

ABSTRACT

Do Students with Learning Disabilities benefit from accommodations? A Literature Review

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In the United States, there is a growing gap between learning disabled college students and their non-learning disabled peers in academic achievement and graduation rates. Since the incorporation of learning-disabled students in public education on a large scale following the Rehabilitation Act of 1973, many interventions have been tried to help learning disabled students achieve higher success in postsecondary education. Not all have been successful, and those that do work produce small, inconsistent effects. In this review, the history of legislation that gave rise to accommodations for students with learning disabilities is reviewed and several accommodations and interventions are examined. In addition, the practices and trends in the number of students choosing to take tests at the alternate testing facility at Baylor University are analyzed. Finally, recommendations are made regarding possible solutions and what important questions to pursue in the future.

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DO STUDENTS WITH LEARNING DISABILITIES BENEFIT FROM
ACCOMMODATIONS? A LITERATURE REVIEW

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CHAPTER ONE

Introduction

In 1973, the Rehabilitation Act was passed into law, granting wider access to public education to students with all sorts of disabilities, mental or physical, including learning disabilities. With this, the floodgates were opened and more people with learning disabilities entered into the academic world. Why should you care? For many reasons, but chief among them is the fact that the numbers have grown significantly in these past few decades. The high proportion of college students with learning disabilities now means that if you have friends in college or are involved in a campus yourself, chances are you know one of these students. In addition, I myself have been diagnosed with a learning disability, slower processing speed. I can attest to the fact that this impacted my success in college. I experienced struggles with my protective parents to maintain control over what classes I took when and what activities I was involved in. I occasionally felt a lack of self-worth and of self-efficacy. During my first semester I even experienced a depressive state. Writing assignments that took my classmates 30 minutes or an hour to complete would take me considerably longer.

Currently, a growing number of students are coming into colleges and universities around the country and they are likely to go through similar struggles that will affect their ability to succeed. In addition, disparities between those who are learning-disabled and those who are not have surfaced. They paint a dreary picture and beg the question, “What can be done to help these students succeed?”

Many universities now provide offices of disabilities services to provide accommodations to learning disabled students that petition for them. The most common accommodation provided students is extra time on tests, but peer-tutoring and peer note-takers are also offered commonly (Vogel, Fresko, & Wertheim, 2007). These accommodations, other interventions tried by universities and their efficacy have not been evaluated empirically. Technology may have a role to play in addressing this problem, as will counseling and the ability to give special attention to these students before they even apply to university.

Questions I am attempting to answer:

1. Why do we have accommodations for learning disabilities and how are they regulated or mandated?
2. What kinds of problems characterize a learning disabled student and how does one define this population of students?
3. What are the accommodations currently provided students with learning disabilities and how effective are these accommodations?
4. What are the main accommodations that Baylor University's Office of Access and Learning Accommodation provide?
 - a. What kinds of efficacy testing are done to improve interventions?
 - b. What trends in the population of students with learning disabilities are exhibited within Baylor?
5. How do we close the gap in graduation rates between the students with learning disabilities and their non-learning disabled peers?

CHAPTER TWO

What Defines a Learning Disabled Student

Most definitions of learning disabilities in higher education settings come from laws that have established rights for the general population of Americans with disabilities (Chapter Three is dedicated to describing the impact of these laws on the treatment persons with disabilities). Over the years students with learning disabilities quickly became the single largest category of disabled students protected under these laws.

Ofiesh suggests the National Advisory Committee on the Handicapped's definition of specific learning disabilities, a definition used later in the Individuals with Disabilities Education Act law amendment of 2004:

The term "specific learning disability" refers to a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include a learning problem which is primarily the result of visual, hearing, or motor handicaps, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage. (IDEA 2004, as cited in Ofiesh, 2006, p. 884)

This definition was modified by the two qualifiers that were the center of Ofiesh's previously mentioned argument against the IQ--achievement discrepancy model and the new response-to-intervention method proposed: 1) the student does not achieve at the proper age and ability levels in one or more specific areas when provided with appropriate learning experiences, and 2) the student has a severe discrepancy between achievement and intellectual ability in one or more of these seven areas: oral expression,

listening comprehension, written expression, basic reading skills, reading comprehension, mathematics calculation, and mathematics reasoning (Ofiesh, 2006).

Vickers points out that some definitions, such as that in the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders can be quite vaguely defined and lead to confusion on the part of the public. Section 315.9 of the handbook, entitled, "Learning Disorder Not Otherwise Specified" lists this definition:

This category is for disorders in learning that do not meet criteria for any specific Learning Disorder. This category might include problems in all three areas (reading, mathematics, written expression) that together significantly interfere with academic achievement even though performance on tests measuring each individual skill is not substantially below that expected given the person's chronological age, measured intelligence, and age-appropriate education (American Psychiatric Association, 2013).

This is an example of the broadened definitions that have been created over the years to account for the diverse and complicated impairments that are observed in children and adults with learning disabilities.

Rapp and Gittinger also clarified what constitutes a learning disability. In 1993, they gave a presentation at the Annual Conference of the League for Innovation in the Community College in Nashville, Tennessee. They cited the National Joint Committee on Learning Disabilities (1988) in defining learning disabilities:

a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities (Rapp & Gittinger, 1993, p. 4).

This definition applies the qualifier that the disability is intrinsic to an individual and stays with them for life. In other words, the emphasis is that the disability can vary from person to person, but is something they are born with, stays with them and affects a major cognitive function. The assertion that a learning disability stays with a person throughout

their entire life is reflected in definitions brought forward by the American Psychiatric Association (2000) and in Javorsky and Gussin (1994, as cited by Wierzbicki & Tyson, 2007).

Rapp and Gittinger point out that other behaviors and characteristics may be noted, but do not in themselves represent learning disabilities. These include an inability to engage in self-regulatory behaviors, difficulties in perceiving certain social cues, or difficulty interacting normally on a social level. They also note that learning disabilities can appear alongside other disabilities and may be present in students that lack proper education or training/background in English. These however are separate and distinct from a learning disability.

Rapp and Gittinger also emphasize points originally made by Brinckerhoff: learning disabilities are not the result of poor academic background, emotional disturbance, lack of motivation, socio-economic deprivation, lack of visual-hearing acuity, English as a second language, or physical handicap. One must also take into account that mental retardation, although covered by the Americans with Disabilities Act (ADA), is not considered a learning disability. Rapp and Gittinger stress that those with learning disabilities are inconsistent, exhibit a pattern of uneven abilities, and usually of average or above average intelligence (Rapp & Gittinger, 1993).

Reportedly, the number of students with disabilities in postsecondary education are increasing every year and 29% or more of these are from Learning Disabilities alone (U.S. Department of Education, 2000, as cited in Wierzbicki & Tyson, 2007). Wierzbicki (2002) found this similar figure of 29.4% (Wierzbicki 2002, as cited in Wierzbicki & Tyson, 2007). To investigate the prevalence of attention deficit hyperactivity disorder and

learning disabilities in college student populations further, Wierbicki and Tyson (2006) offered free diagnosis to anyone who was experiencing academic difficulty in school or work. Thirty-eight of 92 evaluated individuals were given a diagnosis for either an attention deficit hyperactivity disorder or a learning disability from the university clinic where this study was conducted. This put the figure at 41.3%; another 43.5% did not receive a diagnosis and 15.2% received some other diagnosis. Those that did not receive a diagnosis likely suffered from study skills problems, lower cognitive ability, lower academic preparation, less time devoted to studying, or lack of motivation. The other 15.2% were diagnosed disorders such as depression, posttraumatic stress disorder, or adjustment disorder, bipolar disorder, or obsessive-compulsive disorder.

The more recent figure of 41.3%, up from 29.4%, was presumably more accurate because only one clinic was used in the evaluations; prior investigations involved several different clinics, with the expected variation in diagnosis. Other tests that participants of the study took revealed that learning disability/attention deficit hyperactivity disorder adults had IQs in the upper end of the average range, consistent with Maller and McDermott (1997). They had found that learning-disabled and attention deficit hyperactivity disorder adults scored variably on a WAIS-R test of intelligence but generally were average or above average (as cited by Wierzbicki & Tyson, 2007). Learning disability students took longer to graduate and achieved lower GPAs (Witte, Philips, and Kakela, 1998 as cited by Wierzbicki & Tyson, 2007). Both learning disabled and attention deficit hyperactivity disorder-diagnosed and non-diagnosed students in the study reported academic difficulty in school or work, but the learning disability/attention deficit hyperactivity disorder-diagnosed group had lower academic achievement.

The Wierzbicki and Tyson study highlights the difficulty in diagnosis that provides eligibility for accommodations. Different models of diagnoses have different results (Grovingo, Proctor, Prevatt, 2005, as cited in Wierzbicki & Tyson, 2007). Many diagnostic tests can measure intelligence and aptitude, and can also provide diagnostic assessments of a learning disability or attention deficit hyperactivity disorder. However, the most commonly used test of intelligence, the Weschler Adult Intelligence Scale-Revised, provides no specific profile with which to identify students with disabilities (Maller & McDermott, 1990, as cited by Wierzbicki & Tyson, 2007). Even with the difficulties in transferring accommodations to the university of a student's choice, the numbers of learning disability students enrolling in postsecondary education has still risen incredibly in recent years (Connor, 2012; Eckes and Ochoa, 2005, as cited in Gil, 2007; Hadley, 2007; Humphrey, 2010; Kirby, Silvestri, Allingham, Parrila, & Fave, 2008; Ofiesh, 2002; Sparks & Lovett, 2009; Vogel et al., 2007; Wierzbicki & Tyson, 2007). Once students have been accepted to college, they are less likely to graduate than their nondisabled peers, even after many accommodations and services provided (Hamblet, 2014). Attention deficit hyperactivity disorder and learning disability students are also more anxious than their nondisabled peers (Vance et al., 2002, as cited by Wierzbicki & Tyson, 2007). These are just some characteristics of the population of individuals diagnosed with learning disabilities/attention deficit hyperactivity disorder. As Rapp and Gittinger pointed out, every learning disabled student can look different than his peers.

Both learning-disabled students and students diagnosed with attention deficit hyperactivity disorder are more often depressed than other college student populations

(Mattek & Wierzbicki, 1998, as cited by Wierzbicki & Tyson, 2007). Furthermore, in self-reported tests of depression and anxiety, adults with learning disabilities scored higher than attention deficit hyperactivity disorder adults, suggesting that learning disability adults had a harder time adjusting to high demands of school- or work-related responsibilities than did attention deficit hyperactivity disorder-diagnosed adults (Wierzbicki & Tyson, 2007). These findings also confirmed previous findings that students diagnosed with learning disability tended to display more symptoms of depression than other college students (Mattek and Wierzbicki 1998, as cited Wierzbicki & Tyson, 2007). The surveys for emotional distress however were not given to all learning disability/attention deficit hyperactivity disorder participants, only those that were noted to have emotional concerns by the evaluator. Therefore it is not possible to generalize these results.

The limitations to Wierzbicki and Tyson's results include that most of the participants were students from a private university (83.3%) and may not reflect the population of students in colleges nationwide. Furthermore, the evaluations took place over the course of a five year period, during which new intelligence tests and diagnostic criteria were released and adopted into the study. Collectively, these findings show that there are many reasons one may display academic difficulties in school or work; not all of these problems in individuals can be attributable to learning disabilities or attention deficit hyperactivity disorder. A similar conclusion is reached towards the end of the next chapter in light of the research done by Ofiesh (2006).

CHAPTER THREE

History of Learning Disability Legislation

Laws and Regulations

The modern era of learning disabilities accommodations began with the Rehabilitation Act of 1973 (Aron & Loprest, 2012; Madaus 2000; Sarver, n.d.; Trainin & Swanson, 2005; Vogel, Fresko, & Wertheim, 2007). Warnath and Dunnignton noted that the 1970s brought civil rights to people with disabilities, building on a wave of reformation in the civil rights in the 1960s (as cited in Madaus 2000). Prior to the 1970s, students with disabilities could be rejected from institutions solely because of their disability (Bonney, 1984, as cited in Madaus 2000). Section 504 of the 1973 Rehabilitation Act particularly addresses discrimination of this sort with students with disabilities:

No otherwise qualified handicapped individual in the United States shall, solely by reason of his handicap, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance (as cited by Madaus 2000, p. 10).

This section declared a person eligible to receive these protections if the individual was deemed to have a physical or mental impairment that greatly limited a major life function and that individual has either a documented history of the impairment or is considered to have the impairment (Aron & Loprest, 2012; Brinkerhoff, et al., 1993, as cited in Madaus 2000). This was applied directly to the colleges and universities via Subpart E of Section 504 (U.S. Department of Education, 1980, as cited in Madaus, 2000).

The broad terms of this law, however, left many institutions with questions regarding how to implement the law. In addition, colleges were concerned over the economic burdens this law would require (Jarrow, 1991, as cited in Madaus 2000). Several court cases followed, providing guidance in many of these areas (*Grove City College v. Davis*, 1979, as cited in Madaus 2000). They also provided definitions of what constituted a “reasonable accommodation” (*Campbell A. Dinsmore v. Charles C. Pugh and the Regents of the University of California*, 1989; *Wynne v. Tufts University School of Medicine*, 1992, as cited in Madaus 2000). In addition later laws further clarified the proper action to be taken by institutions or agencies covered by Section 504, such as the Civil Rights Authorization Act of 1988 (which extended protections of Section 504 to entire entities even if only one program within such entity qualified under its protections (P.L. 100-259, as cited in Madaus 2000)). The effect of Section 504 on the landscape of America’s universities was large, but mainly affected students with physical disabilities that required structural changes and accommodations to allow them access to buildings and classrooms.

Public Law 94-142, or the Education for all Handicapped Children Act (EHCA) emphasized access and accommodation to children in primary and secondary education and was established at the same time as the Rehabilitation Act of 1973 (Madaus, 2000). The EHCA ensured that all children would “receive a free appropriate public education in the least restrictive environment” (Madaus, 2000, p. 12). This law allowed generations of young students with disabilities to receive education adequate to prepare them for postsecondary education. The dramatic rise in students with learning disabilities applying to and enrolling in colleges and universities across the nation is no small part due to the

passage of this law. The EHCA was amended by and adapted into what later became known as the Individuals with Disabilities Education Act, or IDEA.

Few laws have produced an impact as large as the DEA in establishing real, proactive regulations to ensure the educational rights of students with disabilities. The main focus of the law was to ensure an education for students with disabilities that was as similar to the education their non-disabled peers were receiving, but it also established federal grants, allowing states to receive help paying for the additional costs associated with special education (Aron & Loprest, 2012). Unlike Section 504, IDEA only covers children aged 3-21 with these specific impairments: mental retardation, hearing impairments, speech or language impairments, serious emotional disturbance, orthopedic impairments, traumatic brain injury, deaf-blindness, learning disabilities, and multiple disabilities.

In 1997, an amendment to the law that provided protection for children seeking general classroom education and curriculum, revised standards and accountability measures to measure children's success in the classroom, and improved the college transition of students with disabilities (Aron & Loprest, 2012). The implementation of the transition from secondary education to postsecondary education has been complicated by the fact that the federal rules and regulations governing documentation of learning disabilities in K-12 education are different from those governing in postsecondary education; this has been a subject of many investigations (Connor, 2012; Gil, 2007; Hamblet, 2014; Lindstrom & Lindstrom, 2011; Vickers, 2010). In 2004, IDEA received additional amendments that furthered the support for teachers, states and their school districts, but also focused on a revision of the way in which school districts identify

students as being learning disabled. Recommendations were issued to emphasize the use of “proven practices and materials” and to “promote better accountability [measures] for results” (Aron & Loprest, 2012, p. 100).

The last major legislation to be passed that addressed students with learning disabilities in college populations was the Americans with Disabilities Act of 1990 (ADA). ADA borrowed heavily from the Health and Human Services Section 504 regulations passed a little less than two decades earlier (Feldblum as cited in Madaus, 2000). Essentially the ADA extended the protections offered by Section 504 to every facet of the university (Madaus, 2000), from student life to athletics (Brinckerhoff et al., 1993 and Kaufman, 1991, as cited in Madaus, 2000). Jarrow and Kaufman have noted the significance of the ADA, calling it “the most comprehensive piece of civil rights legislation since the 1964 Civil Rights Act” (as cited in Madaus, 2000, p. 16). Indeed it functioned in making any practice of discrimination based solely on a person’s disability illegal, thus functioning much like the 1964 Civil Rights Act.

The 2004 amendment to IDEA was, in part, an answer to a crisis caused by increases in sheer numbers of students with disabilities that were entering into the public school systems. Hanushek, Kain, and Rivkin (2001) noted that in the first twenty years of the implementation of the Rehabilitation Act of 1973, the percentage of the student population in schools increased a little more than five percentage points and nearly all this growth was attributed to an increase in students specifically with learning disabilities (as cited in Mock, Morgan, & Young, 2003). Hitchings and Hamblet also had similar findings in their studies (Henderson, as cited in Hitchings et al., 2001, Hamblet, 2014). This highlighted for all involved in education that learning disabilities were a serious

problem (Mock et al., 2003). What followed were new developments in the theory behind the evaluation of learning disabilities.

Response-to-Intervention v. IQ-Achievement Discrepancy

A central issue in the 1980s was how students with disabilities would be evaluated and managed, following concerns that over-identification of learning disabilities or over-referral of students to special education was taking place (Mock et al., 2003). Pre-referral became the provided a solution. This involved applying interventions in or alongside the classroom education prior to referring students to special education services. Traditionally, students were identified as learning disabled based on a measured discrepancy between their IQ and their performance in class or on various cognitive tasks. This system proved unreliable because studies came out showing that both students who had an IQ-performance discrepancy and those that did not achieved similar results in cognitive tasks (Fletcher et al., 1994; Foorman, Francis, & Fletcher, 1995; Francis, Shaywitz, Stuebing, Shaywitz, and Fletcher, 1996; Stanovich and Siegel, 1994, as cited in Fuchs et al., 2003). In addition, deficits in the skills thought to be at the root of the students' issues, "phonological-processing deficits," were able to be corrected (Fletcher, 1995; Morris et al., 1998; Siegel, 1989, 1999; Stanovich, 1999; Torgesen, Morgan, and Davis, 1992; Vellutino et al., 1996, as cited in Fuchs et al., 2003). The problem with IQ and other cognitive-testing was the lack of standardization (Fuchs et al., 2003). The individual states could decide which tests to use and little attention was paid to the fact that law required that students be measured and assessed for learning disabilities only if they had received generally effective education. The IQ-discrepancy model, the primary model for diagnosis at the time, assumed that students had received their due education

and had been properly exposed to the various lessons needed for normal cognitive development. If students had not received proper education, the discrepancy between their scores on tests of cognitive ability and their IQ would not be reflective of the presence of some learning disability. Therefore, the pursuit of methods referred to as response-to-intervention (RTI) were developed by researchers that basically took the following approach:

1. Students are provided with “generally effective” instruction by their classroom teacher;
2. Their progress is monitored;
3. Those who do not respond get something else, or something more, from their teacher or someone else;
4. Again, their progress is monitored; and
5. Those who still do not respond either qualify for special education or for special education evaluation. (Fuchs et al., 2003)

This meant that the interventions and referrals made for students could be individualized. The shift in general opinion towards the response-to-intervention approach was codified in the early 2000s: a 2001 Office of Special Education Programs meeting of researchers to discuss learning disabilities resulted in a majority rejection of IQ-performance discrepancy as a legitimate selector for learning disabilities, later supported by the National Joint Committee on Learning Disabilities (Bradley, Danielson, & Hallahan, 2002, as cited in Mock et al., 2003). After these recommendations, the focus shifted from identifying students that could be defined specifically as “learning disabled” and instead

focusing on helping the general population of students that were not responding to normal classroom instruction.

Ofiesh brought such a perspective to the idea of response-to-intervention and defended the use of a definition of specific learning disabilities (specific learning disabilities) from the report by the National Advisory Committee on the Handicapped (NACH) to Congress in 1968. Part of the qualification for a specific learning disability supplied in this report was that a student achieved a lower level of academic performance than that reflective of one's age, provided they had "adequate educational opportunities;" presumably meaning education. Therefore Ofiesh advocated for response-to-intervention as a constructive progression in the development of a proper response to the crisis brought on by the increase in students with learning disabilities partly because it opened the floor up for a discussion on "what adequate instruction means for all learners" (Ofiesh, 2006, p. 883). Ofiesh believed that although response-to-intervention has its benefits, but such a model cannot address all the concerns unless they continue to incorporate a reliable test of cognitive or psychological functioning as a part of a "comprehensive psychoeducational evaluation" (Ofiesh, 2006, p. 886).

Ofiesh argued that the definition of learning disability may have lost key parts in the adoption into laws in the 70s. This led to the misguided idea that an IQ-achievement gap alone would suffice to document a learning disability. The important part of the definition originally given by the NACH, was that a person should have a disorder specifically "in one or more of the basic psychological processes involved in understanding or in using a language, spoken or written" (NACH Report to Congress, 1968, as cited in Ofiesh, 2006, p. 884). The report also listed two qualifications to be

considered learning disabled: 1) lack of achievement at the level of success that matches one's age group despite adequate education, and 2) a gap in the level of innate intelligence and achievement scores in specific cognitive areas. Ofiesh argued that the laws created for learning disabilities in the 1970s and afterward accounted for only the latter of the two qualifications given by the NACH and subsequently by the IDEA of 2004 (Ofiesh, 2006). This was evidenced by the growth of the popular IQ-achievement discrepancy paradigm that dominated the schools during the 1970s, 1980s and 1990s (Fuchs et al., 2003). Furthermore, though, she argues that the response-to-intervention model has the same potential for corruptibility of the essence of what it means to have a specific learning disability by overemphasizing the part of the definition that has to do with under-achievement. Both the response-to-intervention and IQ-achievement discrepancy models ignore the main part of the definition of the specific learning disabilities that must be recognized: a deficit in "one or more of the basic psychological processes involved in understanding or in using language" (Ofiesh, 2006, p. 884).

CHAPTER FOUR

Accommodations and Interventions

Vickers (2010) noted discontentment from faculty, professors, and perhaps non-disabled students as well, over the accommodations given to learning-disabled students. Some argued those receiving accommodations did not truly have a learning disability, and thus the nondisabled population of students was placed at a disadvantage. The following year, Lindstrom published an article on mathematics accommodations, proposing a theory called differential boost. Differential boost theory claims that a given accommodation or intervention helps one group of students, usually the subject is the group of learning-disabled students, more than another comparison group (Lindstrom, 2010). One example demonstrating this comes from Trainin and Swanson (2005) who found high strategy use benefited students with learning disabilities more so than it did non-disabled students; learning disabled students that high on the Motivated Strategies for Learning Questionnaire (MSLQ) had higher achievement than non-disabled students. Otherwise, differential boost in accommodations has not been found (Lindstrom, 2010). Accommodations do not appear to give an unfair advantage to those receiving them, but merely give a learning-disabled student the opportunity to exhibit what he or she knows. What happens, though, when a student is unable to gain access to these accommodations? What form of documentation is required?

Documentation requirements vary significantly across the universities and between secondary and postsecondary education. Lindstrom and Lindstrom state that the newest amendments to the IDEA of 2004 present obstacles for students to properly

document their disabilities (Lindstrom & Lindstrom, 2011). They also state that a student's documentation that was sufficient in high school may not be sufficient for postsecondary education. These differing ways of certifying students applying for accommodations, present challenges for students trying attain those accommodations. Lindstrom and Lindstrom (2011) suggest the use of committee review processes for postsecondary institutions along with Vickers (2010). In addition, they and Hamblet agree that greater cooperation between high school disabilities counselors and postsecondary disabilities professionals can facilitate a smooth transition (Hamblet, 2014; Lindstrom & Lindstrom, 2011; Vickers 2010). Hadley (2007) argues that taking advantage of accommodations can be key to success in college for students with learning disabilities.

Subpopulations of learning-disabled students that are able to perform as well as their non-disabled peers (Trainin & Swanson, 2005). Trainin and Swanson investigated characteristics of those students who are successful following accommodations. Trainin and Swanson (2005) hypothesized that metacognitive strategies helped students with learning disabilities compensate for their deficits in phonological learning. They also noted that there were several behaviors that these students engaged in that correlated with stronger academic performance. These included self-regulation in study habits, help-seeking and low expectancy levels. Low expectancy levels meant that students were taking on a view that they were going to do poorly in a given semester. This provided a sort of psychological protection, while also serving as a motivating factor. Learning strategies helped learning disabled students just as much as they did non-disabled students and regardless of disability, low-strategy users had lower achievement. The

same pattern was observed in help-seeking behaviors. Trainin and Swanson concluded by stating that the evidence was inconclusive as to whether or not metacognitive strategies were decisively playing a role in the performance of high-achieving, learning-disabled students. They believed learning disabled students were relying on vocabulary knowledge and working memory to compensate; this is consistent with a model suggested by Perfetti (1988) and Conners and Olson (1990), as cited in Trainin & Swanson (2005).

Trainin and Swanson identified other effective strategies used by successful learning-disabled college students are. What can a university itself institute to help students be successful? Reed et al. (2009) showed that study success courses often offered during the first semesters of college can be beneficial to incoming students with learning disabilities as they transition to college. These courses improve students' basic critical thinking and academic skills, but also instilled many of the same attributes of successful students identified by Trainin and Swanson (2005). These included academic resourcefulness (help-seeking) and self-efficacy as well as introducing a new attribute which was associated with higher grades; internal locus of control. Reed et al. found that when students cared deeply about their grades and placed the blame for failure on themselves or their actions, they were more likely to achieve more. Those opting for course-intervention received the most benefits. Course-intervention here meant that students would attend a study skills course during the semester. Reed et al. recommended course-intervention over two other intervention methods studied. These were low-intervention, where the student seeks out help when they deem necessary, and high-intervention, which was regular one-on-one tutoring to discuss success strategies. (Reed et al., 2009)

One-on-one training in basic phonological skills, cognitive skills, or study strategies have also improved some students' success (Fuchs et al., 2003; Reed et al., 2009; Rogowsky, Papamichalis, Villa, Heim, & Tallal, 2013). Vellutino (as cited by Fuchs et al., 2003) took students who scored in the 15th percentile on the Woodcock Reading Mastery Test-Revised and administered a training regimen of 30-minute sessions, five days a week. Two-thirds of these students showed 'good' or 'very good' improvement in scores on the same Woodcock Reading Mastery Test-Revised by the end of the semester. The types of success seen in these types of intervention are indicative of an extremely worthy consideration as an intervention for students with learning disabilities, but the costs associated with one-on-one tutoring may be prohibitive for large scale adoption in school districts and even for universities. (as cited by Fuchs et al., 2003, p. 167) One alternative is the use of computers to do this same type of work (Rapp & Gittinger, 1993; Rogowsky et al., 2013)

An answer

Although one may expect that when a student reaches college he or she has mastered the basics of grammar, recent studies suggest otherwise (Rogowsky et al., 2013). Nationally, only 27% of high school seniors reached or surpassed the level of proficiency set by the National Assessment of Educational Progress in 2012. Less than half of college-bound seniors in 2012 reached Career Readiness Benchmarks for Critical Reading and Writing. The remediation of these deficits in abilities critical to success in college is often left to the colleges themselves. Developmental writing courses are among the remediation efforts taken by colleges for the population of students requiring these resources (usually students with English as a second language or ESL, and

underrepresented minority students). Rogowsky et al., however, state the need for a better understanding of the neurocognitive processes involved in writing in an effort to create reliable, measurable, and effective interventions to improve writing skills of college students. They find recent neuroplasticity research promising.

Since writing proficiency stems from an initial mastery over language, researchers have investigated the ways in which language develops and forms in order to create the most effective recommendations for remedial measures necessary for the improvement of writing skills in college students (Rogowsky et al., 2013). Rogowsky et al. concluded that phonemic training would be a key to improving reading, because it links reading and language through symbol-sound association. In support of this theory, they cite the results of Eldredge and Baird that showed phonics to be a superior training paradigm for writing compared to whole language or holistic approaches (Eldredge & Baird, 1996, as cited in Rogowsky et al., 2013).

Writing is markedly different from reading and listening to language because one is actively producing and using sentence structures that make use of morphology, syntax, and semantics. One must understand these components of written language in order to progress in addition to having phonemic awareness. Writing involves all the basic cognitive abilities of memory, processing speed, attention, and sequencing. This is because one uses long term memory to conform new ideas of what one wishes to write to before-learned rules of expression. Meanwhile, one uses short-term memory to keep earlier-written words in mind as one writes a sentence, one word after another. Based on the cognitive processes involved in writing the researchers hypothesized that improving the basic perceptual and cognitive skills of college students through the use of language

comprehension exercises would result in strengthened reading and writing skills.

(Rogowsky et al., 2013)

The first training programs designed specifically to improve basic perceptual and cognitive skills were grounded in animal studies that posited evidence of neuroplasticity. Neuroplasticity describes the flexibility of the brain, late after initial formation and development, to exhibit changes in neural connectivity resulting usually in reference to improved mental capacities. The animal studies conducted were successful in effecting a change in the cortices of adult owl monkeys following three important requirements: 1) increasing difficulty and frequency across trials, 2) focused attention on the task, 3) immediate feedback and highly timed of reward/correction. Rogowsky cites Merzenich et al.'s research on the effects of neuroplasticity-designed auditory and visual exercises, disguised as videogames, on the language abilities in children.

FastForWord is a training program based on the results like those of Merzenich et al. (as cited by Rogowsky et al. 2013). These neuroplasticity-designed games effected more significant improvements in language abilities in children who use these games compared to children who used regular video games designed for the same goal but without neuroplasticity research-derived changes. An NIH study that examines the programs integrity/validity compared the FastForWord Language (FFW) products' effectiveness compared to other alternatives and found that it was just as effective as another Computer-Assisted Language Intervention system (CALI), or individualized assistance by a speech-language pathologist (SLP) (as cited by (Rogowsky et al., 2013). The training software used by Rogowsky et al. had a neurodevelopmental-informed approach to improving language abilities. Since the basis of language is comprehension

of phonemes, Fast ForWord-Literacy begins with auditory training in phonemic awareness, progresses to morphological awareness training and develops the student to handle Fast ForWord-Reading exercises that begin again with phonemic awareness and progress sequentially to complex reading comprehension exercises in easy to hard texts. The stress throughout was on consistency of the training time and intensity as well as highly timed rewards and corrections. The effects of the training lasted as long as CALI and longer than the effects of the SLP intervention. The FFW, CALI and SLP interventions were better than general academic enrichment programs and all were done for the same amount of time (1 hr. 40 min., 5 days/week, 6 weeks). The fact that all programs produced large gains for participants involved in each led Rogowsky e. al. to suggest that intensity rather than the type of program may be the greatest determinant for success of a program.

Many other studies have investigated the ability for Fast ForWord-Language products, FFW-Literacy and FFW-Reading, to improve performance in younger populations and recently programs have been established for remediation of middle and high school students, but Rogowsky et al. examined whether the higher level FFW-L and FFW-R programs (levels 3-5) have a positive effect on college students' reading and Standard Edited American English (SEAE) writing skills who previously had poor performance. The results of 11 weeks of daily Fast ForWord training in a group of 25 college students with historically lower scores in literacy (meaning minority students of the university and those required to take a developmental writing course) showed that the training group improved in both writing and reading when compared to a comparison, confirmed by post-test and pre-test of measures. Half of the students trained spoke

English as a second language. Those in the training group scored above average in both reading and writing in posttests, but only scored significantly better than their pretests on the Oral and Written Language Scales Written Expression Scales.

In comparing their studies to others on the Fast ForWord learning series, Rogowsky et al. pointed out that no other studies used the full spectrum of training programs offered in the Fast ForWord-Literacy and Reading series, no other studies had focused on college students, and no other studies had attempted to improve writing skills up to the time of their research. In addition, unlike other computerized programs, Fast ForWord makes use of a trained monitor that can assess problems in training and effect specific solutions customized to struggling students.

CHAPTER FIVE

Baylor's Office of Access and Learning Accommodations

Baylor University has its own disabilities support office entitled, Office of Access and Learning Accommodations (OALA). As a part of this literature review, some information on OALA's practices was acquired via interview questions that were responded to via email by the director of OALA. In addition, some data from their database on testing times for students with learning disabilities was collected and compiled here.

One of this author's first concerns was what kind of accommodations are more than often provided for students with learning disabilities, specifically. The OALA provides Time and a Half testing accommodations along with an alternate testing site in which to take their exams. They also provide taping of lectures, assistance locating a notetaker, a reader for exams, computer in-class exams and essays, and computers for note-taking. The most commonly provided of these are the testing accommodations, consistent with Ofiesh's studies (2000, 2005). The trends show that there is a steady increase in students registering with OALA every year. From Spring 2012 to Fall 2012 the number of exams being taken at the Alternate Testing Site administered by OALA increased more than twofold. Most of these cases are psychological, attention deficit hyperactivity disorder or a medical condition. Accommodations requests are reviewed by a committee of OALA disabilities services specialists and are accepted depending on the strength of the recommendations given by physician evaluations of the students' disabilities. As of yet, no interventions to improve student performance have been

implemented at the OALA. Success of accommodations is evaluated by comparing GPAs of students that request letters that authorize use of accommodations and those that do not request these letters be sent to their course professors. Preliminary data collected by Vasek shows that there is not much of a difference but it is not known if disability type has an effect on the trends. No accurate data to describe graduation rate of OALA students exist. (D. Vasek, personal communication, April 1, 2015).

Testing Data

The data consists of Baylor students who have registered with OALA and have been approved to take time and half or twice the amount of time on their exams as an accommodation. In order to access this accommodation during a given school year, the student must deliver a letter of notice (at Baylor, this is done using the University's online system) to the professor whose course they wish to receive the accommodations in. A student is allowed to send this letter to any number of their professors or all of them, but they have the discretion to do so. This letter is used to validate any accommodations for the given class, but in this case, we are speaking only of students taking extra time on their exams. The data does not identify any students personally, but gives the testing start and end times for every student with learning disabilities that took their exams with testing accommodations in a three year span from September 17, 2010 to December 17, 2013. The raw data is organized by numbers assigned to each of the learning disability students (1, 2, 3, 4 ...899).

The data was analyzed in Excel and manipulated to include a ratios column of data that would express the proportion of time given that students actually utilized. This was done by dividing the recorded actual times used by students by the documented times

given for students to complete the exam (time used/allotted time). These ratios were analyzed using the JMP statistical analysis package.

Preliminary analyses run on the total tests taken over a three year period at OALA by students with learning disabilities given time and a half or double time on exams taken at an alternate testing site are shown in Figure 1. The results show some odd outliers that suggest a student took four times his or her allotted time. Some ratios that were a little over one were expected because students must travel from a check-in station to a test room and back to check out, so a little more time may be used than given. Still, to clean up the data, another distribution was made without any ratios below 0 and above 2.

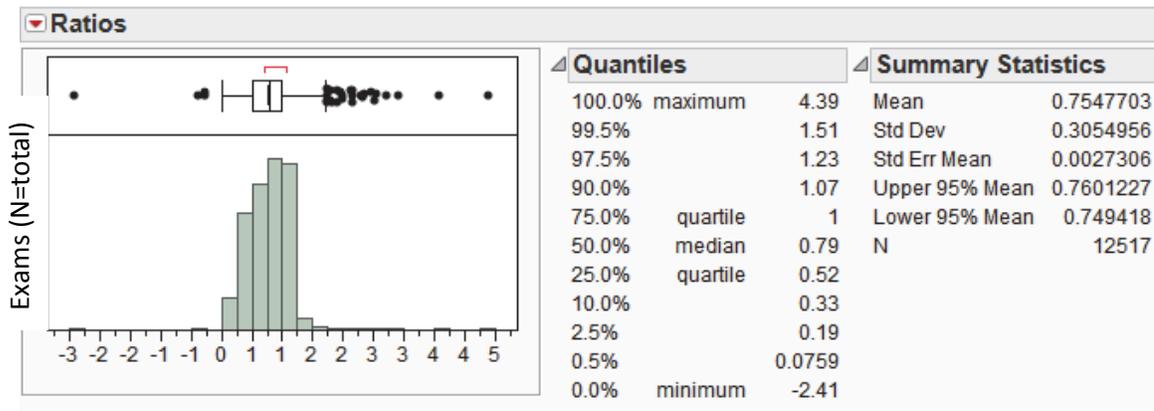


Figure 1: Distribution of ratios for testing times of students given time and a half or double time to take tests at an alternate testing site. The numbers charted are ratios signifying how much of the allotted time students used to complete their exams. A 1 signifies a student used all their allotted time, whether it be double or time and a half. A .67 describes a student who, in the case of time and a half, used the amount of time that would have been allotted to them in a classroom ($2/3$ s of $3/2$ s = 1).

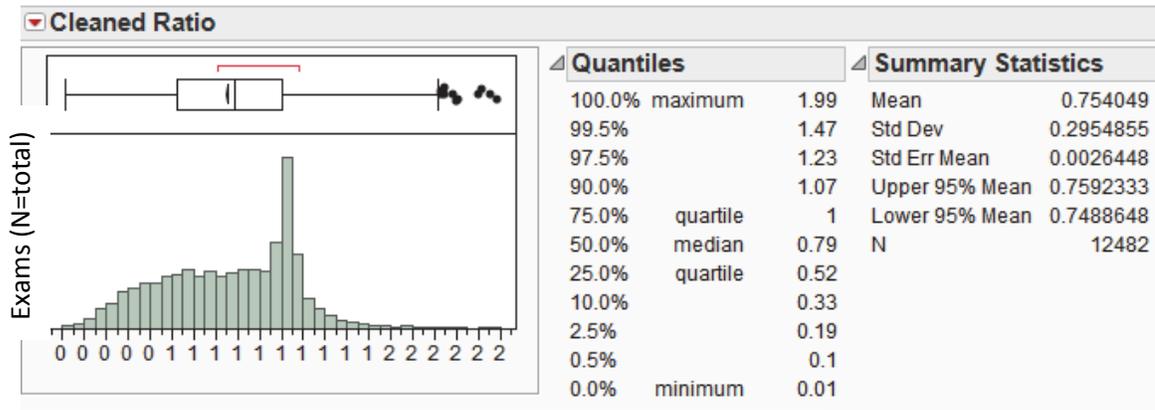


Figure 2: Cleaned Ratios, Distribution analysis for testing times ratios of students given time and a half or double time to take tests at an alternate testing site. The numbers charted are ratios signifying how much of the allotted time students used to complete their exams. This distribution excludes ratios from Figure 1 that were either negative or above 2.

The new distribution chart labeled, Figure 2: Cleaned Ratios, shows a much cleaner pattern than seen in Figure 1 and it was used to analyze the numbers supplied by the quantiles. These numbers showed that 50% of tests taken between September 17, 2010 and December 17, 2013 were taken using 80% or more of the allotted time. Conversely, 25% of tests taken took 50% of the allotted test time or less. This was peculiar because 50% of time and a half is 67% of regular class time. This meant that at least 25% of tests were being taken in the amount of time one could have taken with the rest of their classes.

This author wanted to investigate this further and made a third chart that distributed nominally the tests under three conditions: 1) the group of exams that finished in regular time or less (ratio=.67 or 2/3s of time and a half), 2) the group of exams that finished within the allotted time, but after class time (ratio>.67, but <=1), and 3) the group of exams that were completed after the allotted time. These are shown in figure three.

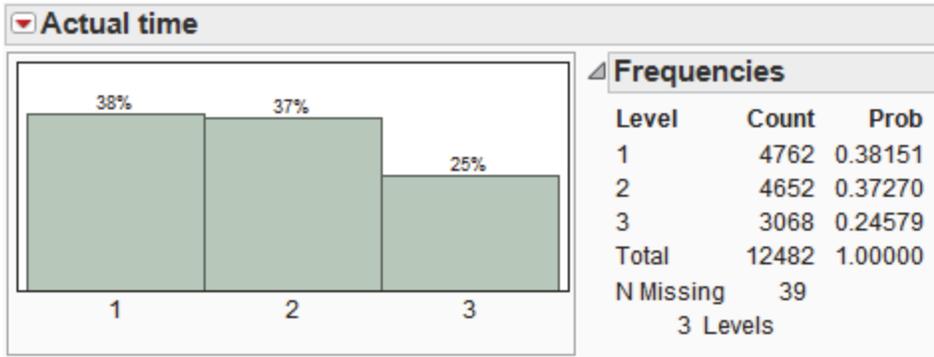


Figure 3: Ratios Categorized, Testing time ratios of students given time and a half or double time to take tests at an alternate testing site. The ratios from Figure 2 were categorized into the following groups: 1) ratios less than or equal to .67, 2) ratios equal to or less than 1.0, but greater than .67, and 3) ratios greater than 1. The numbers categorized are ratios signifying how much of the allotted time students used to complete their exams. This chart excludes ratios from Figure 1 that were either negative or above 2.

Figure 3 demonstrates clearly that almost 40% of exams taken at the OALA during the period of data collection used an amount of time that is similar to that used by normally achieving students. Thus, more than 60% of all the tests students took with accommodations took advantage of the extra time allowed.

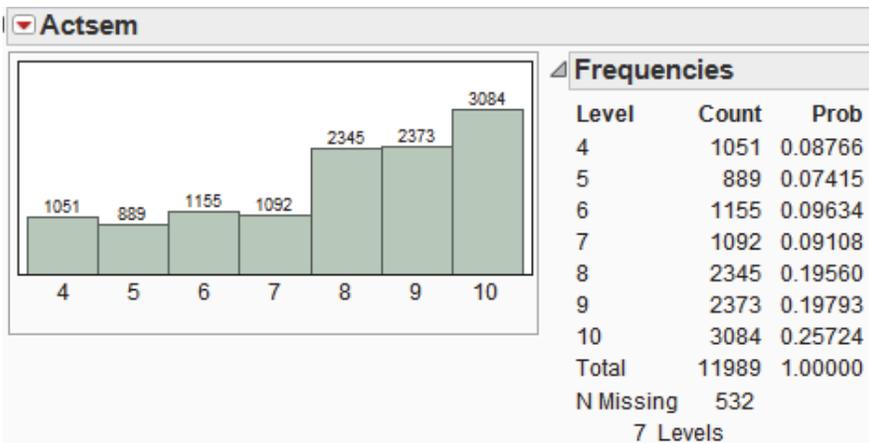


Figure 4: Number of Exams by Semester, This is a fourth JMP analysis of the number of total tests for which data was collected. The tests were organized based on the semester in which it was taken 4) Fall 2010, 5) Spring 2011, 6) Fall 2011, 7) Spring 2012, 8) Fall 2012, 9) Spring 2013, and 10) Fall 2013.

In Figure 4: Number of Exams by Semester, the number of tests were organized into semesters and a pattern can be seen that shows a general increase in the number of exams taken with testing accommodations by students with learning disabilities from Fall

2010 to Fall 2013. In addition, there was a doubling of exams taken with accommodations from Spring 2012 to Fall 2012. Currently, there is no explanation for this sudden increase in tests taken.

CHAPTER SIX

Recommendations

Interventions

- Institutionalize a standard for accommodations documentation requirements for Universities (Lindstrom & Lindstrom, 2011).
 - Take into account for presence of learning disabilities and more general, low performance in the classroom.
- Study should be done assessing the trends between percentage of total accommodated time used by students with learning disabilities and outcomes on these tests.
- Computerized interventions have been shown to work on equal footing as one-on-one tutoring in bringing students back up to speed on basic academic skills like writing in low-performing students with either English as a primary or secondary language (Rogowsky et al., 2013). In addition, Vellutino's one-on-one exercises that brought two-thirds of low-achieving readers up to above average performance in their classes was also promising (as cited by Fuchs et al.). Perhaps this training too, can be adapted to computerized training. This training, performed as it was in Rogowsky et al. has a 1:25 teacher to student ratio as opposed to a 1:1 ratio, but has similar effects (Rogowsky et al., 2013). This author recommends further research into feasibility and effectiveness of a computer training program as a university-wide accommodation for entering students with learning disabilities.

Baylor

The data I have collected from Baylor University's OALA seems to give some merit to the fact that there may be students that do not need to take the exam with the usual testing accommodations. Baylor University does not currently record data on what the grades of the exams taken at their alternate testing site are, but this author recommends that this type of data be collected in order to assess the effectiveness and need of the testing accommodations used by college students with learning disabilities. In some cases, with proper counseling, students may choose to opt out of OALA services on their own and based on recommendations and data collected from the students' scores on exams and the length of time they are taking to finish their exams. There is evidence to suggest that students "may not be in the best position to decide on intervention level" (Reed et al., 2009, p. 396). In Reed et al.'s study, students chose their intervention levels and the higher scoring individuals with better resourcefulness skills and self-efficacy scores coming in from high school tended to choose low-intervention accommodations and scored poorer in post-test than the other, higher intervention accommodation choices. This implies that overconfidence in first-year students could contribute to the nonuse of accommodations and the decreased achievement in students with learning disabilities. Careful counseling from the OALA or a partnership with the Paul L. Foster Success Center tutors could help to increase accountability measures that would be helpful to students in being honest with themselves about how much of their accommodations they should use. This is a two-pronged battle; there are students that are ashamed of their accommodations that need to be encouraged to own up to their disability and take advantage of something that could really help them (Connor, 2010), and then there are

students who may feel over-attached to accommodations that are not really helping them and could perform just as well in the classroom as in an alternate test site with extended time.

Diagnosis

Much of the concern that went along with the question of pre-referral and identification of students as being learning disabled was that there was a question of, should we just be trying to help students who have learning disabilities or should we generally try to help all who are undergoing difficulty in the classroom? Where do we draw the line? Ofiesh and to a lesser extent, Fuchs et al., draw attention to this fact (Mock et al., 2003) Ofiesh answers this concern with a blanket yes and this author agrees with her. Models for how to identify students with learning disabilities need real tests that measure deficits in basic psychological processes involved in the use of language to be used in tandem with holistic approaches like response-to-intervention.

Some points that Wierzbicki and Tyson say may be helpful in the proper diagnosis of learning disabilities and attention deficit hyperactivity disorder in individuals applying for accommodations are 1) Investigating, in general, learning disabilities and attention deficit hyperactivity disorder in college students 2) Realizing that there are more factors that cause academic difficulty in students with otherwise high IQ than just learning disabilities and attention deficit hyperactivity disorder and 3) Being aware of and addressing the emotional distress associated more with learning disabilities, but also present in students with attention deficit hyperactivity disorder. (Wierzbicki & Tyson, 2007)

Some peculiarities existed in the evaluations done by Wierzbicki and Tyson that suggest some important recommendations for the evaluation of learning disability/attention deficit hyperactivity disorder in student populations and help to make the point that diagnosis of a cognitive disability can often be a slippery matter. One participant was adamant that she had attentional problem during lectures attributed to attention deficit hyperactivity disorder, but upon evaluation, it was found that she actually had a language processing learning disability. Another participant had been diagnosed with attention deficit hyperactivity disorder and prescribed Ritalin by his physician for problems concentrating on his academic work prior to this study. Upon reevaluation, he was found not to have attention deficit hyperactivity disorder and it was concluded that the earlier diagnosis was likely inaccurate. These examples are just a few that point out the confusion in the diagnosis of learning disabilities and attention deficit hyperactivity disorder. Each year, more is learned about these disorders and better ways of identifying them in individuals are being adopted. A side effect of this and the 2004 Individuals with Disabilities Education Act that allows universities and school systems to adopt more freedoms in determining how to define a learning disability mean that students who may qualify for accommodations at one school may not at another. McGuire and Madaus (1996) concluded that a university's decisions to extend accommodations often relied on assessments conducted in different ways, using different criteria. This presents a problem and Wierzbicki and Tyson suggest the use of the Association on Higher Education and Disability's (AHEAD) standards of documentation practice to level the playing field. Ofiesh (2006) recommends determining whether a student actually lacks a major psychological function necessary for understanding or using a language (Ofiesh, 2006).

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