or environmental, cultural, or economic disadvantages. Definitions of learning disabilities also vary among states.

According to the National Joint Committee on Learning Disabilities (1998), learning disabilities refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, writing,

reasoning, or mathematical abilities. The disorders are intrinsic, although the disorders may be linked to a central nervous system dysfunction and may occur over one's lifespan. The (American Psychiatric Association [APA], 2013) indicates that learning disorders features are diagnosed when the individual's achievement on individually administered, standardized tests in reading, mathematics, or written expression is substantially below that expected for age, schooling, and level of intelligence.

The new DSM-5 views LD as specific learning disabilities (SLD), which fall under a neurodevelopmental diagnosis involving difficulties in learning and using academic skills. At least one symptom must be persistent for at least 6 months, despite the provision of interventions that target those difficulties; symptoms may include: being inaccurate or slow with word reading, difficulty in understanding the meaning of what is being read, difficulties in spelling, written expression, mastering of number sense, calculation, facts or calculations, and mathematical reasoning. Affected academic skills are substantially and quantifiably below those expected for the individual's chronological age, learning difficulties during school school-age year, but may not become fully manifested until the demands for those affected academic skills exceed the individual's limited capacities, and learning difficulties are not better accounted for by intellectual difficulties (APA, 2013)

Several definitions have been reviewed regarding learning disabilities; however, Lovette and Lewandowski's (2006) definition was the definition for this study, including on the discrepancies between a student's ability, achievement, or performance which are then considered neurological deficits that interfere with a student's capability to store,

process, or produce information. According to the scientific research and various types of LD, there is no commonly accepted definition of chronic learning difficulty that exists in 10-15% of the human population (Gadbow & Dubois, 1998, p. 25).

Academic Performance for College Students with LD

The National Council on Disabilities (2003) report that 3% of college freshmen were identified with some type of disability in 1978 while today 98% of public institutions report enrollment of students with disabilities and most postsecondary education institutions provide some level of services, supports and accommodations for students with disabilities. The percentages have increased over the years according to Beale (2005) and the increase of enrollment could contribute to the efforts of postsecondary institutions willingness to provide additional support services and transitional planning.

With LD being considered a lifelong condition, not a diagnosis that one may outgrow (Roffman, 2000) individuals with LD are considered to have average to above average intelligence due to presumed central nervous system dysfunction (Gilbert & Steffey, 1996; Hammill, 1990; Scott, 1997). In addition, students have difficulties in one or more of the following areas: (a) reading, (b) spelling, (c) written language, (d) oral language, or (e) mathematics (Gilbert & Steffey, 1996; Hammill; Scott, 1997). Difficulties are also expected in processing, organizational skills, time management, and/or attention (Barga, 1996). Studies show that college students and adults with learning disabilities are highly affected by their level of anxiety in the academic settings (Manglitz, Hoy, Gregg, King, & Moreland, 1995). Studies conducted by Beilock, Kulp,

Holt, & Carr (2004); Cassady, 2004; Miller & Bichsel, 2004, depicts the negative impact of distracting thoughts and worries on mathematics performance, resulting from disruption of the central executive component of memory that is essential for complex problem solving (Prevatt,Welles, Li, & Proctor, 2010).

According to Kavale (2000), one of the most common ways of operationalizing LD is by acknowledging and utilizing the discrepancy between general intellectual ability and academic achievement in a subject area. For example, if a student is unable to learn a basic skill in reading despite his/her adequate general intellectual ability, LD is a reasonable explanation of the student's failure to acquire the skill, so an achievement test score substantially below a student's IQ score is taken as evidence of LD (Reschly & Hosp, 2004). Studies of college students with LD revealed that students have a greater difficulty handling academic demands, adjusting to change, dealing with criticism (Mellard & Hazel, 1992), and to university life (Saracoglu, Minden, & Wilchesky, 1989). Barton and Fuhrman (1994) contended that adults with LD often need to cope with a number of psychological difficulties including stress and anxiety. Hoy, Gregg, Wisenbaker, Man-Glitz, King, & Moreland (1997) found that students with LD reported consistently higher levels of anxiety and persistent feelings of lower self-efficacy and large gaps between their competence and their actual achievements.

College Students and Mathematics Disorders

According to Fleischner and Manheimer (1997), 5-6% of students have significant difficulty with mathematics and it has become increasingly evident that students need help in understanding mathematics due to the world evolving scientifically

and mathematically (McGlaughlin, Knoop, & Holliday, 2005). As students with LD transition, LD as it is related to mathematics can be connected to issues related to language, information processing and cognition (Daley, 1994; Strawser & Miller, 2001). The subtype that primarily affects mathematics is dyscalculia or nonverbal learning disability (Strawser & Miller, 2001) which is not language-based and can be traced to the right hemisphere of the brain.

The characteristics for individuals with mathematics difficulties include; selective impairment in mathematics, visual-spatial disturbances, and difficulties with social perception and development of social skills (Fleischner & Manheimer, 1997). For postsecondary students generalizations and abstract rules are difficult if one has the diagnosis of dyscalculia or nonverbal learning disability (Sullivan, 2005).

Developmental Mathematics

Students enrolled in developmental mathematics (DM) courses are placed in the classes with the intent to give students the necessary skills and knowledge in order to succeed (Miller, 1996). Once a student has been successful in the course then the student is able to move to the next sequence of math order. A typical sequence of DM courses includes; Pre-Algebra, Beginning Algebra, and Intermediate Algebra. A student's math ability is assessed which will determine whether the student is able to take college level math or whether a DM course is appropriate for the level of their ability (Jacobson, 2006).

Self-Efficacy and Academic Performance

Self-efficacy has shown to be an accurate predicator of success in one's academic performance (Fast, et al; Hackett & Betz, 1989; Multon, Brown, & Lent, 1991) and Pajares (2005) found that twenty-five percent of a student's academic success is based solely on their self-efficacy. According to Cavallo, Potter, and Rozman (2004) students with high self-efficacy are apt to attain higher achievement in a specific subject area, whereas those with lower self-efficacy tend to be less successful. Lackaye and Margalit (2008) report there is evidence of self-efficacy beliefs in history and in mathematics that students with LD often experience difficulties either in language-related domains or in mathematics, or manifest comorbidity of difficulties in both domains.

Motivation and Academic Performance

Motivation

According to Pintrich and Schrauben (1992), motivation and cognition are important components of successful academic performance in regards to a student's learning. Several studies have shown that students with LD tend to attribute their failure to lack of ability (i.e., Butkowsky & Willows, 1980; Kistner, Osborne, & LeVerrier, 1988; Pearl, 1982).

Psychologist David McClelland (1985) researched motivation and the need for achievement; focusing on how to strive for success, which is needed in order to master difficult challenges and to meet high personally generated standards of excellence. Researchers (Vallerand, Pelletier, Blais, Briere, Senecal, & Vallieres, 1992; Waugh, 2002) investigated motivation and the accomplishments of students by first defining

motivation of accomplishment as a psychological activity that is the pleasure and satisfaction experienced when one accomplishes something. There are several aspects in regards to academic motivation which include: interest in topic or area, learning from others, and responsibility for learning, intrinsic, extrinsic, and social rewards (Waugh, 2002). Motivation is influential in student's retention, research conducted on the retention of motivation for students is based on studies which measured student's aspirations; which is defined as the desire to finish college and identified as a form of goal commitment (Allen, 1999).

Reasonable Accommodations

As students with LD transition to postsecondary education, the realization of newness is there for many students. Although students may struggle academically once they transition to postsecondary, there are laws in place to protect them. For example, Section 104.44 of Subpart E of Section 504 of the Rehabilitation Act of 1973 addresses academic modifications, which gives the rights to students with disabilities and the students are able to request accommodations based on their diagnosis and documentation. Possible modifications include increasing the length of time allowed for the completion of degree requirements, allowing course substitutions, and providing changes in course delivery. Institutions are also required to provide auxiliary aids, such as audio texts and interpreters, to students with impaired sensory, manual, or speaking skills if the absence of the aids would lead to discrimination. Rules (e.g., no audio recording of lectures) limiting the participation of students who have disabilities is also prohibited. Institutions are not required to provide aids or services that are of a

private/individual nature, such as personal care attendants or readers for personal use, nor are they required to modify academic requirements that are deemed essential, such as certification or licensing requirements.

Accommodations

Accommodations may be a critical aspect of access to and for opportunities in higher education for students with disabilities (Lindstrom, 2007); however, not all students utilize the service. For students with LD, accommodations can help level the playing field on college entrance and course exams, promote fair access to instruction and increase retention (Mull, Sitlington, & Alper, 2001; Ofiesh & Hughes, 2002; Pierangelo & Crane, 1997; Sireci, Scarpati, & Shuhong, 2005; Stodden & Dowrick, 2000; Stodden, Jones, & Chang, 2002). Some students opt out of seeking services for the simple belief that they are able to complete college without any assistance. According to Forrest (2003), it has been estimated that only 25 to 50% of students with disabilities actually register with the DRC; students must be their own self-advocates; contrarily, many students who attend college with a disability do not want to be identified with a disability. One reason in particular that students with disabilities may not self-identify according to Olney and Brockelman (2003) is related to the fear of students being seen less competent and wanting their peers to accept them as equals.

Usually when a student receives accommodations, the goal of the service is to give the student the opportunity to demonstrate his or her abilities and provide equal access to the learning environment, not to give the student a greater advantage than the student without a disability.

According to Mull et al. (2001) postsecondary students with LD are considered the fastest growing group of college students with disabilities, however, Forrest (2003) estimated that only 25 to 50% of students with a disability are registered with the office for students with disabilities at their colleges. Research conducted by Bursuck, Rose, Cowen and Yahaya (1989) and Mellard and Byrne (1993) indicated that only a minority of college students with LD utilized academic support services available to them. This becomes a concern for not having the students with LD utilizing services, although a study conducted by Forrest (2003) estimated that only 25 to 50% of students with disabilities are registered with the office of disabilities.

With such a rapid increase in enrollment at colleges and/or universities of students with disabilities, accommodations are being sought after by students and parents as students' transition to a postsecondary institution especially knowing that postsecondary institutions are legally required to provide reasonable accommodations to enable students with disabilities the opportunity to obtain an equal education as those without a disability.

Although both state and federal laws protect students with learning disabilities, Norton (1997) clearly emphasized that there are fewer decisions specifically addressing accommodations. As students are seeking accommodations appropriate documentation must be provided in order for the DRC to make the decision on what is deemed the most appropriate accommodation for the student based on the documentation provided and the diagnosis.

Receiving appropriate support and accommodations is critical to postsecondary success and retention Wagner et al. (2005), for students with disabilities; for example

seeking tutoring and seeking assistance from the DRC. Postsecondary institutions are required to provide student support service does not discriminate on the basis of disability (Office for Civil Rights, 2004). Accommodations are not provided as an advantage for students with disabilities. In order words, an accommodation that provided to a student must not change the nature of the construct being measured according to Sireci (2005).

Extended Test Time

According to Ofiesh, Hughes and Scott (2004) the most requested accommodation by college students diagnosed with LD is extended time. Researchers have reported that in 1991, 62% of college students with LD requested untimed tests (Hughes, 1991) and those numbers increased the following decade (Brinckerhoff, McGuire, & Shaw, 2002). "Studies exploring an extended time accommodation for college students with LD have inconsistent findings. For example, Alster (1997) purported no significant difference in algebra test scores between college students with learning disabilities in an extended time condition and students without learning disabilities in both timed and extended-time conditions. Medina (2000) found that although extended time benefited all participants in the study, extended time did not benefit college students with learning disabilities as compared to their non-disabled peers. Zuriff (2000) believed that although extended time benefited both learning disabled and non-disabled college students the analysis of the five studies examined did not support the theory that only students with learning disabilities benefited from extended time. In contrast, Weaver (2000) reported postsecondary students with disabilities made

significantly higher gains on their reading tests using extended time as compared to students without learning disabilities.

For students with disabilities attending postsecondary schools, it is usually the Disabilities Counselor and/or Coordinator that determines the reasonableness of the students' request for an accommodation based on a disability, in relation to precepts from the ADA. The precepts from ADA are: (1) the current impact of the disability on a major life activity, and (b) the functional limitations of the disability (Ofiesh and McAfee, 2000). Students who have been approved for the testing accommodation, extended time, will have extended time in different increments (based on one's school).

Based on anecdotal data disability offices may be both conservative and liberal with assigning extended time to students with disabilities. For example, some DRC offices may provide one standard amount of time for most, while others use ranges from 25%-400%, as well as unlimited time (Ofiesh & Hughes, 2002).

A study conducted by Heiman and Precel (2003) revealed the concerns of using extended time for those with LD and for those without LD. The concerns that were presented focused on having limited time availability for test completion, needing to finish too quickly, admitting problems with concentration, having a difficult level with the exam, writing the wrong answer, and passing the test. In comparison of students that were not diagnosed with LD, more students with LD reported having stress, nervousness, frustration, helplessness, physical pains, which includes headaches. In addition, the study showed that more students with LD reported more stress, nervousness, frustration,

helplessness, physical pains (i.e, headaches), and uncertainty during exams; the students believed that extended time on tests would help them succeed.

The rationale for the accommodation, extended time, is that students diagnosed with LD tend to take longer to complete timed tests than students that have not been diagnosed with a learning disability, due to slower processing, speeds (Zuriff, 2000). For example, students with a learning disability completing a reading comprehension test tend to score significantly lower than students without disabilities under timed conditions (Runyan, 1991). Research has been conducted that supports individuals that are diagnosed with LD and supports that it takes longer to complete timed tasks and taking tests (i.e., reading passages, math calculations) than individuals without the diagnosis of LD (Wolff, Michel, Ovrut, & Drake, 1990; Gaeary & Brown, 1990).

Summary

In summary, Chapter 2 contained several articles researched that were relevant to college students diagnosed with LD seeking services from their college tests (i.e., reading passages, math calculations), social cognitive theories and expectancy-value theory in which a history is provided on the academic performance and the impact of motivation and self-efficacy for students with LD.

Chapter 3 will provide information explaining the research design and the methods used in the research of college students with LD using the testing accommodation, extended time, to determine if the student's self-efficacy and/or motivation is impacted. Additionally, the chapter will discuss the research design, methodology, and the necessary steps taken to maintain confidentiality.

Chapter 3: Research Method

For this study a quantitative approach was used to determine whether academic performance, self-efficacy, and motivation increased at the end of the semester in students diagnosed with LD using the testing accommodation extended time. There were several steps in the research process that ranged from the initial assignment of numbers in the coding process to utilization of the self-efficacy scale. Information gathered from the participants remained confidential throughout the evaluation process. Students were not identified by their names; instead they were assigned numbers on their instrument forms for easy coding. Academic performance was measured by percentages and collected from the instructors at the end of the semester to determine whether there was an increase in academic performance. All information pertaining to the participants was analyzed using SPSS.

I examined two groups of postsecondary students diagnosed with LD and approved for the testing accommodation extended time. One group of students used the accommodation and the other group of students did not use the accommodation. The purpose of this study was to identify the effectiveness of using the testing accommodation extended time in postsecondary students who had been diagnosed with LD, and the predictive influence of self-efficacy and motivation on the academic performance of students with LD.

This chapter includes the design of the study, the research questions, the hypotheses, the sample size and participants, the instrumentation, and the data collection and analysis process.

Research Design

I used a quantitative approach to measure the effectiveness of using the testing accommodation extended time for students diagnosed with LD, and how motivation and self-efficacy were impacted with or without the use of the same accommodation.

According to Creswell (1994), quantitative research is used to explain a phenomenon by collecting numerical data that is analyzed using statistical methods. Using a quantitative approach provides the opportunity to create objective meaning through the collection of data. A quantitative method was selected over qualitative because quantitative methodology is used for collecting and analyzing numerical data while qualitative methodology is concerned with social phenomena and attributes across relatively few cases (Creswell, 1994). The rationale for selecting the quantitative approach was based on the fact that the approach is realistic, allowing me to be objective.

A quantitative method was the most appropriate method of selection due to the random assignment of participants to separate groups: LD students who chose not to use the testing accommodation extended time (Group 1), and LD students who chose to use the testing accommodation extended time (Group 2). Assigning participants to groups allowed me to determine the effectiveness of academic performance, self-efficacy, and motivation and whether there was an improvement in academic performance at the end of the semester. Using a quantitative method allowed for replication of the study and generalization of the findings.

Methodology

In this quantitative study, I explored the effectiveness of students diagnosed with LD using the testing accommodation extended time. In addition, I explored the relationship between academic success and self-efficacy and motivation based on the use of the testing accommodation extended time.

Sampling

The recruitment process involved flyers being posted at the college DRC and speaking directly with math instructors requesting permission to recruit volunteers for the study. Each student completed a packet on a volunteer basis. A prescreener determined whether the student would need to complete the entire packet, and the end of the term the instructor was contacted for the final percentage for students who met eligibility based on completing the packet.

Population

The sample consisted of college students (males and females) diagnosed with LD registered with the DRC approved for the testing accommodation extended time from ethnically diverse communities. Selection of participants was through a convenience sample of being enrolled in a MAT1033 class. Group 1 included registered DRC students diagnosed with LD choosing not to use the accommodation extended time), and Group 2 included registered DRC students diagnosed with LD who used the accommodation extended time. To determine the *t* statistic with an alpha of .05, I needed a medium effect size ($d = .5$) and 80% power. In using a large effect size for a *t* test, there needed to be 52 students to complete the study (Rudestam & Newton 2007).

Setting

Data were collected from each participant on a voluntary basis from the math classes and the DRC. Demographic information was retrieved from the student information data sheet, students learned about the the study from flyers posted at the DRC and math labs.

Instruments

Two forms were used to gather information about students: informed consent and demographic sheet. Two instruments were used for the study: the Generalized Self-Efficacy Scale (GSE) and the Academic Motivation Scale – College Version (AMS-C).

Informed Consent

Each participant completed this form giving permission to participate in the study and being informed of his or her rights. This form indicated to the participants that at any time they had the right to withdraw from the study without any negative repercussions. See Appendix B for more details.

Demographic/Information Data Sheet

Each participant completed this form to provide information on age, gender, ethnicity, college classification, disability, and how often accommodations were used. Information gathered from the forms will remain confidential and were only used for the purpose of the study. See Appendix A.

Self-Efficacy Scale

The General Self-Efficacy Scale (GSE) a 23-item inventory (Sherer & Adams, 1983; Sherer & Maddux, 1982) was administered during the participant's developmental

math class measured the overall level of confidence that an individual possesses in implementing life activities, based on Bandura's social cognitive theory. The scale is used to predict and explain the changes in behavior using key concepts of self-efficacy expectations, outcome expectations, and personal characteristics (Bandura, 1997). Selecting the GSE scale provided the opportunity to translate results into numerous languages for several populations. According to Dougherty, Johnston, and Thompson (2007), Cronbach's alpha reliability demonstrates good internal consistency (*SE* α = 0.93). The criterion validity has been documented in various correlation studies (Parschau, Koring, Knoll, Schwarzer, & Lippke, 2003; Schwarzer & Warner, 2013; Koring, Parschau, Ernsting, Lippke, & Schwarzer, 2012) in which positive coefficients were found in emotions, dispositional optimism, and work satisfaction.

Motivation Scale

The Academic Motivation Scale- College Version Scale (AMS-C) (Vallerand et al., 1992) was administered during the participants' developmental math classes. The original scale was developed in French-Canadian version but has since been used in the U.S. collegiate population (Cokley, Bernard, Cunningham, & Motoike, 2001). The scale is based on the self- determination theory (SDT) of motivation (Deci et al., 1991; Deci & Ryan, 2000). SDT has two types of motivation: intrinsic and extrinsic, and a state called *amotivation* signifying a lack of motivation.

The AMS-C was selected for this study due to the levels of intrinsic motivation, extrinsic motivation, and amotivation revealed (Vallerand, 1993). There are seven subscales to assess motivation: intrinsic motivation (to know, to accomplish, and to

experience stimulation; extrinsic motivation (external regulation, introjections, and identification); and amotivation. Obtaining high scores in one of the seven areas would indicate the individual's strength of academic motivation as well as the desire to pursue a postsecondary education (Vallerand et al., 1989). Combining subscale scores indicated a student's intrinsic motivation, extrinsic motivation, or amotivation in regards to his or her academic pursuits.

From the seven subscales, internal consistency was assessed during the development of the English version of the AMS ranging from .83 to .86 (Vallerand et al., 1992), and from .60 to .86 with another English-speaking sample (Vallerand, 1993). This was supported through construct validity as assessed through examination of correlations of the subscales and correlations between the subscales and motivational antecedents and consequences (Vallerand et al., 1992).

Ethical Protection of Participants

Data were collected after obtaining permission from Walden's Institution Review Board and obtaining signed consents from participants. I informed the participants of confidentiality and the withdrawal procedures from the study that could have been carried out at any time. Participants were also informed of the nonmonetary participation. All data obtained from participants will be destroyed 5 years after the study was completed.

Confidentiality

Steps were taken to maintain confidentiality in the study. Participants were assigned numbers instead of their real names; these numbers were implemented in the coding process during the beginning of the study. The information data sheets will be

stored in a locked storage at my home for 5 years. Students' names were removed once data were collected, and then their names were destroyed. After 5 years, I will shred the data.

Voluntary Basis

Students who participated in the study were considered volunteers and were not paid for their service during the study. Students completed the initial consent form, which indicated their willingness to volunteer in the study with the understanding that they were able to withdraw from the study without negative repercussions.

Reliability

Internal consistency was used as the measure of reliability for each instrument. Using internal consistency was based on a constructivist learning environment, which was more suited and effective for adult learning students (Trochim, 2006). Cronbach's alpha was used to determine the internal consistency for both instruments.

Data Analysis

Data analysis included descriptive procedures to summarize the data, including the mean, standard deviation, frequency, and percentages. Results were analyzed using SPSS Statistics GradPack 22.0 for Windows. The findings demonstrated the relationships among the variables in the study.

Research Question 1*:* Does the use of the testing accommodation, extended time, improve the academic performance of postsecondary students diagnosed with LD within a semester?

H_{01}: Students diagnosed with LD who use the testing accommodation extended time will not differ in their academic performance at the end of the academic semester as measured by final course reviewing of percentages compared to those with LD who do not use their accommodations.

H1: Students diagnosed with LD who use the testing accommodation extended time will differ in their academic performance at the end of the academic semester as measured by final course reviewing of percentages compared to those with LD who do not use their accommodations.

Research Question 2*:* Is there a relationship between using the testing accommodation, extended time, and self-efficacy for postsecondary students diagnosed with LD?

H_{02}: There is no relationship between students using the testing accommodation, extended time, and self-efficacy as measured by the Generalized Self-Efficacy Scale (GSE) for postsecondary students diagnosed with LD.

H2: There is a relationship between students diagnosed with LD who use the testing accommodation, extended time, and self-efficacy as measured by Generalized Self-Efficacy Scale (GSE) for postsecondary students diagnosed with LD.

Research Question 3: Is there a predictive relationship between using the testing accommodation extended time, motivation, and academic performance?

H_{03}: There is no predictive relationship between students diagnosed with LD who use the testing accommodation extended time, motivation, and academic performance.

H3: There is a predictive relationship between students diagnosed with LD who use the testing accommodation extended time, motivation, and academic performance.

The first hypothesis of the comparison of academic performance between the two groups was analyzed using *t* tests comparing mean scores. The second hypothesis comparing the relationship between the testing accommodation extended time and self-efficacy was analyzed using a Pearson correlation, and the third hypothesis addressing the relationship between testing accommodation extended time and self-efficacy and motivation was analyzed using multiple regression.

Summary

Chapter 3 focused on the research design, research questions, methodology, and the instruments used for the study. Additionally, the chapter addressed the reliability and validity of the scales. Confidentiality and treatment of data were also explained.

Chapter 4: Results

The purpose of this study was to examine whether there was an influence on the academic performance, self-efficacy, and motivation of postsecondary students registered with the DRC diagnosed with LD approved to use the testing accommodation extended time. It was my intent to increase awareness of students diagnosed with LD and the emphasize the importance of using the testing accommodation extended time for students with LD to maintain their motivation for school and their sense of self-efficacy while pursing higher education.

This study was conducted using a quantitative approach. Two Likert-scale survey instruments were used for collection of data: the AMS-C for motivation, and the GSE for self-efficacy. Academic performance was operationalized as the final percentage score at the end of the MAT1033 math class. Based on the data analysis the research questions were answered as associated hypotheses were confirmed or disconfirmed.

Chapter 4 includes an overview of the analysis of the quantitative data collected from two groups of students. Group 1 represented students who chose not to use their accommodation extended time, and Group 2 represented students who used their accommodation extended time. A total of 53 students attending a local state college participated in this study. The overview of the analysis includes the procedures used in the analysis.

Research Questions and Hypothesis

The main questions guiding this study addressed the motivation and self-efficacy of students diagnosed with LD using the testing accommodation extended time and the

influence on academic performance. There were minor changes to the research questions and hypotheses after data collection to ensure that the data were analyzed in the most methodologically sound manner.

Research Question 1: Is academic performance affected by using the accommodation extended time for postsecondary students diagnosed with LD?

$H_0$1: Academic performance as measured by the final class percentage score is not affected by using the accommodation extended time for postsecondary students diagnosed with LD.

H1: Academic performance as measured by the final class percentage score is affected by using the extended time accommodation for postsecondary students diagnosed with LD.

Research Question 2: Is self-efficacy as measured by the Generalized Self-Efficacy Scale (GSE) affected by using the accommodation extended time for postsecondary students diagnosed with LD?

$H_0$2: Self-efficacy as measured by the Generalized Self-Efficacy Scale (GSE) will not be affected by using the testing accommodation extended time for postsecondary students diagnosed with LD.

H2: Self-efficacy as measured by Generalized Self-Efficacy Scale (GSE) will be affected by the testing accommodation extended time for postsecondary students diagnosed with LD.

Research Question 3: Is motivation as measured by Academic Motivation Scale (AMS-C) affected by using the accommodation extended time for postsecondary students diagnosed with LD?

$H_0$3: Motivation as measured by the Academic Motivation Scale (AMS-C) will not be affected by using the testing accommodation extended time for postsecondary students diagnosed with LD.

H3: Motivation as measured by the Academic Motivation Scale (AMS-C) will be affected by using the testing accommodation extended time for postsecondary students with LD.

Research Question 4: To what extent does self-efficacy as measured by Generalized Self-Efficacy Scale (GSE) and motivation as measured by Academic Motivation Scale (AMS-C) predict academic performance as measured by final class percentage score for postsecondary students diagnosed with LD that use the testing accommodation extended time?

$H_0$4: Self-efficacy as measured by Generalized Self-Efficacy Scale (GSE) and motivation as measured by Academic Motivation Scale (AMS-C) is not predictive of academic performance as measured by final percentage for postsecondary students diagnosed with LD who use the testing accommodation extended time.

H4: Self-efficacy as measured by Generalized Self-Efficacy Scale (GSE) and motivation as measured by Academic Motivation Scale (AMS-C) is predictive of academic performance as measured by final percentage for postsecondary students diagnosed with LD who use the testing accommodation extended time.

Data Collection

During the Summer 2015 semester, flyers were posted in the Disabilities Resource Center (DRC) and math labs for recruitment of students for volunteer participation of this study. Study participants were recruited from MAT1033 (Intermediate Algebra) classes offered in the local college. The survey method was used for data collection. Survey packets included a prescreener, demographic sheet, informed consent, AMS-C scale, and the GSE scale. Participants were given instructions during their lab time of the class, and surveys were available for pick up at the front of the class. All participants who met eligibility based on the pre-screener moved forward with the study and completed the entire packet. After completion of the packet, students were able to complete their normal classroom assignment and returned the packets at the end of class, thereby limiting classroom interruptions and acknowledgements of those who were completing the packet during lab time. There were no discrepancies in data collection from the plan presented in Chapter 3. Information gathered was transferred to Microsoft Excel and later exported to SPSS.

Descriptive Statistics

The study sample was representative of college students diagnosed with a learning disability in math. The sample consisted of college students enrolled in MAT1033 math classes (n = 53) who were placed in two groups; Group 1 chose not to use the accommodation extended time (n = 30), and Group 2 chose to use the accommodation extended time (n = 23). The participant sample was somewhat diverse with a slightly larger number of females (n = 30, 55.67%) compared to males (n = 23,

42.6%). With respect to ethnicity, the participant sample consisted of Whites (*n* = 36, 66.7%), Blacks (*n* = 10, 18.5%), Asians (*n* = 1, 1.9%), Hispanics (*n* = 4, 7.4%), and others (*n* = 2, 3.7%). Participants ranged in age from 17 to 58 years, with a mean age of 24. Demographics are presented in Table 1.

Table 1

Demographics

Variable	Percentage	*N*
Gender		
Male	44.4	24
Female	53.7	29
Race/Ethnicity		
Asian	1.9	1
Black	18.5	10
White/Caucasian	66.7	36
Hispanic/Latino	7.4	4
Other	3.7	2
Age	23.72 (Mean)	8.153 (SD)

Preliminary Analysis

I used independent samples *t* tests and linear regression to analyze data. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity, and homoscedasticity. Correlations between independent variables were less than .9; therefore, the assumption of multicollinearity was not violated. Inspection of the normal probability plot of the regression standardized residual and the scatterplot showed no major deviations from normality and rectangularly distributed residuals. Therefore, the assumptions of normality, linearity, and homoscedasticity were not violated.

Data were analyzed for outliers that were removed (Pallant, 2013). Based on the values from Group 2, the skewness (-1.428) and the kurtosis (2.909) distribution was somewhat negatively skewed and peaked. Once the outlier was identified, it was removed from the sample and the distribution for academic performance was examined again. The subsequent distribution appeared to be approximately normal, which was supported by low skewness and kurtosis standardized values, as shown in Table 2.

Table 2

Demographics Mean and Standard Deviation Based on Groups

Variable	Groups	*N*	Mean	*SD*
Motivation				
Amotivation	1	30	6.47	4.918
	2	23	6.09	3.356
Intrinsic	1	30	60.97	9.725
	2	23	57.00	11.662
Extrinsic	1	30	71.33	9.400
	2	23	64.09	13.215
Self-efficacy	1	30	33.60	4.399
	2	23	30.74	4.223
Academic Performance	1	30	80.52	13.02
	2	23	71.13	22.21

Note. Group 1 represents students who chose not to use approved accommodation extended time. Group 2 represents students who chose to use the approve accommodation extended time.

Main Analysis

Data retrieved from each group were obtained from three sources. The AMS-C scale, GSE scale, and final percentages were obtained from instructors. An independent sample *t* test and regression analysis were conducted to answer the research questions. Four variables were included in the analysis: motivation scale, self-efficacy scale, final class percentage score from the end of the year, and scores from Group 1 and Group 2.

Hypothesis 1

H_0: Academic performance is not affected by using the extended time accommodation.

H1: Academic performance is affected by using the extended time accommodation.

To assess whether there was an effect on students' academic performance, final percentage scores were obtained from instructors and were used as the measure of academic performance. An independent samples *t* test was conducted comparing postsecondary students using the testing accommodation extended time to those who did not use the accommodation. There was no significant difference in the scores for academic performance for students not using accommodations ($M = 80.52$, $SD = 13.020$) and those using accommodations ($M = 74.36$, $SD = 16.27$), conditions, $t(50) = 1.51$, $p = .136$. These results indicate that academic performance was not affected by use of the testing accommodation extended time. Therefore, the null hypothesis was accepted. Results are shown in Table 3.

Table 3

Students and the Use of Accommodations

Accommodations	*N*	Mean	*SD*
Chose not to use accommodations	30	80.52	13.02
Used accommodations	22	74.36	16.27

Note. Group 1 represents students who chose not to use approved accommodation extended time. Group 2 represents students who chose to use the approve accommodation extended time.

Hypothesis 2

> $H_0$2: Students using the testing accommodation extended time, self-efficacy will not be affected as measured by the Generalized Self-Efficacy Scale (GSE) for postsecondary students diagnosed with LD.
>
> H2: Students using the testing accommodation extended time, self-efficacy will be affected as measured by Generalized Self-Efficacy Scale (GSE) for postsecondary students diagnosed with LD.

To assess whether there was an effect on self-efficacy, which was measured by the GSE scale for students using the testing accommodation, I conducted an independent samples *t* test comparing postsecondary students who chose to use the testing accommodation to those who chose not to use the testing accommodation extended time. The results indicated that there was an effect on self-efficacy for students who chose not to use the testing accommodation ($M = 33.60$, $SD = 4.39$) and those who used the testing accommodation ($M = 30.91$, $SD = 4.24$), conditions; $t\ (50) = 2.21$, $p = .032$. Therefore, the null hypothesis was rejected.

Hypothesis 3

> $H_0$3: Motivation as measured by the Academic Motivation Scale (AMS-C) will not be affected by using the testing accommodation extended time for postsecondary students diagnosed with LD.

H3: Motivation as measured by the Academic Motivation Scale (AMS-C) will be affected by using the testing accommodation extended time for postsecondary students with LD.

To assess whether motivation (intrinsic, extrinsic, and amotivation) was affected by students using the testing accommodation extended time, I conducted an independent samples *t* test. For intrinsic motivation, there was no significant difference between those who chose not to use the testing accommodation extended ($M = 60.9$, $SD = 9.72$) and those who used the accommodation ($M = 57.36$, $SD = 11.8$), condition $t(50) = .70$, $p = .234$. For extrinsic motivation, there was no significant difference between those who chose not to use the testing accommodation ($M = 71.33$, $SD = 9.4$) and those who used the accommodation ($M = 63.5$, $SD = 13.2$), conditions $t(50) = .10$, $p = .0$. For amotivation, there was no significant difference for those who chose to use the testing accommodation ($M = 6.09$, $SD = 3.42$) and those who did not use the accommodation ($M = 6.47$, $SD = 4.91$) $t(50) = .219$, $p = .788$. Therefore, the null hypothesis was accepted.

Hypothesis 4

$H_0$4 Self-efficacy as measured by Generalized Self-Efficacy Scale (GSE) and motivation as measured by Academic Motivation Scale (AMS-C) is not predictive of academic performance as measured by final percentage for postsecondary students diagnosed with LD who use the testing accommodation extended time.

H4: Self-efficacy as measured by Generalized Self-Efficacy Scale (GSE) and motivation as measured by Academic Motivation Scale (AMS-C) is predictive of

academic performance as measured by final percentage for postsecondary students diagnosed with LD who use the testing accommodation extended time. To access if academic performance is related to self-efficacy and motivation a linear regression was completed for each group (group 1 chose not to use the accommodation and group 2 chose to use the accommodation). Two different regression analyses were conducted separating group 1 and group 2. For group 1 (students that did not use accommodations) using the enter method it was found that there was no significant prediction of academic performance between the motivation levels (intrinsic, extrinsic, and amotivation) and self-efficacy. ($F(4, 25) = .446$, $p>.05$, $R^2 = .016$, $R^2_{Adjusted} = .083$. The model explained less than 8% of the variance. For group 2 (students that did use accommodations) it was found that there is no significant prediction of academic performance between the motivation levels (intrinsic, extrinsic, and amotivation) and self-efficacy. ($F(4, 17) = 1.33$, $p<.05$, $R^2 = .239$, $R^2_{Adjusted} = .060$. The model explained less than 6% of the variance. The null hypothesis was accepted.

Summary

The purpose of this study was to examine the potential impact of the extended time testing accommodations on academic performance, motivation and self-efficacy. Two different statistical analyses were used to answer the research questions; independent samples t-test and regression. The study consisted of 53 participants placed in two groups; Group 1 was defined as students that chose not to use the approved testing accommodation extended time ($n = 30$) and Group 2 was defined as students that chose to use the accommodation extended time ($n = 22$).

Research question 1 focused on whether using the accommodation extended time had an affect on the academic performance. Results of the independent samples t-test revealed that using extended time did not affect the academic performance for either group, therefore the null hypothesis was accepted.

Research question 2 focused on whether self-efficacy was affected by students using the accommodation extended time. Results of the independent samples t-test revealed there is an affect on self-efficacy for students that use the accommodation extended time, therefore the null hypothesis was rejected.

Research question 3 focused on whether motivation was affected by students using the accommodation extended time. Results from the independent samples t-test revealed that there was no significant effect of any of the three aspects of motivation (intrinsic, extrinsic, or amotivation) on the accommodation extended time. The null hypothesis was accepted.

Finally, the 4th research question focused on whether academic performance was predicted by self-efficacy and motivation. Results of the multiple regression analyses found no significant predications of self-efficacy and motivation on academic performance. The null hypothesis was accepted.

The last chapter, Chapter 5, will examine the findings in the context of the literature of students with LD and the testing accommodation extended time. Included is a discussion of study limitations, recommendations for further research and practice, and implications for social change.

Chapter 5: Discussion, Conclusions, and Recommendations

This purpose of this quantitative study was to provide a better understanding of the influence of the testing accommodation extended time on the academic performance, self-efficacy, and motivation of students diagnosed with LD. Research shows that there has been an increase of students with disabilities transitioning to colleges and universities (Madaus, Banerjee, & Merchant, 2011) with the largest group being students with learning disabilities (Trainin & Swanson, 2005). With an increase of students with LD transitioning to postsecondary education, this study was needed to explain how the testing accommodation extended time influences academic performance, self-efficacy, and motivation of students diagnosed with LD. Participants included 53 students placed in groups. Group 1 included those who chose not to use the testing accommodation extended time, and Group 2 included those who used the testing accommodation extended time). In this chapter I discuss the findings that were presented in Chapter 4. I also review the purpose of the study, interpret the findings, discuss the limitations, make recommendations for further research, and offer implications for social change.

Overview of the Study

In reviewing the literature there is an increase of students with LD transitioning to higher education (Olney et al., 2004). The population has tripled and by some estimates quadrupled over the past 25 years (Olney et al., 2004; Palombi, 2000) despite being historically underrepresented (Beilke & Yssel, 1999; Shevlin, Kenny, & McNeela (2004). In this review, I examined the laws that impact students with disabilities in postsecondary education by focusing on research that has been conducted on students with disabilities

and accommodations for students transitioning to higher education (Americans with Disabilities Act [ADA], 1990; Section 504 of the Rehabilitation Act of 1973). I attempted to provide a better understanding of the laws that protect students with disabilities, including the most used accommodation and its influence on academic performance. Finally, I attempted to provide a connection between self-efficacy, motivation, and academic performance for students with learning disabilities.

Interpretation of the Findings

The first hypothesis addressed whether the testing accommodation extended time influenced academic performance of students with learning disabilities. I hypothesized that there would be no effect on the academic performance of students using the testing accommodation extended time. Findings indicated that academic performance was not affected by the decision to use or not use the extended time accommodation. This suggests that students who chose not to use accommodations believed they did not need the extra time to improve their academic performance. There have been several studies that do not align with these findings (Katz, 2005; Stretch & Osborne, 2005) and others that support these findings (Alster, 1997). Gavilan College (2002) showed that students with learning disabilities do as well or better than students without disabilities. It is unclear whether accommodations improved the students' performance. Other studies indicated that students with disabilities do less well (Horn & Berktold, 1999). Alster (1997) researched students with and without LD completing algebra tests under timed conditions, and found that the scores of students with learning disabilities did not differ significantly under timed or extended time conditions.

Findings related to the second hypothesis indicated there was an effect on self-efficacy using the accommodation extended time. It is possible that students who used extended time felt a sense of comfort or felt more confident that using the extended time would lead to better results. This may have impacted their decision to use accommodations. There are studies that support the findings, such as Chemers et al. (2001) who found that individuals reporting higher levels of self-efficacy were more likely to interpret stressful situations as challenges rather than threats, and therefore were more motivated to achieve despite the perception of challenges or barriers.

The third hypothesis addressed whether there was a significant difference in motivation for students who chose to use the testing accommodation extended time compared to those who did not use the accommodation extended time. There are earlier studies inconsistent with the findings. For example, Hartman-Hall and Haaga (2002) reported that motivation influences students' coping behaviors when faced with difficulties and may impact their decision to seek assistance. Additionally, extrinsic motivation has been associated with poorer coping and a decreased likelihood of asking for assistance when faced with a challenge, especially if public criticism for mistakes appears likely (Hartman-Hall & Haaga, 2002). Motivation has consistently been shown as a primary determinant of learning for students with disabilities based on review of other studies (Ley & Young, 1998). Additional research needs to address how receiving a diagnosis of LD in college affects students' subsequent motivation to make changes in study habits, seek additional help, and follow other types of recommendations (Canto, Proctor, & Prevatt, 2005).

The fourth hypothesis addressed whether there was a significant predictive relationship between self-efficacy and motivation for students with LD and their academic performance. According to previous studies this finding is inconsistent. For example, according to Lackaye and Margalit (2006) students with LD had lower grades in all the reported subjects, invested less effort in their studies, and conveyed decreased self-efficacy (cited Bergen, 2013). Activities that improve success within a specific content area have the ability to improve a student's overall self-efficacy and motivation (Friedland & Truesdell, 2006), consequently improving academic performance. Predictability was not found in this study perhaps due to students feeling more confident in their academic area and students feeling more comfortable reaching out to their instructors if they needed assistance.

Limitations of the Study

There were several limitations in this study. First, participants were from one college in the Southeastern United States. For replication of study results, students from other colleges may be included. Another limitation was that participants with disabilities could have been compared to students without disabilities when examining scores on the self-efficacy and motivation scales. The smaller sample size may also have been a limitation. A larger sample size would have possibly provided a more diverse population of students in age and ethnicity.

This study may be replicated in other postsecondary contexts; however, factors that influence an individual's need for extra time should be clarified as well as the

amount of extended time that will be allotted. Despite the limitations, the central findings in the study indicate a significant relationship between extended time and self-efficacy for students with learning disabilities. This suggests that students with high self-efficacy are more likely to use the accommodation and feel a sense of comfort (less stress).

Implications for Social Change

The implications of the relationship between extended time and self-efficacy could influence how students with LD are educated about the benefits of accommodations during college orientation. Greater awareness of programs and services for students with disabilities should be discussed as students' transition to postsecondary education to provide them the opportunity to make better decisions regarding services. The number of students with disabilities enrolling in colleges and universities is increasing (Madaus et al., 2011), with the largest group students being those with learning disabilities (Trainin & Swanson, 2005). With the most requested and honored testing accommodation being extended time, I focused on the needs of students and their academic performance as it related to this accommodation.

The most interesting finding was the lack of relationship between the accommodation extended time and academic performance. Accommodations are seen as the best method for assisting students with LD to achieve success in school. Therefore, it is curious that using accommodations did not relate to higher academic performance for these participants. If confirmed in other studies, this finding may have implications for the practice of offering accommodations to students with LD. Perhaps there is an

overreliance on the accommodation extended time or the expectations that this accommodation improves performance.

Recommendations for Future Research

The literature review for this study indicated that there is a need for students in higher education to continue to seek services from the Disabilities Resource Center and faculty members to remain open to testing accommodations provided to students with learning disabilities. Additionally, it is important for colleges to fully understand the needs of students with learning disabilities. Based on the findings from the current study, several suggestions can be made to assist the students, faculty members, and college.

The findings suggest a significant relationship between extended time and self-efficacy, which supports the need for students with learning disabilities to seek assistance from the Disabilities Resource Center to continue to build their self-efficacy.

There were no other significant findings in the present study; therefore, I recommend that future researchers explore why students with disabilities are reluctant to use services and accommodations. Marshak, Van Wieren, Ferrell, Swiss, and Dugan (2010) suggested that students with disabilities are often reluctant to use services and accommodations available to them because they conflict with their desire to be independent or because of a lack of knowledge. Future research should address extended time using a different approach than what was used for the current study, including random samples of students to measure the academic performance of each student. In regards to self-efficacy and motivation, a pre- and posttest could be conducted for each

student. A pretest would allow the researcher to determine whether there are any changes between self-efficacy and motivation.

Conclusion

The purpose of this study was to determine whether there was an impact on the academic performance of students with disabilities approved to use the testing accommodation extended time. Although findings did not indicate an influence on academic performance with or without the approved the accommodation, it was important to examine the predictive relationship between the variables academic performance and motivation. Finally, it was important to learn the influence self-efficacy had on students with disabilities in regards to their academic performance.

Further research may focus on self-efficacy and motivation are some of the key factors. Additionally, it would be important to focus on the policies that would most likely benefit students with disabilities as they transition to postsecondary institutions.

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Appendix A: Information Sheet/Demographic Sheet

What is your age?

What is your gender?

Female

Male

How would you classify your race/ethnicity?

Arab

Asian/Pacific Islander

Black/African American

Caucasian/White

Hispanic

Indigenous or Aboriginal

Latino/a

Multiracial

Would rather not say

What is your current marital status?

Divorced

Living with another

Married

Separated

Single

Widowed

Would rather not say

Which of the following best describes the area you live in?

Urban

Suburban

Rural

Do you have a documented learning disability

Yes

No

Did you receive services for the learning disability when you were in high school?

Yes

No

Are you currently registered with the Disabilities Resource Center?

Yes

No

How often do you use accommodations during the semester?

1-3 times

4-6 times

All semester

Appendix B: Informed Consent Form

Informed Consent Form

Please complete this form after you have read the Information Sheet and/or listened to an explanation about the research.

Project Title: The effectiveness of testing accommodations for postsecondary students diagnosed with Learning Disabilities (LD)

Researcher: Dana J. Lindsey

Thank you for your interest in taking part in this research. Before you agree to take part, the person conducting the research will explain the project.

If you have any questions arising from the Information Sheet or explanation already given to you, please ask the researcher before you to decide whether to participate. You will be given a copy of this Consent Form to keep and refer to at any time.

Participant (Are there any questions?)

I agree that:

- I have read the notes written above and the Information Sheet, and understand what the study involves.
- I understand that if I decide at any time that I no longer wish to take part in this project, I can notify the researcher involved and withdraw immediately.
- I consent to the processing of my personal information for the purposes of this research study.
- I understand that the information I have submitted will be published as a report. Confidentiality and anonymity will be maintained and it will not be possible to identify me from any publications.
- I understand that such information will be treated as strictly confidential
- I agree that my non-personal research data may be used by others for future research. I am assured that the confidentiality of my personal data will be upheld through the removal of identifiers.
- I agree that the research project named above has been explained to me to my satisfaction and I agree to take part in this study.

Signature: Date: