

AN EXAMINATION OF THE RELATIONSHIP AMONG LEARNING DISABILITY,
ATTENTION DEFICIT HYPERACTIVITY DISORDER, ACADEMIC SELF-
EFFICACY, EFFORT, SELF-AWARENESS AND ACADEMIC ACHIEVEMENT IN
POSTSECONDARY STUDENTS

BY

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Dedication

In memory of my father...I think you would have been proud Pops!

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This has been quite the adventure. In the midst of finally completing this task, there have been so many life changes. I wish that my aunt, my grandmother, and my father were here to witness my accomplishment. I do think they would be proud! Through this entire race, I have been blessed with many supporters who have provided with me much encouragement, which has helped me to finally reach this finish line.

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Abstract

The purpose of this study was to explore the relationship between academic self-efficacy, effort, self-awareness, and achievement in college aged students with LD and/or ADHD. Participants included thirty, fourteen were male and seventeen were female, undergraduate students that have been diagnosed with a LD and/or ADHD. The students were selected from small private and large public liberal arts colleges located in Western New York and one University in New Jersey. Participants were provided with a packet asking questions regarding demographics. In addition, participants completed the Effort Questionnaire, Motivated Strategies for Learning Questionnaire, and the Self-Advocacy Survey. A simultaneous multiple regression analysis was conducted to gain a better understanding of the relationships that may exist between the variables. Academic achievement (GPA) was simultaneously regressed on measures of academic self-efficacy, self-awareness, and effort. The overall multiple regression was not found to be significant ($R^2 = .088$, $F\{3, 27\} = .873$, $p = .467$). In examining the β , the effect sizes could indicate a possible power problem that could be the result of the small sample size (N) that made up the population of this study. The variable of perceived impact was added to the original model and the overall multiple regression was significant.

Chapter 1

Introduction

An Examination of the Relationship Among Learning Disability, Attention Deficit Hyperactivity Disorder, Academic Self-Efficacy, Effort, Self-Awareness and Academic Achievement in Postsecondary Students

Much research has been dedicated to the area of Learning Disabilities (LD) and Attention Deficit Hyperactivity Disorder (ADHD). The definition for LD that is outlined by the Individuals with Disability Education Act (IDEA) tends to be the one most utilized, especially in the field of education is: “a disorder in one or more of the basic psychological processes involved in the understanding of or using language, spoken or written, which the disorder may manifest itself in imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations” (Latham, 2000). According to the National Institutes of Health, approximately 15% of the U.S. population has some form of a learning disability.

Attention Deficit Hyperactivity Disorder (ADHD) is typically defined as “a pattern of behaviors appearing in childhood that is manifested by developmentally inappropriate levels of inattention, impulsivity, or hyperactivity” (Heiligenstein, Guenther, Levy, Savino, & Fulwiler, 1999). In 2003, the Center for Disease Control and Prevention analyzed data from a National Survey of Children’s Health (NSCH). The data indicated that approximately 4.4 million children aged 4-17 years of age reported having a history of ADHD diagnosis, which translates to a prevalence rate of 3%-5% as reported by The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).

Past research has indicated a high rate of comorbidity between LD and ADHD. Research has suggested that 19% to 26% of children diagnosed with ADHD are likely to also have a diagnosis of LD (Barkley, 2003). The percentages differ in the research depending on how the researchers define LD and ADHD as well as how both the LD and ADHD were assessed. Researchers have often thought of LD and ADHD as “overlapping spectrum disorders (Mayes, Calhoun, & Crowell, 2000) due to the high comorbidity rates. Both diagnoses, whether experienced separately or together, tend to have a negative effect on academic achievement (Barkley, 2003; Mayes, D. S., Calhoun, L. S., & Crowell, W. E., 2000; Maynard, Tyler, & Arnold, 1999).

The passage of legislation such as the 504 Section of the Rehabilitation Act of 1973 along with of Americans with Disabilities Act (ADA) of 1990 has resulted in increased opportunities for individuals with disabilities in many aspects. More specifically, legislation has enhanced the opportunities for students with disabilities at the postsecondary level of education. Consequently, there has been an increase in the number of students with learning disabilities attending postsecondary education. In 1978 2.6% of all freshman enrolled in postsecondary education reported having a disability as compared to 9% in 1996 (HEATH Resource Center, 1995, 1998). In addition, in 1988 16% of freshman enrolled in a four-year postsecondary education institution reported having a learning disability compared to 40% in 2000 (Henderson, 2001). As the opportunities for students with disabilities to attend college increased, planning for transition from secondary to postsecondary settings became more important.

In 1990, the Individuals with Disabilities Act (IDEA) began to require school districts to provide transition planning for students with disabilities. The goal of such

planning was to better assist students with the transition to life beyond high school. In 1997, IDEA began to require the transition planning process to begin at age 14 and continue until graduation (Witte, 2002). For many students, both with and without disabilities, completing postsecondary education successfully increases their chances of obtaining employment (Fairweather & Shaver, 1990). As a result, many schools encourage students to transition to some type of postsecondary education with the goal of bettering their long-term outcomes.

As a result of the increase in the number of students with disabilities attending postsecondary education, there has been an increase in research aimed at exploring participation in postsecondary education for students with disabilities as compared to their non-disabled peers. Research has indicated that compared to non-disabled peers, students with learning disabilities have lower rates of employment, lower earnings, lower rates of postsecondary school attendance, and lower rates of independence (as cited in Murray, Goldstein, Nourse, & Edgar, 2000). Fairweather and Shaver (1990) found that 37% of men and 26% of women with LD were attending postsecondary education as compared to 79% of men and 71% of women without LD. Blackorby and Wagner (1996) reported that, for students who had been out of high school for two years, 14% of those with LD reported attending some type of postsecondary education as compared to 53% of non-disabled peers. Additional research conducted by Murray, Goldstein, Nourse, and Edgar (2000) provided a long-term picture of the postsecondary school attendance and graduation rates of LD and NLD students. Results indicated that students with LD were significantly less likely to attend and graduate from postsecondary institutions than their NLD peers.

Limited research exists that explores the relationship between ADHD and academic performance at the postsecondary level. Heiligenstein et al. (1999) conducted a study that illustrated that college students with ADHD had lower grade point averages (GPA) and were more likely to be on academic probation than students without ADHD.

The long-term outlook tends to appear bleak for students with LD and ADHD when compared to their peers without LD or ADHD. However, there are students with LD and/or ADHD that are successful and researchers have begun to explore what factors impact that long-term successfulness and/or unsuccessfulness. By interviewing students, Spekman, Goldberg, and Herman (1992) explored both the qualitative and quantitative factors that impact long-term outcomes. It was found that on measures of IQ, the successful individuals had significantly higher Verbal IQs than unsuccessful individuals. The two groups did not differ significantly on measures such as race, socioeconomic status (SES), gender, diagnosis, services received, or reading and math achievement scores. The factors found to be most important to the long-term success were self-awareness, proactiveness, perseverance, emotional stability, appropriate goal setting, and the presence and use of effective support systems. In a 20-year follow-up study, the same six attributes were again found to be strong predictors of success (Raskind, Goldberg, Higgins, & Herman, 1999).

Specific research has been completed to better understand what variables contribute to the success of students with learning disabilities at the postsecondary level (Vogel, A. S., & Adelman, B. P., 1992; Vogel, A. S., Hruby, J. P., & Adelman, B. P., 1993; & Murray 2003). Research has identified variables that impact student achievement over which the student may not have control such as socioeconomic status,

gender, age, cognitive functioning, and diagnosis. Research has also been conducted to better understand which additional variables impact student success. Vogel and Adelman (1992) found that high school preparation (defined as the number of regular core curriculum courses the students completed with a C or better) and overall high school grade point average (GPA) were two of the best predictors for success in postsecondary education for students with LD. In a follow up study, Vogel, Hruby, and Adleman (1993) found that successful college students were significantly older and had taken a greater number of regular English courses in high school than the unsuccessful students. Study habits and attitudes have also been found to impact success at the postsecondary level (Murray, 2003).

The Role of Self-Efficacy

Self-efficacy can be defined as a measure of one's belief about his/her ability to successfully perform specific tasks in specific situations (Bandura, 1986). Academic self-efficacy could then be defined as a person's belief in his/her ability to perform on academic related tasks. Much of the research that exists on self-efficacy tends to include research on self-esteem, self-concept, and self-worth, these terms are often being used interchangeably. When comparing students with LD to NLD students on a measure of self-efficacy, discrepancies exist in the research. Some studies have suggested that students with LD have lower self-concepts while others do not indicate any differences (Chapman, 1988; Bear, Minke, & Manning, 2002). However, when self-efficacy is specified as academic self-efficacy and/or academic self-concept, research indicates that students with LD have lower academic self-efficacy than their NLD peers (Clever, Bear, & Juvonen, 1992; Nunez, Gonzalez-Pienda, Gonzalez-Pumariega, Roces, Alvarez,

Gonzalez, Cabbach, Valle, & Rodriguez, 2005; Lackaye & Margalit, 2006). Almost all past research has focused on students in elementary, middle, and high school and, therefore, lack of research exists that explores college students' perceived self-efficacy and/or self-concept.

Perceived self-efficacy has been hypothesized to influence an individual's choice of activity, level of effort he/she puts forth, and persistence in the face of obstacles (Bandura, 1986). Therefore, students who possess a high level of perceived academic self-efficacy have been shown to be more willing to exert added effort on academic tasks than those with lower perceived academic self-efficacy. Meltzer, Katzier-Cohen, Miller, and Roditi (2001) found that students with LD were more likely to put forth more effort and utilize more strategies if they experienced success as a result of their efforts. Meltzer, Reddy, Pollica, Roditi, Sayer, and Theokas (2004) found that students with LD who had positive academic self-perceptions were more likely to work hard and implement strategies. Lackeye and Margalit (2006) found that academic achievement, academic self-efficacy, and negative mood significantly contributed to the prediction of effort. To date, there are no studies that explore the relationship of effort and academic self-efficacy in college students with LD.

Bandura (1997) stated, "Accurate appraisal of one's own capabilities is highly advantageous and often essential for effective functioning." Thus far, there appears to be little understanding of how well students with disabilities understand their particular disability. Furthermore, there has not yet been research that explores the relationship of understanding or awareness of a disability and students' self-efficacy, effort, and achievement. Heyman (1990) was one of the first to study self-perceptions of LD and its

relationship to academic self-concept and self-esteem. The researcher built upon previously conducted research that explored how individuals with physical disabilities accept their disability. In the study, self-perception was defined as “how the children view their learning problem, with particular emphasis on whether they understand it as delimited rather than global, modifiable rather than permanently limiting, and not stigmatizing” (Heyman, 1990, p. 473). Heyman (1990) developed the Self-Perception of Learning Disability (SPLD) scale, which measured the extent to which students perceived their disability. Presently, this is the only measure that explores individual’s self-perceptions of learning disability. Further research that has utilized the SPLD has found that self-perceptions of learning disabilities are significantly related to academic self-concept and academic achievement. Of the research conducted which utilized the SPLD, only one included college students as the target population in the study. Overall, the result of the research indicated that students who viewed their learning disability as circumscribed, changeable, and nonstigmatizing were more willing to seek help and possessed greater self-esteem (Hartman-Hall & Haaga, 2002).

Research on College Students with Learning Disabilities

Statistics assert that the number of students attending postsecondary institutions with disabilities is on the rise (HEATH Resource Center, 1995, 1998; Henderson, 2000; Henderson, 2001). There are two factors that may explain the increase. One is recent federal legislation and the other, recent changes made to incorporate transition planning for students who are enrolled in high school. Despite the increase in those attending college, the outlook for students completing and obtaining a degree fails to be encouraging (Blackorby & Wagner, 1996; Fairweather & Shaver, 1990; Murray, et al.,

2000; Sitlington & Frank, 1990; Wagner, Newman, Cameto, Levine, Garza & Gonzalez, 2006). The available research that includes college-aged students explores factors that contribute to the long-term success of students with learning disabilities after high school. Research indicates that factors, such as self-awareness, play a role in success (Spekman et al., 1992; Raskind et al., 1999). For students who continue on to a postsecondary institution, factors such as previous high school achievement, high school courses, age, and study habits also contribute to success at that level.

There appears to be a lack of research that explores the relationship between self-awareness, academic self-efficacy, and effort at the postsecondary level. With increased pressure being placed on students to continue to some type of post high school education, there continues to be a need to explore what factors help students with LD and/or ADHD to be successful. In addition, there is a need for professionals working with students at the high school level to better understand how they can help prepare a student to achieve, once the student leaves their classroom.

As students transition from high school to postsecondary education, responsibility shifts from the *institution* ensuring that a student receive the services they need, to the *student* becoming responsible for ensuring he/she receives services. In order to successfully accomplish such a task, students must have an understanding of their own specific learning needs. Therefore, it could be hypothesized that in order to have an understanding of their learning needs, disabled students need to have a clear understanding of their disability, how it impacts their life, and what they need to help them cope and achieve.

The purpose of this study is to explore the relationship between academic self-efficacy, effort, and self-awareness in college aged students with LD and/or ADHD. Research has already been conducted in the area of self-efficacy as well as effort, although the population sample typically did not include college students. Limited research has taken place in the area of self-awareness. The goal of such research would be to better understand how such factors impact students' success at the postsecondary level. In understanding such factors, professionals working with students with LD and/or ADHD should be better informed on how to better prepare students at the high school level to achieve at the postsecondary level.

Chapter 2

Review of Relevant Literature

While presenting at a conference in 1963, Samuel Kirk became the first educational leader to formally use the term “learning disability.” Since that time, the definition of learning disability has continued to evolve and change as psychologists and educators work to gain a better understanding of what the term means and its impact on those identified as such (Lyon, Fletcher, & Barnes, 2003). The term “learning disabilities” was first federally labeled as a “handicapping” condition in 1969. In 1975, “learning disability” (LD) first appeared in the educational system with the passing of the Education for All Handicapped Children Act (P.L 94-142).

In 1902, English physician George Still was the first professional to speak about a disorder that is currently thought of as Attention Deficit Hyperactivity Disorder (ADHD). His lecture stimulated continued research regarding this disorder. It took a number of years before the term ADHD was used to describe individuals who experienced this disorder. In the Diagnostic and Statistical Manual of Mental Disorders (DSM II) published in 1968, it was termed “hyperkinetic reaction of childhood (as cited in Barkley, 2003). In 1980, research conducted by Douglas placed importance on the major symptoms that comprise ADHD, such as problems with sustained attention and impulse control. His research led to the eventual renaming of the disorder in 1980 to “Attention Deficit Disorder” (Barkley, 2003). In 1987, the disorder was changed to “Attention-Deficit Hyperactivity Disorder” to encompass the hyperactivity symptoms that had been previously absent from the disorder’s name. In the publishing of the DSM-IV, distinction was made between individuals displaying primarily inattentive symptoms and

hyperactivity-impulsivity symptoms as well as a subtype, which exhibited features of both (Barkley, 2003).

Definition of Learning Disability

There are a myriad of definitions for the term “learning disability.” The term can best be described as an “umbrella” term (Latham, 2005, p. 1). Learning disabilities, and the impact they have, tend to vary from person to person. Individuals can also be diagnosed with more than one LD. As a result of the complexity of learning disabilities, along with a variety of other factors that may affect an individual’s ability to learn, each person with a learning disability experiences his/her disability in different ways.

The definition of learning disability that tends to be used most often in educational settings appears in the Individuals with Disabilities Act (IDEA) and is the most widely accepted definition (Kaveale & Forness, 2000)). IDEA breaks down the definition into three parts: a general definition, disorders included in the definition, and disorders not included in the definition. The most general definition consists of “a disorder in one or more of the basic psychological processes involved in the understanding of or using language, spoken or written, which the disorder may manifest itself in imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations” (Latham, 2005). The definition includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia (loss of power to use or understand speech). Disorders not included as part of the definition are learning problems that are primarily the result of visual, hearing, or motor disabilities, mental retardation, emotional disturbance, or environmental, cultural, or economic disadvantage (Latham, 2005).

The National Joint Committee on Learning Disabilities (NJCLD) (1998) also developed a definition for LD that is often used as a reference. The NJCLD definition consists of five components. The first component indicates that learning disabilities are heterogeneous and individuals' own strengths and weaknesses should be taken into account. The second component of the NJCLD definition indicates that individuals with learning disabilities experience significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, and/or mathematical skills. NJCLD further emphasizes that the difficulties must have a significant impact on an individual's ability to succeed in school, work, and/or home. In addition to that, the individual must continue to have difficulties despite the amount of effort he/she puts forth. The difficulties they experience cannot be simply overcome by trying harder. When exploring the possibility of an LD diagnosis, experts must acknowledge and recognize the fact that all individuals learn at various rates and with varying effort levels. Therefore, not all children in a classroom will succeed or progress through a curriculum at the same rate. Simply stated, just because a child isn't keeping up with the curriculum, does not mean they have a learning disability.

The third piece of the NJCLD (1998) definition acknowledges that a learning disability is a lifelong diagnosis and is the result of central nervous system development. The degree to which the students may exhibit the disability may change over time and in different settings, but the actual disability does not go away. The fourth section of the NJCLD definition acknowledges that learning disabilities may exist in addition to other disabilities but that those disabilities, in themselves, do not represent a learning disability. For example, an individual with Attention Deficit/Hyperactivity Disorder (ADHD) may

also be an individual with a reading disorder, however the ADHD alone does not equal a learning disability.

The last section of the definition states that a learning disability cannot be the result of outside influences, such as insufficient instruction or lack of instruction. Typically insufficient instruction does result in learning difficulties although that does not constitute a learning disability. Even though those with a learning disability may have had insufficient instruction, it is the role of the evaluator to determine whether the individual has a learning disability or if they are simply not progressing as a result of insufficient instruction. If the difficulties they experience are the result of poor teaching, they cannot be diagnosed with a learning disability. An evaluator must also take into account cultural and language influences. If a child's primary language is one other than English, the evaluator must determine proper assessment procedures to take language and culture into account ("Operationalizing the NJCLD," 1998).

Definition of Attention Deficit Hyperactivity Disorder

The definition most utilized in defining Attention Deficit Hyperactivity Disorder (ADHD) comes from the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV-TR, 2000). The first part of the definition states that there must be the presence of a "persistent pattern of inattention and/or hyperactivity-impulsivity that is more frequently displayed and is more severe than is typically observed in individuals at comparable level of development." The second part of the definition states that "some hyperactive-impulsive or inattentive symptoms must have been present before seven years of age." The third component states that, "some impairment from the symptoms must be present in at least two settings." In other words, an individual cannot be

diagnosed with ADHD if the presence of the symptoms only occurs in one setting such as home. The fourth criteria is that, “there must be clear evidence of interference with developmentally appropriate social, academic or occupational functioning.” The symptoms must in some way significantly impact a person’s daily functioning. Finally, “the disturbance does not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorders and is not better accounted for by another mental disorder.” Before a professional can diagnose a person with ADHD, they must ensure that the symptoms are not related to some other mental health disorder (APA, 1994).

Within the definition of ADHD, there are three subtypes: ADHD Predominantly Inattentive Type, ADHD Predominantly Hyperactive-Impulsive Type, and ADHD Combined Type. ADHD, predominantly inattentive indicates that the person displays symptoms of inattention and no more than six symptoms of hyperactivity. Symptoms of inattention include: often fails to give close attention to details or makes careless mistakes in schoolwork, work or other activities, often has difficulty sustaining attention in tasks or play activity, often does not seem to listen when spoken to directly, often does not follow through on instructions and fails to finish schoolwork, chores or duties in the workplace (not due to oppositional behavior or failure to understand instructions), often has difficulty organizing tasks and activities, often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework), often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books or tools), is often easily distracted by extraneous stimuli, and is often forgetful in daily activities (APA, 1994) .

ADHD, predominantly hyperactive indicates that an individual has displayed six or more symptoms of hyperactivity-impulsivity and those symptoms have persisted for at least six months. Symptoms of *hyperactivity* include: often fidgets with hands or feet or squirms in seat, often leaves seat in classroom or in other situations in which remaining seated is expected, often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness), often has difficulty playing or engaging in leisure activities quietly, is often “on the go” or often acts as if “driven by a motor”, and often talks excessively. Symptoms of *impulsivity* include: often blurts out answers before questions have been completed, often has difficulty awaiting turn, and often interrupts or intrudes on others (e.g., butts into conversations or games). ADHD, combined type indicates that an individual displays six symptoms of inattention and six symptoms of hyperactivity-impulsivity and the symptoms have last for at least six months (APA, 1994).

Comorbidity of LD and ADHD

Researchers have found a high prevalence rate of children diagnosed with both ADHD and LD. Barkley (2003) reported anywhere between 19% to 26% of children with ADHD may also have a diagnosis of learning disabled. Mayes, Calhoun, and Crowell (2000) analyzed data on 119 children ages six to 16. The purpose of the analysis was to further explore the comorbidity of LD and ADHD. Each of the participants in the study underwent an evaluation by a psychologist and by a child psychiatrist or a developmental pediatrician. The Weschler Scale of Intelligence for Children, third edition (WISC III) was utilized in order to gain information regarding cognitive ability. The Weschler Individual Achievement Test (WIAT) was utilized to gain a standardized

measure of their academic achievement. The Gordon Diagnostic System (GDS) was utilized to gain a measure of attention. Within the sample of 119 participants, 86 had a diagnosis of ADHD. Of those 86 participants, 69% of them had an LD in one or more areas. There were 73 children diagnosed with an LD and of those 73 children, 82% of them were also diagnosed with ADHD (Mayes et al., 2000). Despite a small sample size, this research highlights the high rate of comorbidity that exists between LD and ADHD.

Overall, the percentages reported in the research on the co-occurrence of ADHD and LD differs depending on how the researchers define and assess ADHD and LD. Many researchers have thought of LD and ADHD as “overlapping spectrum disorders” (Mayes et al., 2000, p. 417). Despite much of the research exploring the co-occurrence, the relationship between ADHD and LD is not fully understood and the causality of co-occurrence is not agreed upon (Maynard, Tyler, & Arnold, 1999). What is understood is that both ADHD and LD, whether co-occurring or not, have a negative impact on academics (Barkely, 2003; Mayes et al., 2000; Maynard et al., 1999).

Legislation Impacting Classification and Services

Over the years, there has been much attention and assistance given to students with disabilities. In 1975 the Education of All Handicapped Children’s Act was passed, which guaranteed free and appropriate education for all students with disabilities ages five to 21. That act was then redefined as the Individuals with Disabilities Education Act (IDEA) in 1990. Legislation, such as IDEA, has made it possible for students with disabilities to receive the necessary services to help them achieve in elementary and secondary school. IDEA also governs how states and public agencies provide special education and related services.

Each student who receives special education services receives an Individualized Education Plan (IEP). The IEP outlines a student's specific learning strengths and weaknesses and the services that will be provided by the district to help that child achieve in spite of their learning disability. In addition, the IEP includes goals for the student to work towards to help them build compensatory strategies to help them with their specific areas of difficulty. IDEA also regulates the composition of IEP and the process for ensuring that schools are following the IEP and meeting students' needs.

Process For Classification

There are specific guidelines and processes that schools must follow in order to classify a student as a student with an LD and/or ADHD. Classification is necessary in order for students to have an IEP. IDEA provides specific criteria to which schools need to adhere when classifying a student learning disabled. States are also permitted to write specific guidelines, although they cannot be narrower or more exclusive than the federal guidelines (Smith & Strick, 1997). Typically, either a teacher and/or a parent refer a student to a multidisciplinary team at his/her school. That team has the responsibility to determine whether the child needs to be evaluated by the members of the team to determine the possibility of a learning disability. Teams usually include school psychologists, speech/language therapists, special educators, classroom teacher, and a chair of that committee. A variety of assessment methods are implemented in order to ensure that a comprehensive investigation of the child's difficulties takes place. The evaluation must incorporate all aspects of a child including their background (culture), strengths and weaknesses in regard to learning and also outside of the classroom, and their social/emotional health. The goal of the evaluation is to provide as complete a

picture of the child as possible and to explore all factors that may be impacting his/her learning. The results of the evaluations assist the educational team in making a decision on whether or not to classify a child with a disability. Once the student is classified, he/she then receives an Individualized Education Plan (IEP).

Professionals within schools do not typically diagnosis ADHD. Rather they make referrals to the individual's private physician or licensed professionals. In assessing an LD, there typically are various instruments that can be utilized to assist in the proper diagnosis of ADHD. If a student is diagnosed with ADHD, without LD, and the symptoms significantly impact the student's academic performance, the student is typically classified under the educational classification of Other Health Impairment (OHI). The student can then receive an IEP and accommodations to assist them with the symptoms that most negatively impact their academic performance.

Transition

As stated previously, IDEA guides and regulates what needs to be included when writing an IEP for a student. In 1990, IEDA added a transition section to IEPs. The transition section required that by age 16, all students were to have transition plans included on their IEPs. The purpose of the transition plan was to provide a way for schools to make a connection between high school and the adult world or life after high school. The purpose of the transition section was to allow schools to address the need for schools to begin providing students with the skills necessary to succeed in post-school employment and education. In 1997, further amendments were added to IDEA, which declared that students were to have statements of transition included on their IEPs at the age of 14. By age 16, the plan needed to include a statement of the necessary transition

services to be provided by the district, which would further enhance necessary transition skill development. The amendment stated that the transition piece of the IEP must include “appropriate measurable postsecondary goals based upon age-appropriate transition assessments related to training, education, employment, and, where appropriate, independent living skills.” In addition, “the transition services (including courses of study) needed to assist the child in reaching those goals” (Witte, 2002, p.157).

In addition to the laws and amendments that have been passed to improve student outcomes after they transition out of high school, federal law has also paved the way for students with disabilities to attend colleges and universities. In 1973, Section 504 of the Rehabilitation Act was passed. The Act prohibited discrimination against a person in all institutions, including colleges and universities, which receive federal funding based on their disability. In 1990, the American with Disabilities Act (ADA) was passed helping to further prohibit discrimination on the basis of disability in the areas of employment, public accommodation, public services, transportation, and telecommunications. The ADA is currently what protects students at the postsecondary level. It also allows them to access the necessary accommodations and services they need to achieve.

Just as in high school, there are procedures that students with disabilities must follow to access supports when entering postsecondary education. There is also a change in the laws that protect them as well as in who is responsible for ensuring that students receive the services and/or accommodations they need. IDEA and IEPs do not apply to postsecondary institutions. Rather, as stated previously, ADA protects their rights. At the postsecondary level, universities and colleges are required to have an Office for

Students with Disabilities. The name of the office and the level of support provided vary by institution. The responsibility of accessing services is the students' responsibility. Students are required to inform the university of their disability and specific learning needs along with informing the school of the services they required (Beale, 2005). While it is true that students with disabilities can make it through secondary education successfully without any knowledge of the laws governing services, this is not the case with postsecondary education. As a result of this legislation, along with an emphasis on transition planning in high school, the number of students attending postsecondary education has been on the rise.

College Level Learning Disabled Students

Research indicates that whether or not students have disabilities, completion of postsecondary education increases their chances of obtaining employment. (Fairweather & Shaver, 1990). Postsecondary education is often thought of as the necessary link for young adults becoming productive and successful members of society. With such a belief, there tends to be a great deal of emphasis and pressure for students in high school to attend postsecondary education. Unfortunately, research indicates that outcomes for students with learning disabilities are not as good as compared to their non-disabled peers. Researchers have reported that students with LD have lower rates of employment, lower earnings, lower rates of postsecondary school attendance, and lower rates of independence (as cited in Murray, Goldstein, Nourse, & Edgar, 2000). It should be noted that students with disabilities who do attend college comprise a particular subgroup of students with disabilities that is different from those students who do not attend

college. In order to attend college a student has to have a certain level of prior achievement and success.

The National Longitudinal Transition Study (NLTS) (Blackorby & Wagner, 1996) of Special Education Students was conducted to explore trends in employment, wages, postsecondary education, and residential independence of youth with disabilities in their first five years after high school. The Office of Special Education Programs (OSEP) of the U.S. Department of Education (Blackorby & Wagner, 1996) sponsored the study. Included in the study were more than 8,000 youth ages 13-21 who received special education services in 1985. Each student was classified under one of the eleven categories of disabilities as outlined by federal guidelines. Various methods were utilized to gather data such as phone interviews, analysis of high school transcripts, and surveys of teachers and principals. The data was collected within a “two –wave longitudinal design (Blackorby & Wagner). The first wave of data was collected in 1987, at which time the youth had been out of school from a few months to two years. At that time, the data was gathered via telephone interview with parents and/or guardians. The second wave of data was collected in 1990 when the students had been out of secondary school between three and five years. At that point, many of the students were no longer living with parents and, as a result, the students themselves were interviewed.

Blackorby and Wagner analyzed data from the NLTS study. They analyzed data from a specific subset of the initial population included in the study. Students included in their analyze were those who had already left secondary school by the time of the first data collection. Students within the subsample had to meet the following criteria in order to be included: “ 1. Students had to be enrolled in special education at a secondary school

in the 1985-1986 school year, 2. They had left secondary school by September 1987, 3. Their parent or guardian had completed an interview during the first wave of the NLTS data collection, and 4. Either the parent or the student completed a telephone interview or mail questionnaire in the second wave of data collection” (Blackorby & Wagner, 1996, p 405).

A total of 1,990 students met this criteria and their information was then utilized in the data analysis. Results of the analysis were reported in percentages. The researchers noted that the percentages reported were weighted in order to be nationally representative. The researchers focused on postschool outcomes in the areas of employment, postsecondary education, and residential independence. Within the area of postsecondary education, results indicated that after students with disabilities had been out of high school for up to two years (first wave), only 14% of them reported attending some type of postsecondary education, compared to 53% of youth from the general population. During the second wave of data collection, an additional 13% of students with disabilities reported attending some type of postsecondary education. The results suggest that students with disabilities tend to postpone attendance into postsecondary education. The results also indicate that, after having been out of high school for three to five years, 27% of students with disabilities reported attending some type of postsecondary education, in comparison to 68% of youth without disabilities. When the sample is examined by classification of disability, the percentages were a bit different. For youth with learning disabilities, during the first wave of data collection, it was reported that 14% of them pursued some type of postsecondary education. During the second wave, that percentage increased to 31%. For students with other health

impairments, which include Attention Deficit Hyperactivity Disorder, during the first wave it was reported that 28% of youth pursued postsecondary education. During the second wave that percentage increased to 56% (Blackorby & Wagner, 1996). Students with speech impairments, visual impairment, and deafness had the highest rate of postsecondary school attendance.

Murray, Goldstein, Nourse, and Edgar (2000) conducted a longitudinal study that provided a long-term picture of the postsecondary school attendance and graduation rates of LD and non-learning disabled (NLD) students. The researchers interviewed the participants five years (1985) and ten years (1990) following high school graduation. The results of the study indicated that students with LD were significantly less likely to have attended postsecondary education than their NLD peers. The results also indicated that the students with LD were less likely to graduate than their NLD peers and more likely to attend training programs and community colleges than four-year institutions, whereas their NLD peers were more likely to attend four-year institutions (Murray et al., 2000).

The U.S. Department of Education conducted a follow-up study beginning in 2001 similar to the one reported on in 1996 (Blackorby & Wagner, 1996). The study was entitled the National Longitudinal Transition Study-2 (NLTS2) and, as was the case in the 1996 study, took part in two waves (Wagner, Newman, Cameto, Levine, Garza, & Gonzalez, 2006). The first wave took place during 2001 and 2002 and included youth ages 13 to 18 who were still enrolled in secondary education. The goal of the first wave was to document students disabilities and their functioning. During the second wave, data was collected on youth ages 15 through 19, of which 28% were no longer enrolled in

secondary education. The goal of this wave was to gain information about the experiences of the youth with disabilities the first few years after leaving high school. Interviews were conducted with youth and/or their parents in order to gain information. There were 1,200 youth that participated in this section of the study. Results indicated that about 3 in 10 of youth with disabilities had been enrolled in some kind of postsecondary school and nine percent of youth with disabilities reported attending a 4-year college. Youth in the general population were four and a half times as likely to be taking courses in a 4-year college. For 2-year or community colleges, one-fifth of the youth with disabilities reported having been enrolled, which was similar to that of the general population (Wagner et al., 2006).

A potential weakness of such studies is that the percentages found may not be accurate since, in order for students to be considered, they must self-identify themselves. In other words, the student must inform colleges he/she has a disability. As a result, there may be students with disabilities who are not included in these percentages due to their decision to not inform the college.

Despite some of the bleak research, the number of students with documented disabilities that is enrolling in postsecondary education has increased significantly over the years. In 1996, over nine percent of all freshmen enrolled in postsecondary education reported having a disability as compared to 2.6% in 1978 (HEATH Resource Center, 1995, 1998). Henderson (2001) reported on data that was gathered from a Cooperative Instructional Research Program. The participants included students who reported having a disability who were enrolled as full-time freshman at public or independent four-year colleges or universities. The results of the data indicated that the classification of

learning disability was the fastest growing category of disabilities between the years of 1988 and 2000. In 1988, 16% of the freshman reported having an LD as compared to 40% in 2000 (Henderson, 2001).

Factors related to success in postsecondary education

Given the overall rise in the number of students attending postsecondary education, both with disabilities and without, research has begun to focus on exploring factors that impact academic success and retention for students. Much of the research that has been conducted has focused on first year students. Freshman year of college is typically thought of as a very large transition year for students. They begin life on their own, in a new setting, and are presented with a new level of expectations. Colleges have focused on researching factors related to success and retention in order to help them better meet the needs of students as well as develop programming aimed at retention.

A student's high school GPA as well as total SAT score has historically been an indicator for academic success at the postsecondary level (as cited in DeBerard, Spelmans, & Julka, 2004). DeBerard et al. (2004) sought to expand on the variables explored when investigating academic achievement. They conducted a study that included ten possible variables that might correlate with academic achievement. The variables included: gender, overall GPA and SAT score, global social support, two coping strategies, health related quality of life factors such as smoking and binge drinking habits, general physical health, and mental health related quality of life. Results of the study indicated that when those ten predictors were simultaneously included, they accounted for 56% of the variance in predicting cumulative GPA for students. Independently, nine of the ten variables were significant predictors of cumulative GPA.

Mental health related quality of life was not found to be a significant predictor (DeBerard et al., 2004).

George, Dixon, Stansal, Gelb, and Pheri (2008) conducted a study to measure the influence of personal, cognitive, and attitudinal factors on success. The variables of goals, intelligence, time management skills, sleep issues, spirituality, emotional health issues (self-esteem and emotional stability), and dietary, health, and leisure activities were explored as possible predictors of achievement. The sample included 231 students attending a small liberal arts college in Alberta, Canada. The researchers methodology included a six-page questionnaire that each participant completed as well as a time diary for five consecutive weekdays. Participants were instructed to record their daily activities in the diary within a 24-hour time frame that was broken up into half hour segments. The diaries were then coded for events such as time spent in class, studying, working, leisure, devotions, chores, eating, sleeping, and hygiene related activities. Seven of the variables were found to be significant predictors of GPA. They were: time management skills, intelligence, time studying, waking up early, owning a computer, less time spent in passive leisure, and a healthy diet. Time management was found to be the strongest predictor. Several of the variables were correlated to GPA although not predictors. Those variables included clearly defined goals, better overall health, living in community rather than residence halls, more time spend in devotion, greater reported spirituality, less time spent sleeping, and greater emotional stability (George et al., 2008)

Both of these studies aimed to determine factors related to academic success at the postsecondary level, in addition to long-standing predictors such as high school GPA and SAT scores. As stated previously, much of the research that exists focuses mainly on

first year college students. Research in this area continues to evolve and progress as those working with students at the postsecondary level work to increase the success rate for students.

Factors related to the success of students with LD

As stated previously, the successful completion of postsecondary education can only enhance long-term outcome for students. With increasing numbers of students with disabilities attending postsecondary education, researchers have begun to examine what factors aided in the receipt of a postsecondary degree. Spekman, Goldberg, and Herman (1992) explored factors related to success and life satisfaction of young adults with learning disabilities. The overall goal of the study was to provide both quantitative and qualitative information on what generates success for some students and not for others. The researchers conducted a follow up study with fifty adults with learning disabilities, ages 18-25, who were former students at the Marianne Frostig Center of Educational Therapy. Data was collected via case records, personal interviews, a parent rating scale, and a brief cognitive and academic screening. From the interviews, the sample was then divided into two groups: successful and unsuccessful. The researchers defined successful as: “demonstrating age appropriate activities and endeavors, rating themselves as generally satisfied with their lives, and the ability to describe school, employment, and social activities that were in accordance with self-perceptions, capabilities, and aspirations” (Spekman et al., 1992, 161). Unsuccessful was defined as those individuals who “experienced difficulty with age-appropriate activities, were often dissatisfied with their lives, and/or described activities, experiences, or aspirations that were not in accordance with self-perceptions” (Spekman et al., 1992, 163).

Within that same study, quantitative variables were explored including gender, race, family socio-economic status (SES), age at Frostig School Enrollment, length of enrollment, verbal, performance, and full scale IQ, specific diagnosis, services received, and discrepancy between expected and actual reading and math achievement scores. The results of the quantitative findings revealed that the two groups were similar on measures of race, SES, gender, diagnosis, services received, and age of enrollment. On the measures of IQ, the successful individuals had significantly higher verbal IQs than the unsuccessful individuals, as measured by the Wechsler Intelligence Scale for Children-Revised (Wechsler, 1974). Despite the difference, both were within the average range and the researchers noted that the implication of the difference was unknown. Overall, there were minimal differences between the two groups on such variables, which leads to the postulation that there must be other variables impacting the successfulness or unsuccessfulness of individuals with disabilities (Spekman et al., 1992).

The research conducted by Spekman et al. (1992) also explored qualitative variables through that may differentiate the two groups. The results of the interviews revealed six attributes of successful students: self-awareness, proactive, perseverance, emotional stability, appropriate goal setting, and the presence and use of effective support systems. Possessing an accurate level of self-awareness allowed the individuals to identify their strengths and weaknesses, and how to work with those within their lives, as well as acceptance of their learning disability. Along with acceptance, the individuals considered their LD to be one only part of their personality and, therefore, did not allow it to completely define who they were. Conversely, the unsuccessful students tended to deny that they had any difficulties. In addition, they denied the impact their learning

disability had on their life. Often times they did not seek out services to assist them with their needs and did not appreciate anyone who attempted to assist them. In addition, they had a tendency not to interact with other students with learning disabilities (Spekman, et al., 1992).

Raskind, Goldberg, Higgins, and Herman (1999) conducted a 20-year follow-up study using the same sample in the research conducted by Speakman et al. (1992). The results were similar in that the six attributes were found to be better predictors of continued success than variables such as IQ, academic achievement, life stressors, age, gender, SES, and ethnicity. Such results were encouraging given that the six variables found to be better predictors of success were variables that could be potentially altered. Those working with individuals with disabilities can assist with variables such as self-awareness, goal setting, and self-advocacy. Whereas variables such as IQ, age, gender, SES, and ethnicity cannot be altered.

Vogel and Adelman (1992) conducted a study that explored factors related to success of students with learning disabilities at the postsecondary level. The study compared 62 students with LD to 58 NLD students and they were matched on gender and American College Testing (ACT) composite scores. All of the students were enrolled in a small, private midwestern college. The two groups were compared on variables such as age, academic preparation for college, high school performance, year in school at college entrance, college performance, graduation rate and academic failure rate, course load, and time taken to complete degree. In order to explore academic preparation for college, the researchers completed an analysis of participants' high school transcripts. The results indicated that the groups differed significantly on the number of

developmental math courses taken in high school, with students with LD taking more. The overall results indicated that high school preparation (defined as the number of regular core curriculum courses the students completed with a C or better) was the best predictor of college exit GPA for students with LD. It was also found that overall high school grade point average (GPA) was significantly correlated with college performance for both LD and NLD students (Vogel & Adelman, 1992). The researchers noted that 100% of the students who failed in both LD and NLD groups had no prior college experience.

The researchers then concluded that as a result, in order to increase the success rate at the postsecondary level, it would be beneficial for students to have exposure to the demands of college and partake in an academically challenging curriculum. Furthermore, for students with LD, “to recognize the effect of their LD and utilize accommodations and services contributed to their success” (Vogel & Adelman, 1992). Researchers indicated that aside from high school preparation and high school and overall GPA, “poor motivation, negative attitude, along with substance abuse, denial of LD, and unrealistic expectations appear to be better predictors of success for students with LD than standardized test scores” (Vogel & Adelman, 1992). The researchers also noted a need for studies to explore students’ self-knowledge of their LD, willingness to accept their LD, and the ability to then seek out support services.

Vogel, Hruby, and Adelman (1993) conducted a follow-up study that explored educational and psychological factors in both successful and unsuccessful students with learning disabilities. The sample included 107 students with LD who entered a small, private midwestern college between the years of 1980 and 1988. The group was then

divided into two groups: successful and unsuccessful. Successful students were those who completed their bachelor's degree (n=36) and unsuccessful students were those who had been dismissed or who had dropped out due to academic failure (n=23). Each of the students completed a detailed case history in order to gain information needed for the study. The groups were compared on the constructs of educational intervention, high school preparation, prior college experience, psychological support, sex differences, and age. The results of the study indicated that the successful and unsuccessful students did not differ on ACT scores, intellectual ability, or academic achievement. On the other hand, the successful students were significantly older and had taken a significantly greater number of regular English courses in high school than the unsuccessful students (Vogel et al., 1993). It was noted that the college in which the student sample was drawn, provides LD specialists for the students to work with. One of the activities that the specialist performed was to review psychological testing results with the students. The researchers noted that typically, students entered the college with minimal understanding of their LD. The goal of such activity was to increase student self-awareness, provide students with an increased understanding of their own particular strengths and weaknesses, and also allow for them to further develop as strong self-advocates skills. Noted was the research conducted by Speakman et al. (1992) that illustrated that successful students had a better understanding, as well as an acceptance, of their particular learning disability.

Research conducted by Vogel and Adelman (1992) and Vogel et al. (1993) led to recommendations on interventions to help increase the success rate for students with LD at the postsecondary level, as well as with life post-high school. One of the

recommendations made was, for those professionals working with students with LD, to teach students about LD in the hopes of increasing their own understanding of their LD.

Henderson (2001) reported on data from a Cooperative Instructional Research Program survey. Participants in the study were students with disabilities who were enrolled as full-time freshman at public and independent four-year colleges and universities during 2000. The data provided information on the number of students with disabilities enrolled in postsecondary education and also conveyed information on additional variables such as personal and family background, high school performance, preparation for college, educational and career experience, self-perceptions, and opinions. The results indicated that, when compared to other freshman with disabilities, those with LD were more likely to be part of a white/Caucasian family, were older than 19, and part of a family whose income exceeds \$100,000. In high school, students earned “C” or “D” averages and held the expectation that they would need remedial tutoring in English, reading, and math. They were also more likely to consider majoring in arts and sciences. When exploring their self-perceptions, it was found that they tended to rank themselves lowest on math, writing, and academic ability, as well as intellectual self-confidence. It was also found that students with LD were more likely to place value on colleges that offer special programs. Results from this study outlined trends as opposed to predictors to success. The information gathered in the investigation, and the possible impact on students’ success, could be further explored in future research.

Murray (2003) explored cognitive, academic, and attitudinal predictors of GPA for college students with learning disabilities. The sample included 84 students diagnosed with LD who received support services at a midwestern college during 1998,

1999, and 2000. The researcher hypothesized that student study habits and attitudes would be stronger predictors of college GPA than cognitive functioning and academic achievement as found in the research conducted by Spekman et al. (1992). Academic achievement was measured by individually administered norm-referenced achievement tests and cognitive ability was measured with individually administered norm-referenced tests of intelligence. The Survey of Study Habits and Attitudes (SSHA) was utilized to assess students attitudes and habits related to studying. The SSHA includes four constructs including Delay/Avoidance, Work Methods, Teacher Approval, and Educational Acceptance. The results indicated that most of the cognitive and academic variables were not correlated with GPA. It was found, however, that many of the cognitive variables were correlated to each other and were correlated to academic variables. Results of the study found that full scale IQ and the Delay/Avoidance subscale (related to delayed study habits and procrastination) were significant predictors of college GPA (Murray, 2003). When the full model (credit hours, gender, Full Scale IQ, and Delay/Avoidance) was included in the regression analysis, it accounted for 14% of the variance in students' GPA. Full Scale IQ accounted for 6% of the variance and Delay/Avoidance accounted for 5% of the variance.

Overall, research indicates that there seems to be a variety of variables related to success for students with LD at the postsecondary level, as well as long-term success (Spekman et al., 1992; Raskind et al., 1999; Vogel & Adelman, 1992; Vogel et al., 1993; Henderson, 2001; & Murray, 2003). Research also brings into question the reliability of using traditional cognitive and academic measures to predict postsecondary outcomes for students (Murray, 2003). Researchers have noted a need for further investigations into

variables such as self-understanding, study habits, study skills, and additional academic, cognitive, and emotional capability.

Factors related to success in college for students with ADHD

Unlike the research in the area of LD, there has been a limited amount of research conducted on students with ADHD at the postsecondary level. The research that has been conducted suggests that students with ADHD have lower academic achievement, more academic problems, and are more likely to be on academic probation than students without ADHD (Heiligenstein, Guenther, Levy, Savino, & Fulwiler, 1999; Kaminski et al., 2006). As with students with LD who attend college, college students with ADHD may be viewed as a unique segment of the population of students with ADHD as a whole. For the most part, students with ADHD who attend college most likely have higher ability levels, experienced more success in school prior to college, and may have better developed compensatory strategies (Frazier, Youngstrom, Glutting, & Watkins, 2007).

There have been limited studies conducted which explore factors that relate to academic success at the postsecondary level for students with ADHD. Kaminski et al. (2006) was one of the only studies that exclusively explored predictors of success for students with ADHD. The study included 68 college students from a liberal arts college in the eastern United States. Of the 68 students, 22 were diagnosed as primarily inattentive, 11 were diagnosed as primarily hyperactive-impulsive, and 35 were combined type. The researchers explored the variables of academic success, coping, demographic and open forum questionnaire, and intelligence. Students' GPA measured academic success, and the students were divided into two groups: high success (HS) and

low success (LS) based on their GPA falling above or below the mean GPA (2.61). The researchers explored coping resources and defined it as “factors that are present and available even before stressors occur” (Kaminski et al., 2006, p. 61) which can be utilized to assist the student with dealing with stress they encounter. The researchers utilized the Coping Resources Inventory for Stress (CRIS), which assesses coping resources available to a person to prevent stress and also measure the extent to which that person utilizes those resources. A demographic questionnaire was used to gain information about gender, age, socioeconomic status, etc. There was also a three-item, open-ended “Open Forum” Questionnaire (OFO) that was designed for the study. Participants were asked to write about factors that help them manage their ADHD symptoms in college, perceived barriers to their success, and sources of motivation. The Wonderlic Personnel Test was used to measure and control for intelligence.

Results indicated that the greater the coping resources, the greater the academic success. Researchers also explored themes and found that the two most common coping methods for successful students were “working harder and longer than other students” and “using some type of social support (Kaminski et al., 2006, 63). Other themes that emerged in the study included utilizing certain study skills, time management and organizational skills, exercise, spirituality, maintaining a positive attitude, and self-awareness (Kaminski et al., 2006). As in research with students with LD at the postsecondary level, variables found to be related to academic success were variables unlike the typical cognitive and academic variables.

Limitations of the study included limited diversity in regards to ethnicity. The majority of the participants were Caucasian. Furthermore, researchers noted that the

population that was utilized for this study represented a unique part of the population of students with ADHD. Most of the students included in the study were at least experiencing some academic success and the sample did not include students with comorbid diagnoses. Thus, the generalizability of the results is limited. More research is needed in this area in order to better understand what differentiates successful students with ADHD from unsuccessful students.

Self-efficacy

A person's perceived self-efficacy is defined as a measure of one's beliefs about his/her ability to successfully perform specific tasks in specific situations (Bandura 1986). Consequently, students' academic self-efficacy could be defined as a person's belief in his/her ability to perform on academic related tasks. A person's perceived self-efficacy is thought to develop as a result of four principles of knowledge. The first principle of knowledge is past achievement. If a person experiences several successes with a specific task, those successes help to raise his/her perceived efficacy. The second principle is vicarious experience which results if a person witnesses or can visualize another person similar to them succeeding in a task, that can raise his/her own perception of efficacy. The third principle is access to verbal persuasion and is used to help talk a person into believing he/she has the ability to achieve on a specific task. The final principle is the experience of emotional or physiological arousal and the use of those feelings to help a person judge his/her capabilities (Bandura, 1986; Hampton & Mason, 2003). Based upon those four principles, one can conclude that academic self-efficacy develops as a result of a student's past academic achievements, academic difficulties,

vicarious experiences, and verbal persuasions from others along with his/her overall academic experiences.

Self-efficacy and self-concept of students with LD

A number of studies have illustrated that students with learning disabilities (LD) tend to score lower than their non-learning disabled peers (NLD) on measures of self-concept, self-efficacy, and self-worth. Many times in research the terms of self-concept, self-efficacy, self-esteem, and self-worth are used interchangeably. Chapman (1988) conducted a meta-analysis of 27 studies completed from 1974 to 1986. The results of his research found that a child's self-concept typically develops by third grade and remained somewhat consistent until high school. In the analysis, self-concept was defined as "the perception of ourselves involving our attitudes, feelings, and knowledge about our skills, abilities, appearance, and social acceptability" (Chapman, 1988, p. 348). The meta-analysis found within the research that there were some discrepancies on measures of general self-concept. The results of several studies were equivocal: some indicated a significant difference between students with LD and their NLD peers, while others did not illustrate any significant difference. However, when measuring academic self-concept, the research indicated conclusively that students with LD scored significantly lower than their NLD peers. Bear, Minke, and Mannig (2002) conducted a meta-analysis, similar to Chapman (1988), which included 61 studies from 1986 to 2000 on self-concept. The results were similar to Chapman's in demonstrating that children with LD perceived their academic self-concept to be lower than their NLD peers (Bear et al, 2002).

Clever, Bear, and Juvonen (1992) conducted a study that explored the academic self-perceptions, as well as overall self-worth, of students with LD, low achieving students, and normal achieving students. The sample of students was taken from a fifth grade classroom in a Mid-Atlantic suburban school district. All of the students were placed in an integrated program, which is a classroom that includes both students with and without LD. Normal achieving students (n=122) and low achieving (n=27) students were defined based on their performance on the Stanford Achievement Test (SAT). LD students (n=35) were chosen based upon their classification. Each of the students was administered the Self-Perception Profile for Children (SPP-C). The SPP-C measures children's self-evaluations in the areas of scholastic competence, behavioral conduct, social acceptance, physical appearance, and athletic competence as well as overall global self-worth. The results indicated that low achieving students and students with LD had lower academic self-perceptions than normal achieving students. They also found that students with LD had lower self-perceptions of behavioral conduct. Surprisingly, they found no difference between the three groups on measures of overall self-worth (Clever et al., 1992).

Hampton and Mason (2003) conducted a study in which the relationship among gender, learning disability status (student with learning disability and students without learning disability), sources of efficacy, self-efficacy beliefs, and academic achievement were examined. In order to measure self-efficacy, The Sources of Academic Self-Efficacy Scale (SASES) was utilized. The SASES consists of four subscales that correspond to the four primary sources of self-efficacy: (1) personal performance accomplishment (2) vicarious learning, (3) social persuasion, and (4) emotional arousal.

The Self-Efficacy for Learning Scale (SELS) was also used to measure the academic self-efficacy beliefs of the participants. Hampton and Mason (2003) found that the learning disability status had an indirect impact on self-efficacy via the influence of the source variable, gender did not have an impact on self-efficacy, the source variable had a direct impact on self-efficacy, and self-efficacy had a direct impact on academic achievement. The findings indicate that those who have more sources of efficacy tend to have higher self-efficacy beliefs and in-turn, higher academic achievement. Therefore, the results suggest that students with LD have fewer sources of efficacy than their NLD peers (Hampton & Mason, 2003).

Nunez, Gonzalez-Pienda, Gonzalez-Pumariega, Roces, Alvarez, Gonzalez, Cabaach, Valle, and Rodriguez (2005) conducted a study that compared students with LD to NLD students on measures of self-concept, causal attributions, and academic goals. A total of 345 students participated: 173 with LD and 172 NLD. The ages of the participants ranged from 9 to 14. In order to measure self-concept, the participants completed the Self-Description Questionnaire, which measured eight self-concept dimensions including academics (Nunez et al., 2005). Participants also completed the Sydney Attribution Scale (SAS), which assessed the participants' perceptions of the causes of their academic successes and failures. In addition, the participants completed an Academic Goals Questionnaire designed to measure learning goals, achievement goals, and social reinforcement. Results found that NLD students attributed their academic successes significantly more to internal factors, such as ability or their own effort. They also attributed their failures significantly less to lack of ability or to lack of

effort than students with LD. On measures of self-concept, students with LD scored significantly lower than their NLD peers (Nunez et al., 2005).

In a study conducted by Lackaye and Margalit (2006), measures of achievement and self-perceptions of academic self-efficacy, loneliness, sense of coherence, mood, and hope were compared between students with LD and their NLD peers. Participants included 571 students in seventh grade from 7 schools in central Israel. 124 were students with LD and 447 NLD students. The NLD peers were broken into four achievement levels in order to explore the differential contributions of academic achievement levels. The purpose of the study was three-fold: (1) to explore whether the self-perceptions of students with LD differ from students without LD, (2) to explore if the self-perceptions of students with LD differ from their peers without LD at four levels of achievement, and (3) to determine if any of those factors predict effort among the students with LD. The results of the study indicated that when students with LD were compared to NLD students, the students with LD had lower grades, invested less effort, and reported lower levels of self-efficacy, sense of coherence, positive mood, and hope than their NLD peers. Students with LD also reported high levels of loneliness and negative mood. The students with LD were also compared to NLD students at various achievement levels. Overall, the scores on measures of academic self-efficacy for students with LD were found to be comparable to their NLD peers who were failing academics (Lackaye & Margalit, 2006).

Limited research exists that explores college students' perceived self-efficacy, self-concept, and self-esteem. Blake and Rust (2002) conducted research that investigated the relationship between self-esteem and self-efficacy among college students with

physical and learning disabilities. Participants included 44 undergraduate students and four graduate students at Middle Tennessee State University. Students' collective self-esteem, membership self-esteem, private self-esteem, and public self-esteem as well as general and social self-efficacy were measured in the study. Results illustrated the correlation that exists between the constructs of self-esteem and self-efficacy. Although the study explored self-esteem and self-efficacy in college students with disabilities, it did not explore how those variables may or may not impact performance at the postsecondary level. Blake and Rust stated a need for further research on college students that explores these constructs.

Research has been conducted that explores differences in how students with LD score in comparison to NLD students on measures self-efficacy, self-esteem, self-concept, and self-worth. Results of the research indicate that outcomes depend on how researchers defined these concepts and what instruments are utilized to measure them. (Bear et al., 2002 & Chapman, 1998). However, when specifically measuring students' perceived academic self-efficacy, students with LD typically score lower than NLD students (Bear et al., 2002; Chapman, 1998; Clever et al., 1992; Lackaye & Margalit, 2006; Nunez et al., 2005). Researchers have also connected academic self-efficacy to achievement. Students with low academic self-efficacy typically do not achieve well in school. The relationship between the two is not fully understood. Researchers remain uncertain as to whether low achievement results in lower self-efficacy or low self-efficacy results in low achievement (Bear et al., 2002; Chapman, 1998; Clever et al., 1992; Lackaye & Margalit, 2006; Nunez et al., 2005). There is a lack of research on these variables at the postsecondary level (Blake & Rust, 2002).

Self-efficacy in students with ADHD

There has been limited research that solely explores the relationship between ADHD and self-efficacy. There was no research found which specifically explored academic self-efficacy of college students with ADHD. Much of the research that links self-efficacy and ADHD has been done within the field of learning disabilities. Research has been conducted that has shown there are many social, emotional, and educational difficulties that can arise for students with ADHD (Barkley, 2003). The symptoms of ADHD often impact a student's educational performance. As a result, students with ADHD typically receive more negative feedback from teachers because of their academic struggles, which can cause them to adopt a negative perception of themselves and their abilities (Owens, Hoza, & Owens, 2003).

Tabassam and Grainger (2002) explored the constructs of self-efficacy, self-concept, and attributional style in students with LD, and LD and ADHD, as well as normally achieving students. The study included 172 elementary school students, grades 3 to 6, from nine public schools in Sydney, Australia. The sample consisted of 44 students with LD, 42 students with LD/ADHD, and 86 average achieving students. Three measures were utilized in the study. The first was the Self-Description Questionnaire (SDQ) that measured the students' self-concept. The second was the Academic Attributional Style Questionnaire (AASQ) that was utilized to measure academic attributional style. Attributional style was defined as "the way people explain the causes of bad or good events involving themselves" (Tabassam & Grainger, 2002, p. 141). Lastly, the students completed the Academic Self-Efficacy Beliefs Scale (ASES). Results from the study indicated that students with LD and LD/ADHD had significantly

lower scores on measures of academic self-concept, academic self-efficacy beliefs, and academic attributional style. The scores on the nonacademic self-concept were not significantly different from LD, LD/ADHD, and typical peers. The only significant difference found between LD and LD/ADHD groups was on the peer relation self-concept. In that area, LD/ADHD students reported significantly lower scores than students with LD. The researcher concluded that the ADHD comorbidity did not significantly influence the academic self-concept, academic attributions, and academic self-efficacy. Overall the students with LD and LD/ADHD scored much lower than their NLD on measures of academic self-concept, academic self-efficacy, and academic attributional style (Tabassam & Grainger, 2002).

Effort

An individual's perceived self-efficacy is hypothesized to influence an individual's choice of activity, the level of effort he/she puts forth, and persistence in the face of obstacles, all of which in turn influence learning (Bandura, 1986). Therefore, individuals who possess high self-efficacy typically have the ability to perceive failures and setbacks as obstacles that can be overcome. In addition, they are thought to put forth more effort on tasks in which they possess high self-efficacy. Typically, students with LD and ADHD face more obstacles in academics than their NLD peers. Many times they are taught strategies to help them cope and overcome those learning difficulties. Some students access those strategies and put forth more effort while others do not. Research has explored the interplay between self-perceptions, effort, and strategy use.

Meltzer, Katzir-Cohen, Miller, and Roditi (2001) explored the impact of effort and strategy use on academic performance in LD and NLD adolescents. The participants

consisted of 663 students in grades 4-9 from one urban city school and one suburban school. The researchers defined effort as “a conscious attempt to achieve a particular goal through persistence over time” (Meltzer et al, 2001, p. 86). Each participant completed the Student Self-Report System (SSRS), which was a 50-item questionnaire that evaluates students’ perceptions of the extent to which they use strategies in reading, written language, spelling, math, and organization. Participants also completed the Student Rating System, which required them to rate their performance in reading, writing, spelling, math, and organization. In addition, students rated their level of effort and their ability to plan, check their work, and apply strategies to schoolwork.

The results of the study indicated that both groups, LD and NLD students, rated effort as the most important predictor of strategy use. In addition, they rated effort as the most important contributor to academic performance. The researchers explored the level of effort and strategy use of high-achieving students with and without LD versus low achieving students with and without LD. The results showed that the low achieving students had significantly lower self-ratings of their strategy use and level of effort as compared to the high-achieving students. The researchers also compared level of effort and strategy use in high-achieving students with LD and NLD, as well as low-achieving students with LD and NLD. The results of those comparisons indicated no significant differences of self-perceptions held by high-achievers, regardless of LD/NLD status. On the other hand, they found that low-achievers with LD rated themselves significantly lower on both strategy use and level of effort than low-achievers without LD.

Overall the results indicate that students who experience academic success as a result of their efforts and strategy use, regardless of having an LD or not, are more likely

to continue to put forth the effort needed to sustain academic success. The researchers felt the results supported the notion of “reciprocal strategy-effort interaction: when students are successful as a result of their hard work and strategy use, they feel empowered to take more responsibility for their work, to value the strategies they have used, and to continue to work hard” (Meltzer et al, 2001, p.96).

Meltzer, Reddy, Pollica, Roditi, Sayer, and Theokas (2004) conducted a study that explored how effort interacts with strategy use to arbitrate the academic performance of successful students with learning disabilities. Participants in the study consisted of 46 students with LD and 46 students without LD in grades 6-8. The participants completed an effort questionnaire, which measured how hard they worked in specific academic areas or activity (reading, math, etc.), as well as a single item that measured effort in a nonacademic area. They also had to complete questionnaires that measured their academic competence, strategy use, and perceptions of school difficulty. They found that students with LD who had positive academic self-perceptions were more likely to work hard and to implement strategies than students with LD who had a negative academic self-perception. There were no significant differences found on the measures of effort and strategy use for students without LD with positive and negative self-perceptions (Meltzer et al., 2004).

Lackaye and Margalit (2006) also conducted research that further contributed to the research conducted by Meltzer et al. (2001,2004). Their research explored predictors of effort investment in LD and NLD students, as well as exploring the social-emotional consequences of academic achievement. The participants consisted of 124 students with LD and 447 NLD students. All of the students attended one of seven schools in central

Israel. The researchers utilized the effort measure used in the Meltzer et al. (2001,2004) studies. They also obtained measures of academic self-efficacy, loneliness, sense of coherence, mood, and hope for all of the students. They found that for students with LD, academic achievement, academic self-efficacy, and negative mood significantly contributed to the prediction of effort. For students without LD, they found that academic self-efficacy and positive mood significantly contributed to the prediction of effort. For both groups academic self-efficacy predicted effort, although students with LD had significantly lower academic self-efficacy scores (Lackaye & Margalit, 2006).

Many of the studies conducted that explore the variable of effort have illustrated the relationship between effort level and academic achievement, as well as self-perceptions (Meltzer et.al, 2001; Meltzer et al., 2004; & Lackaye & Margalit, 2006). Missing from the research is an exploration of effort level and the possible relationship that may have to academic achievement at the postsecondary level. Furthermore, there is a lack of research as to the possible interplay of academic self-efficacy and effort level at the postsecondary level.

Self-awareness

Milsom and Hartley (2005) identified beneficial characteristics that assist students with disabilities in making a successful transition into postsecondary education. The first component they identified was knowledge of disability. Students who are aware of their disability, have an understanding of their strengths and weaknesses, and are aware of what types of accommodations that best fit their learning needs, are better prepared to deal with life outside of high school. Bandura (1996) stated, “Accurate appraisal of one’s own capabilities is highly advantageous and often essential for effective functioning”.

Despite such a strong statement, little is known about how students develop an understanding or awareness of their own learning disability. Furthermore, little is known about the impact that understanding or awareness has on a student's self-concept, self-efficacy, and/or self-esteem. What is known is that there seems to be a connection between a student's self-concept and academic self-efficacy and amount of effort put forth in academics and willingness to implement strategies, which in turn impact academic performance (Meltzer et al., 2001, Meltzer et al., 2004 & Lackaye & Margalit, 2006). In addition, an accurate understanding of one's disability also impacts the success of that individual in life after high school (Spekman et al., 1992).

Heyman (1990) was one of the first to research self-perceptions of a learning disability and its relationship to academic self-concept and self-esteem. She based her research studies on past research that had been conducted on how individuals with physical disabilities accepted their disabilities. Heyman defined self-perception of the LD as "how the children view their learning problem, with particular emphasis on whether they understand it as delimited rather than global, modifiable rather than permanently limiting, and not stigmatizing" (Heyman, 1990, p.473). She developed The Self-Perception of Learning Disability (SPLD), which measured the extent to which students perceive their disability. The results of her study indicated that self-perceptions of learning disability were significantly related to both self-esteem and academic self-concept (Heyman, 1990). SPLD was accessed again in a study conducted by Rothman and Cosden (1995), which explored the relationship between self-perception of a learning disability and achievement, self-concept, and social support. Their results indicated that children with a less negative perception of their LD earned higher scores on math

achievement tests. In addition, they had more positive self-concepts and greater social approval (Rothman & Cosden, 1995).

Cosden, Elliott, Noble, and Kelemen (1999) explored the self-understanding and self-esteem in children with learning disabilities. The SPLD was used to assess the students' understanding of their LD. The results of the study found that students who had higher cognitive and academic achievement, felt better about their LD. They also found that achievement was related to self-perceptions of LD, although not global self-esteem. Instead, global self-esteem was correlated with perceptions of nonacademic competencies, such as performance in athletics. The researchers also found that a greater understanding of one's own LD did not increase self-esteem. The researchers did find that understanding did have a link to actual and perceived academic competence.

Hartman-Hall and Haaga (2002) conducted a study with college students that explored their willingness to seek help for their learning disabilities. They also utilized the SPLD to measure the degree to which students perceived their LD as circumscribed, modifiable, and nonstigmatizing vs. global, not subject to change, and stigmatizing. Students in the study were presented with vignettes about a student requesting help from professors or peers and receiving positive and negative reactions. Results of the study showed that students who viewed their LD as circumscribed, changeable, and nonstigmatizing were more willing to seek help in the face of unfavorable reactions from professors or peers and had better overall self-esteem.

Presently, the SPLD is the only measure available to assess a students' understanding of their learning disabilities. The measure itself has its limitations and there seems to be a need for an improved method of assessment (Cosden et al., 1999).

Conclusion

In secondary schools, students with a learning disability are provided the accommodations they need. In most instances, the educational professionals and their support systems are the ones telling the student what accommodations they will be using and teaching them specific strategies to implement. That does not happen in postsecondary education. There is a shift in responsibility once a student enters postsecondary education. It is no longer the institution's responsibility to ensure that students with disabilities receive what they need; instead it is the student's responsibility to inform the institution of their needs. The students themselves are responsible for seeking out any accommodations they may need. In addition, postsecondary schools are not responsible for identifying students with learning disabilities. Therefore, it is the students' responsibility to inform the institution of their disabilities, along with providing the institution with documentation to support their need for accommodations. In order for students to complete such a task, they need to be aware of their disability. Furthermore, they need to have an understanding of what accommodations and supports they require in order to be successful. Finally, they must have the ability to convey those needs and their disability to the institution (Beale, 2005).

Despite the importance of a student's understanding and having a certain level of awareness of their learning disabilities, minimal attention has been paid to how much the students themselves understand their learning disabilities (Yuan, 1994). There also has been limited research on how that awareness impacts a student's self-concept or self-efficacy. Furthermore, there is limited research that explores the relationship between students' self-awareness of their disabilities, academic self-efficacy, effort level and the

impact these variables may or may not have on academic achievement at the postsecondary level. Research in this area may help to further assist development of interventions for professionals who work with students with disabilities. An increased understanding of success at the postsecondary level will allow educators to focus their efforts on skills that will strengthen the chance for success for students' post-high school students with disabilities.

Chapter 3

Method

Research Question

This study addressed the following questions: (1) Does a relationship exist among academic self-efficacy, effort, and self-awareness in college students with LD and/or ADHD? (2) How much variance in academic performance can be explained by scores on these scales? (3) Which is the best predictor of academic performance: academic self-efficacy, effort, and self-awareness for students with LD and/or ADHD? (4) Does adding the variable of perceived impact add to the overall model?

Participants

Participants included 31 undergraduate students, fourteen were male and seventeen were female, who have been diagnosed with a learning disability (LD) and/or Attention Deficit/Hyperactivity Disorder (ADHD). The students were selected from small private and large public liberal arts colleges located in Western New York State and in New Jersey. Employees in the disability service office, as well as one professor, at each of the colleges assisted in recruiting participants.

Instruments

Academic Achievement. To measure academic achievement, the researcher obtained overall grade point averages (GPA) of each participant.

Academic Self-efficacy. The Motivated Strategies for Learning Questionnaire (MSLQ) is an 81-item self-report instrument and items are scored on a 7-point Likert-type scale from 1(not at all true of me) to 7 (very true of me). The complete MSLQ consists of six motivation subscales and nine learning strategies scales. The motivation

section includes 31 items that assess students' goals and value beliefs for a course, their beliefs about their skills to succeed in a course, and their anxiety about tests. The learning strategy section includes 31 items that explore the use of different learning strategies by students, as well as the management of different resources (Duncan & McKeachie, 2005). The 15 scales that comprise the MSLQ can be used together or individually. In this study, the eight items that measure self-efficacy for learning and performance were utilized. The subscale of self-efficacy for this measure assessed both expectancy for success, judgments of a person's ability to accomplish a task, and confidence in his/her skills. This definition tends to be much broader than other measurements (Duncan & McKeachie, 2005).

Sample questions in the MSLQ include "I believe I will receive an excellent grade in this class," "I'm confident I can do an excellent job on the assignments and tests in this course," and "I'm confident I can learn the course material in this class." The questions were modified in order to gain a measure of overall academic self-efficacy as opposed to performance within a specific class. Questions included in the scale for this study were "I am confident I can learn the basic concepts taught in my classes I'm taking" and "I expect to do very well this semester." Participants' ratings were averaged in order to gain an overall measure of academic self-efficacy. The higher a person scores, the higher the overall sense of academic self-efficacy that he/she perceives he/she possesses.

Academic Effort. Effort can be defined in many ways although, in this study, it was defined as "a conscious attempt to achieve a particular goal through persistence over time" (Meltzer et al, 2001). The Effort Questionnaire explores many aspects of effort including students' behaviors when working hard, perceptions of the end results of

working hard, effort applied in domain-specific academic (reading, math) and nonacademic areas, perceptions of when and why students work hard, and perceptions of what prevents students from working hard. The survey consists of 12 items, which are rated on a 5-point scale (1=Never, 5=Always). Sample items on the questionnaire include, “In general, I am a hard worker,” “I finish my work even when it is boring,” and “I work hard studying for tests.” The higher the rating, the more effort students perceived they put forth. The scales have been found to have a very high internal consistency ($\alpha=.92$) (Meltzer et al., 2004).

Self-Awareness. This is a 10-item self-report questionnaire developed by the researcher. The items were a combination of multiple choice and short answer questions. The questions aim to gain a measure of a student’s own self-awareness of their disability and an awareness of his/her learning strengths and weaknesses. It also explores a student’s awareness of how his/her disability impacts academic performance. Furthermore, it explores his/her knowledge of strategies used to help cope with learning weaknesses and his/her disability.

Perceived Impact. This variable was added to the model. The study had students respond to a question in which they had to answer whether they believed their LD/ADHD to had a significant impact on how they feel about themselves, on how they learn, or on how they learn and how they feel about themselves, combined.

Procedure

The director of the disability services office at each college and a professor were contacted and informed about the proposed research idea and procedure. The director of the office and the professor signed consent forms indicating that they have agreed to be

part of the study. The proposed research also was reviewed by four of the colleges Internal Review Board (IRB). Once consent and permission was obtained from the director and professor then assisted the researcher in soliciting participants for the study.

In order to protect the confidentiality of the students, the disabilities office staff made initial contact with students since they had a lists of students who self-identified as having a disability. The offices sent out emails to students who access services at their office soliciting participation in this study. The directors then had the students sign consent forms (Appendix A). After the participants completed the consent forms, they returned them to the Office of Disabilities at their college. Once the consent forms had been obtained, the researcher contacted the participants and scheduled a time for them to participate in the study. Some of the students chose to fill out the information with the directors or someone employed by the Disability Service Centers. At the meeting, a packet was distributed to each participant and directions on how to complete the packet were read aloud to them. The packet included questions on demographics (year in college, age, gender) high school GPA, diagnosis (LD and/or ADHD), current major, and college GPA. In addition, the Effort Questionnaire, MSLQ, and the Self-Advocacy Survey were distributed to each participant to complete. Students were encouraged to ask for assistance in completing the forms, if needed. After the completed forms were returned, each participant received a debriefing statement fully informing them of the study.

The professor solicited students who utilized test accommodations and had made the professor aware of their disability. He had the students sign the consent form

indicating their willingness to participate in the research. He then distributed the packets and returned the completed packets to the researcher.

Statistical Analysis

The dependent variable in the study was academic achievement as defined by Grade Point Average (GPA). The following variables were independent or predictor variables: academic self-efficacy, self-awareness, and effort. An additional variable of perceived impact was also added to the model. A simultaneous multiple regression analysis was also conducted.

Academic achievement (GPA) was simultaneously regressed on measures of academic self-efficacy, self-awareness, and effort. Based on the results, an additional variable of perceived impact was added to the model. A second simultaneous regression was used to determine the extent of influence each of the variables had on overall GPA.

Chapter 4

Results

This study was conducted to determine the plausible impact of academic self-efficacy, effort, and self-awareness on overall grade point average (GPA) for college students with learning disabilities (LD) and/or attention deficit/hyperactivity disorder (ADHD). Specifically, the study explored which of these factors could best explain academic success, as measured by overall GPA for students with LD and/or ADHD and the relationship among academic self-efficacy, motivation/effort, and self-awareness.

The first research question explored the impact of academic self-efficacy, effort, and self-awareness in college students with LD and/or ADHD on overall grade point average (GPA). The overall multiple regression was not found to be significant ($R^2 = .088$, $F \{3, 27\} = .873$, $p = .467$). Consequently, no further analysis was conducted.

The second question addressed how much variance in academic performance the scores can explain on the scales measuring motivation/effort, academic self-efficacy, and self-awareness. A simultaneous regression was used in order to determine the extent of the influence of each of those variables on overall GPA of college students with LD and/or ADHD. Given that the overall regression model was not found to be significant, this question was not further explored. However, the Betas (β) for the variables in the original model was examined to determine the of effect sizes of each of the variables. In examining the β , the effect sizes indicated a possible power problem that is likely. The β s were of a moderate effect size. The variable of motivation/effort ($\beta = .263$) was the strongest, with academic self-efficacy ($\beta = -.177$) next and level of self-awareness ($\beta = .139$) last. A moderate effect size for each of the variables indicates the possibility of

a power problem as a result of the small N that comprised this study. It is possible, then, with a larger sample size, the overall regression analysis may have been found to be significant. If this were hypothesized, each of the variables included in this study would have been found to be significant predictors of overall achievement (GPA) for college students with LD and/ or ADHD. Such results might significantly add to the understanding of student achievement of college students with LD and/or ADHD. Consequently, a study such as this might significantly benefit from utilizing a much larger sample size.

The third question addressed exploring which variable is the best predictor of academic performance for students with LD and/or ADHD: academic self-efficacy, effort, or self-awareness. Given that the results were not found to be significant, additional variables were explored based upon previous research (Heyman, 1990; Rothman & Cosden, 1995; Cosden et. al, 1999; Hartmann-Hall & Haaga, 2002) that suggested that students who perceived their LD as only impacting their area of disability, rather than globally impacting their lives and their ability to be successful in many areas of their lives. In order to further explore this theory the variable of “perceived impact” was added to the original model, based on the responses to the question in which they had to indicate whether they believed their LD/ADHD to have a significant impact on how they feel about themselves, on how they learn, or on how they both learn and how they feel about themselves. The variable of perceived impact was added to the original model. A simultaneous regression was used to determine the extent of influence each of the variables had on overall GPA. The overall multiple regression was significant ($F \{5, 25\} = 3.178, p < .05$). “Motivation/effort” ($p < .01$), “perceived impact of LD/ADHD on how

students feel about themselves” ($p < .05$), and “perceived impact of LD/ADHD on how students learn” ($p < .05$) were found to have significant impact on overall GPA. Thus, students who reported that their learning disability had a great amount of impact on how they felt about themselves and how they learned had higher GPAs. The results indicated that these variables accounted for 38.9% of the variance in GPA.

The perceived impact on how they feel about themselves ($\beta = .669$) was found to be the most important variable, followed by motivational/effort ($\beta = .602$) and then perceived impact on how they learn ($\beta = .589$). The variables of academic self-efficacy and level of self-awareness were not found to have a significant impact on overall GPA. Again the β of each of these two variables were examined to determine the possibility of a power problem. Neither academic self-efficacy ($\beta = .09$) nor level of self-awareness ($\beta = .078$) resulted in an effect size that would indicate a power problem.

Chapter 5

Discussion

Summary of Results

As a whole, students with disabilities tend to have much poorer outcomes than their nondisabled peers, including lower rates of employment, lower earnings, postsecondary attendance and independence, and postsecondary attendance, and lower earnings (as cited in Murray, Goldstein, Nourse, & Edgar, 2000). Consequently, it is often asserted that postsecondary education could provide opportunities for students with disabilities to alter the trend of poor outcomes. The number of students with disabilities attending postsecondary institutions has been on the rise (Henderson, 2001). This increase of students with disabilities attending college has produced research aimed at exploring factors that play a role in success of those obtaining a college degree by these types of students. This study examined the impact of some of these variables, including academic self-efficacy, self-awareness, and effort on overall GPA for college students with learning disabilities (LD) and/or attention deficit/hyperactivity disorder (ADHD).

A major question this study attempted to answer was, to what degree does academic self-efficacy, effort, and self-awareness influence academic performance (GPA). Analysis of the data revealed that none of these variables were significant predictors of GPA. However, the Betas (β) of each of these variables were examined to determine the possibility of a power problem resulting from the small N. Upon examination, each of the variables was found to have a moderate effect size. Consequently, it is possible that a larger N may have yielded significant results. If this were to be the case, the variable of motivation/effort would have been the strongest predictor of GPA. In other words, the greater amount of motivation/effort a student puts

forth in his/her academics, the higher the GPA. Such results make sense, especially considering that most students with LD and/or ADHD, typically have to work harder than their nondisabled peers. These results would also support the notion that the more a student experiences success as a result of motivation and effort, the more likely he/she is to put forth effort on the next task (Meltzer et al).

The original model was not found to be significant, consequently two additional variables, student's perceived impact of the LD/ADHD on their learning and self-esteem, were added to the model based on previous research. Results indicated the importance of perceived impact and self esteem. Specifically, students who viewed their LD/ADHD as having a significant negative impact on how they felt about themselves exhibited higher academic achievement as measured by GPA. It was also found that the greater the negative impact a student attributed to his/her LD/ADHD the higher the GPA. This may support the notion that the greater understanding of the negative impact their LD/ADHD has on their learning as well as their self-esteem, the better they can compensate for such awareness. Students, who either lack this awareness or perhaps deny that their LD/ADHD exists, may not be open to exploring and utilizing compensatory strategies.

The motivation/effort construct was also found to be linked to academic achievement. That is, the more effort that students reported, the higher the GPA, and, therefore, the higher their overall achievement. Many of the studies conducted that explored the variable of effort have illustrated the relationship between effort level and academic achievement, as well as self-perceptions (Meltzer et.al, 2001; Meltzer et al., 2004; & Lackaye & Margalit, 2006). The results of this study support previous findings, but at the postsecondary level.

Typically students with learning disabilities have to work harder than their nondisabled peers to achieve in school. The results of the study indicate the significant impact students' perceptions LD/ADHD has on their overall achievement. Studies have indicated a link between self-perception, self-esteem, and academic self-concept and academic achievement (Heyman, 1990; Hatman-Hall & Haaga, 2002). In this study, however, it was not found that academic self-efficacy had a significant impact on overall GPA. Possibly the instrument utilized within the study may not have provided an accurate measure of perceived impact. The measure of perceived academic self-efficacy in this study was specific to the semester during which the students were enrolled. If the instrument measured their overall academic self-efficacy in relation to their overall academic achievement in college, the results may have differed.

The construct of self-awareness has not been heavily researched. Consequently, there are no existing measures that explore a students' understanding of their LD and/or ADHD. The scale utilized in this study measured students' self-awareness as high or low based upon their ability to answer the item, "Please describe how having LD and/or ADHD has had an impact on your learning." The students' level of self-awareness was measured as high or low. It may be more beneficial and informative to explore such a construct utilizing qualitative research methods as opposed to quantitative.

Limitations

Several limitations should be considered when reviewing the results of this study. First, the sample characteristics should be considered as a limitation. Participants were obtained from state and private colleges in Upstate New York State and in New Jersey, and the students that participated in the study represent a population of students who were

already accepted into a 4-year college. Thus, these students already had attained a higher level of achievement in order to be accepted into college. The number of participants from each college varied as well. One of the colleges had only one participant while another had fifteen. Consequently, these limitations undeniably impact the generalizability of the results to all college students with LD/ADHD who are attending a postsecondary institution. It also raises a number of issues about the characteristics of the population (e.g. socioeconomic status, prior school histories, ethnicity, academic and cognitive abilities).

A second limitation is the relatively small sample size. This certainly raises issues concerning the power of the statistical analysis which, in turn, influences the confidence in the findings. It will be important for future research to employ a considerably larger sample size to examine the numbers of variables included in the present study especially since this research resulted in variables with moderate effect size. Such results indicate that if the sample size were larger, the results may have been found to be significant.

Third, the data collection for this study relied upon three self-report instruments on self-awareness, academics self-efficacy, and motivation/effort. There is no way to check for accuracy of participant perceptions. As a result, it is possible that participants overestimated or underestimated their level of self-awareness, as well as academic self-efficacy, and perceived level of motivation/effort. In addition, the need to respond in a socially desirable manner can negatively impact the participants' ability to complete the surveys honestly.

Additionally, the instrument utilized to measure the construct of self-awareness was developed specifically for this study, and did not integrate adequate psychometric properties. The construct is a fairly new one and not much research has been conducted on it. There is only one scale reported in research that measures self-perception of a learning disability, the Self-Perception of a Learning Disability (SPLD) (Heyman, 1990) and this measure does not incorporate information about self-awareness. Additional research is needed to develop a statistically sound measure of such a construct. It is also possible that the self-awareness measure used in this study did not accurately measure the construct, and this may have contributed to the failure in finding statistically significant results. Qualitative research may have been more informative. Given the results of this study, future research may want to utilize a psychometrically sound measure like the SPLD in order to add to the limited research that exists on using this measure is utilized with college students with disabilities.

Finally, the data that was utilized within the study was cross-sectional data. Consequently, one cannot draw global causal conclusions from the data. In other words, it cannot be said that awareness of limitation affects GPA. It may be that receiving poor grades enhances awareness of limitations.

Implications for Practice

Results from this study illustrate the negative influence of students' perceived impact of their disability on learning and self-concept on academic success. Consequently, it may be beneficial for schools to begin developing interventions or programs that teach students about their specific area of disability and, more importantly, to empower them to effectively cope with it. Perhaps if students gain a greater

understanding of their LD and/or ADHD, they might perceive it as having less negative impact on their lives. Furthermore, such programs may help them gain better understanding of how to best learn in spite of their disability. Typically students with disabilities have a harder time with learning and meeting academic expectations. Most learning disabilities make learning more difficult and students have to work harder than their nondisabled peers in order to achieve. Such efforts should not go unnoticed and students could become empowered to persevere despite such difficulties.

Those working in schools that enroll students with LD and/or ADHD should become aware of how a student's own understanding of such disabilities impacts them as a whole, as well as how they learn. Professionals working in schools, specifically school psychologists, who often play an integral role in assessing and classifying students with educational disabilities, could play an important role in changing the misperceptions students may develop. School psychologists are in a position to improve children's understanding about their area of disability. Such understanding, or lack thereof, can have a positive or negative impact on their academic achievement. Academic achievement, in turn, often impacts post-high school opportunities, such as attending a postsecondary education.

In this study, it was found that motivation/effort had a significant impact on overall academic success. Research has indicated that students who experience academic success as a result of their efforts and strategy use, regardless of having an LD or not, are more likely to continue to put forth the effort needed to sustain academic success. If this is the case, it may be beneficial for schools to explore effective, evidence-based study skills programs. If students are studying or performing academic tasks that are not

aligned with their specific learning style, such efforts may lead to unsuccessful results despite giving what they perceive as their best effort. Such feelings of unsuccessfulness may impact how much effort they are willing to put forth in future endeavors. Schools could play an important role in providing students with the skills necessary to link their efforts to success. If they are able to provide education in a way that is linked to students' specific strengths and weaknesses, they could empower students to then tackle academic tasks with more expectation of success.

Implications for Future Research

Research being conducted with students with LD and/or ADHD at the college level is still fairly new. Postsecondary education opportunities are often thought of as an important bridge to long-term success for all students, even more so for students with disabilities. However, attending postsecondary education is only really significant if students complete their education and obtain degrees. Consequently, research in this area is important in order to guide school programs to better prepare students for such “next steps.”

Students' perception of the impact their LD and/or ADHD was found to have a significant negative impact on their achievement. As previous research suggests, there continues to be a need to address how a students understand their LD/ADHD and its impact on their lives, as well how they are taught to cope with their disabilities (Heyman, 1990, Rothman & Coden, 1995; Cosden et al, 1999; Hartman-Hall & Haaga, 2002). Future research is needed to gain a better understanding of how to educate students about their area of disability and who is best equipped to do so. Are there typical procedures for school personnel when they classify a student as having a disability? Do outside

therapists follow a procedure when they diagnose a student with a disability? Are parents taught about the area of disability their child has and then in turn they teach their child? Questions remain as to how students are informed about their disability as well what information is provided.

Research may be needed to better understand how students study and/or tackle academic tasks. Research is needed to explore and then develop programming to teach students how to work with, instead of against, their specific areas of learning strengths and weaknesses. Previous research indicated that as students experienced success with the effort they put forth, they were more likely to put forth effort in the future (Meltzer et al, 2001). In the area of social skills, there is much research that has resulted in evidence-based practices in teaching such skills. Perhaps such programs are needed in order to better link student disability with academic strategies. Additional research is needed to better understand whether or not students' efforts are aligned with their learning needs.

There is a continued need to further explore the construct of self-awareness. Researchers need to fine common ground on what to call this construct and how to measure it. In doing this, research can further explore how such a variable impacts students in their learning, as well as their life in general.

Summary

Research has indicated that students with disabilities fair much better when they have the opportunity to access postsecondary education. Researchers have begun to examine what variables can be linked to the successful completion of postsecondary education for students with disabilities. A major question this study attempted to answer was, to what degree does academic self-efficacy, effort, and self-awareness influence

academic performance (GPA). The results were not found to be significant, however results did indicate that with a larger sample size, the results might have been different. Therefore, there continues to be a need for research in this area with a much larger sample size. Two additional variables, student's perceived impact of the LD/ADHD on their learning and self-esteem, were added to the original model based on previous research. Results indicate the importance of perceived impact and self-esteem as well as the important role motivation/effort plays in academic achievement. Given the limitations of this study, it may not provide definitive answers to the research questions however, it does provide a direction for future research.

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Appendix A

Information Sheet

1. Gender? (circle one) Male Female

2. What school do you attend? _____

3. What year are you in college? _____

4. What is your major? _____

5. How old are you? _____

6. Did you have an Individualized Education Plan in high school? Yes No

7. What is your ethnicity? (circle one)
 - a. White/Caucasian
 - b. African American
 - c. Hispanic/Latino
 - d. Asian
 - e. American Indian
 - f. Other: _____

8. What was your high school Grade Point Average (GPA)? _____

9. What did you score on the SATs(please circle below)?

- Below 800
- 800-900
- 900-1000
- 1000-1100
- 1100-1200
- 1200-1300
- 1300-1400
- Above 1400

10. What did you score on the ACTs (please circle below)?

- Below 16
- 16-20
- 20-24
- 24-28
- 28-32
- 32-36

11. What is your family income? (Please circle)

- a. Below \$20,000
- b. \$20,00-40,000
- c. \$40,000-60,000
- d. \$60,000-\$80,000
- e. Above \$ 80,000

Appendix B

Self-Awareness Survey

Please answer the following questions to the best of your ability.

1. Do you have a Learning Disability? Yes No
 - a. In what areas do you have a disability (circle all that apply)
 - i. Reading
 1. Reading fluency
 2. Reading comprehension
 3. Decoding
 4. Unsure what area of reading
 - ii. Written expression
 - iii. Math
 1. Calculation
 2. Math reasoning
 3. Unsure what area of math
 - iv. Listening comprehension
 - v. Oral language
 - vi. Unsure what area I have a disability in.
 - b. Could you please describe how your disability impacted your learning in the past?

c. Could you please describe how your disability currently impacts your learning?

2. Have you been diagnosed with Attention Deficit Hyperactivity Disorder? Yes No

a. If so, have you been diagnosed with ADHD (please circle below)

- i. Combined type
- ii. Inattentive
- iii. Hyperactive
- iv. Unsure what type

4. Could you please describe how having ADHD has had an impact on your learning in the past?

5. Could you please describe the impact it currently has on your learning?

6. Do you access accommodations at college? Yes No
 - a. If you do, please list the accommodations you utilize

7. What strategies do you use that help you with your learning?

8. What do you believe are your learning strengths?

9. What do you believe are your learning weaknesses?

10. Please circle one of the following responses based upon what you believe best applies to you:
 - a. I believe my learning disability and/or ADHD has a significant impact on how I feel about myself.
 - b. I believe my learning disability and/or ADHD has a significant impact on how I learn.
 - c. I believe my learning disability and/or ADHD has a significant impact on how I feel about myself and how I learn.

Appendix C

Self-Efficacy subscale of the MSLQ

Please rate the following items on your behavior in college. Your rating should be on a 7-point scale where **1= not at all true of me to 7= very true of me.**

1. I believe I will receive excellent grades this semester. _____
2. I'm certain I can understand the most difficult material presented in my readings for the courses I'm taking. _____
3. I'm confident I can learn the basic concepts taught in the courses I am taking. ____
4. I'm confident I can understand the most complex material presented by my professors in my courses. _____
5. I'm confident I can do an excellent job on the assignments and tests in the courses I am taking. _____
6. I expect to do well this semester. _____
7. I'm certain I can master the skills being taught in my courses. _____
8. Considering the difficulty of my courses, the teachers, and my skills, I think I will do well in my courses. _____

Appendix D

Research Consent

You are invited to participate in a study that aims to explore academic achievement at the college level. We are interested in better understanding what factors help students with learning difficulties achieve at the college level. Stacey Exner, as part of her doctoral dissertation, is conducting the research. The faculty sponsor of this work is Dr. Jay Cerio.

If you should agree to participate in this study, you will be asked to complete a packet of questionnaires that will take approximately 20 minutes to complete. The first part of the packet asks you for some personal background information, such as your age. The rest of the packet consists of three questionnaires that will ask you information regarding your beliefs in respects to academics and your learning.

There are no known risks associated with your participation in this research beyond those of everyday life. Although you will receive no direct benefits for participation in this study, it may make you more aware of how knowledge is discovered in psychology and help the investigator better understand what factors help students achieve at the college level.

Taking part in this study is voluntary. You can choose to take part in this study or not. If you volunteer to participate, you may withdraw at any point without penalty or loss. If you decide to participate, your responses in this study are confidential and we have instituted measures to insure the confidentiality of your responses. Your questionnaire will only be identified by a subject number and your name will not go on it.

If you have any questions regarding this research, feel free to contact Stacey Exner staceyexner@yahoo.com.

You may also contact **Dr. Jay Cerio**, advisor.

Address: Lea Powell Institute *Email:* fcerio@alfred.edu.
Alfred University
6 Sayles Street
Alfred, NY 14802

You may also contact the Co-Chairpersons of the Human Subjects Committee at Alfred University.

Dr. Jana Atlas *Email:* atlasj@alfred.edu
Address: Science Center *Phone:* 607-871-2212
1 Saxon Drive
Alfred, NY 14802

Jessamyn Tracy

Email: tracy@alfred.edu
Phone: 607-871-2215

The researcher will provide the participants with contact information should they want to obtain the results of the research.

Appendix E

Signed Consent Form

I understand the procedures described on the previously attached form. My questions have been answered to my satisfaction, and I agree to participate in this study. I will be provided a copy of this form upon my request.

Print Name: _____

Signature: _____

Date: _____

Thank you for your time and assistance with this research.

Appendix F

ME Questionnaire
(**Motivation/Effort Questionnaire**)

1. In general, I am a hard worker.

Never Hardly Ever Sometimes Usually Always

2. Doing well in school is important to me.

Never Hardly Ever Sometimes Usually Always

3. I spend as much time as I need to get material.

Never Hardly Ever Sometimes Usually Always

4. I go over material again and again.

Never Hardly Ever Sometimes Usually Always

5. I do school work before other things that are more fun.

Never Hardly Ever Sometimes Usually Always

6. I keep working, even when the work is difficult.

Never Hardly Ever Sometimes Usually Always

7. I finish my work even when it is boring.

Never Hardly Ever Sometimes Usually Always

8. I put in a lot of effort when I have the support and encouragement of my parents.

Never Hardly Ever Sometimes Usually Always

9. I work harder when I like my professor.

Never Hardly Ever Sometimes Usually Always

10. I work hard

a. In reading

Never *Hardly Ever* *Sometimes* *Usually* *Always*

b. In Writing

Never *Hardly Ever* *Sometimes* *Usually* *Always*

c. In Spelling

Never *Hardly Ever* *Sometimes* *Usually* *Always*

d. In Math

Never *Hardly Ever* *Sometimes* *Usually* *Always*

e. In History

Never *Hardly Ever* *Sometimes* *Usually* *Always*

f. In Science

Never *Hardly Ever* *Sometimes* *Usually* *Always*

g. on homework

Never *Hardly Ever* *Sometimes* *Usually* *Always*

h. studying for tests

Never *Hardly Ever* *Sometimes* *Usually* *Always*

i. on long-term projects

Never *Hardly Ever* *Sometimes* *Usually* *Always*

j. at other activities (sports, music, art, hobbies)

Never *Hardly Ever* *Sometimes* *Usually* *Always*

11. Please judge how well you do in these areas.

- 1= Poor**
- 2=Below Average**
- 3=Average**
- 4=Above Average**
- 5=Strong**

a. Reading	1	2	3	4	5
b. Writing	1	2	3	4	5
c. Spelling	1	2	3	4	5
d. Math	1	2	3	4	5
e. History	1	2	3	4	5
f. Science	1	2	3	4	5
g. Homework	1	2	3	4	5
h. Tests	1	2	3	4	5
i. Long-term Projects	1	2	3	4	5
j. Organization	1	2	3	4	5
k. Checking my work	1	2	3	4	5
l. Making a plan before starting work	1	2	3	4	5
m. Using strategies in my schoolwork	1	2	3	4	5
n. Overall academic performance	1	2	3	4	5
12. As a student, I think I am...	1	2	3	4	5

Appendix G

Feedback Sheet

Thank you again for participating in this study. The study is trying to answer several research questions, all of which are related to understanding the success of students with learning disabilities and/or ADHD at the postsecondary level.

Research is always a process of investigation. This study will not provide any definite, clear answers to our above questions, but should offer some beginning clues. We very much appreciate your willingness to participate in the study.

We cannot provide you with individual results (since we have not identified names on the packets and are only analyzing group results), but if you are interested in some of the general findings of this study, please feel free to contact me at the address below and I will report back to you:

Stacey Exner
875 Ridge Road
Webster, NY 14580
Email: staceyexner@yahoo.com