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SUPPORTS IN HIGHER EDUCATION FOR STUDENTS WITH DYSLEXIA AND
OTHER SPECIFIC LEARNING DISABILITIES-A HISTORY AND SUMMARIZATION ON
THE EXPERIENCE OF STUDENTS, THE EFFECTIVENESS OF PRESENT
ACCOMMODATIONS, AND AREAS OF FUTURE GROWTH

A MASTER'S THESIS
SUBMITTED TO THE FACULTY
OF BETHEL UNIVERSITY

BY
HANNAH WHITE-MCGINN

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS

August 2018

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OTHER SPECIFIC LEARNING DISABILITIES-A HISTORY AND SUMMARIZATION ON
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August 2018

APPROVED

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Acknowledgements

I want to thank my mother, who has supported, taught, encouraged, and loved me throughout my entire educational journey. She was the one who spent nights at the kitchen table helping me with my homework, telling me I could do anything I set my mind to and filling my heart with a passion for caring for others as she cared for me. Her impact carries on through me every day. There is not a moment that goes by that I do not acknowledge that without her in my life I would not have had the courage and hardworking attitude to make my dream come true and climb the ladder of education all the way to a graduate program. It is her grace, patience, and devotion that makes each step I take possible.

Alongside the support from my mother, I would also like to thank my wonderful father. I have been very blessed to have him as a role model in my life. He has always loved me unconditionally and been one of my biggest supporters and allies. I am very proud to be his daughter and thankful for all the love and support he has given me both through school and life. He has always been there for me and helped me find my passion in art and working with my hands. He is an amazing person that I am very lucky to have in my life.

I would also like to take a moment to thank all of the professors I have had the privilege of working with at Bethel University. The experience I have had with each one of them was greatly appreciated and I hope I can bring the same amount of kindness and faith to my students as they did for me. From their prayers to their positive support, each one of them truly enabled me to succeed and grow in my career and faith.

Finally, I would like to thank my brilliant husband Kyle. He has been my editor, my supporter, and my rock through both undergrad and graduate programs. Kyle has been my biggest cheerleader through many courses, projects and papers. He was always there to remind me of my strengths and to ensure that I never gave up and always believed in myself. He is one of the most beautiful people I know. I am lucky to call him my partner and lifelong friend. With his love, I know true happiness and with his support I know I can continue on my educational journey with strength and a full heart. Without him, I would have not gotten this far in my career and education. The amount of happiness that we share is something that I could never have imagined. I love you and I wake up each day more thankful then the last that we found each other.

Abstract

According to the National Center for Special Education, there has been an increase in the past few decades in the amount of students with dyslexia who have enrolled in higher education programs. This includes two year, four year, and technical programs. With an increase of enrollment, there has also been a push for the inclusion and support of these students. Higher education programs have had to increase their attempts to integrate these students into the general population. Adaptations and modifications are used to help these students access higher education at the same level of their non-disabled peers.

The successfulness of these supports varies in the eyes of the students and the institutions they are enrolled in. The impacts of both the students' disability and the levels of support that are provided by their school have long lasting effects on the students. These effects have been recorded as both empirical and statistical evidence. These impacts are both positive and negative. Due to change in legislation and the increased likelihood of students with disability enrolled in programs past high school, there has been an increase in interest on how Specific Learning Disabilities, specifically Dyslexia, positively and negatively affect the abilities and successfulness of the learners in a higher education setting.

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CHAPTER I: INTRODUCTION

Legislation

To understand what is being done for students with Dyslexia or other Specific Learning Disabilities and why there has been an increased trend of these students enrolling in higher education programs, one must understand how the legal standing of these students has changed in the recent past decades. This includes their right to free appropriate public education and the accommodations that are necessary for these students to access education at a success rate equal to that of their non-disabled peers. Two acts are at the forefront of these changes in society and the protection of the rights of disabled students.

The first is the Rehabilitation Act of 1975. As summarized by Cortiella and Horowitz (2014) this act widened the responsibility of public institutions and lengths they must go to accommodate for students with disabilities. More specifically, section 504 bans the discrimination of these students and states that federal funding can be withheld if public institutions are found discriminating against these students. The next act that needs to be considered is the Individuals with Disabilities Education Act (also known as IDEA). Students who qualify for services under the guidelines of this act also are covered by section 504 of the Rehabilitation act. IDEA protects the right of students with disabilities and their families to timely due process, higher standards of communication between schools and families, the access of students to free appropriate public education also known as FAPE, and reasonable modification and accommodations made in the least restrictive environment for students with disabilities

who qualify up until the age of 21. It is these two acts that have paved the way for the increase of supports and inclusion for students with Dyslexia and other Specific Learning Disabilities in both the higher education and primary and secondary education settings (Bonseitz, 2016).

There are two more pieces of legislation that have paved the way to supporting the advancement of disabled learners as they become actively involved members of society. Cortiella and Horowitz continued to explain both the Americans with Disabilities Act (ADA) and the Elementary and Secondary Education Act (ESEA). The ADA supports the rights of people with disabilities which includes people who were covered under IDEA. This act also protects individuals with disabilities that qualify for protection from discrimination in the work place. This provides protection for people with disabilities beyond the educational setting. The ESEA is also known as the No Child Left Behind Act or (NCLB). The NCLB required students with disabilities and their general education peers to have the progress rigorously monitored. The data that has been provided has provided detailed information on the achievement gaps between students with learning disabilities and their general education counterparts.

It is through this legislation that students with unique needs and varying abilities have started to gain equality in the system of education. The accommodations and modifications that they are granted and that are protected under these acts ensures them the opportunity to access education and be accepted into the classroom. It is clear that the educational system as a whole has a long way to go to make true integration and into a general education setting accessible for all students. The increase in acceptance and availability of interventions and resources has played a large role in the

increase of students with learning disabilities and dyslexia enrolling in higher education programs after they successfully graduate high school.

According to some, however, the accommodations and modifications have gone too far. According to Riddel and Weedon (2006) some feel the changes that have been put in place to support students with disabilities has actually compromised the quality of the education and the educational institution. Other researchers such as Reid (2004), also shine the light on challenges that concern and impact students with Dyslexia that are going into higher education programming. Finally, they mention that even faculty attitudes (Rao, 2004) have been impacted due to all the changes. This includes the lengths that are needed to go through in order for faculty to be trained in understanding and supporting students with disabilities such as Dyslexia in a high education setting.

It is now important to explore the effects these rules and regulations had on higher education institutions. These effects can be seen across institutions, faculty training, and the training of soon-to-be teachers and staff members. Since these programs are under continual division in order to keep up with responsive teaching techniques it is yet to be determined if the changes that have been made lean to an overall positive or negative impact. However, some of their impacts are already evident.

Integration in Higher Education

With the changing population of higher education's students becoming broader and more diverse, universities and other post-secondary education programs are having to make adjustments. These adjustments include the accommodations and supports they offer to the overall student population and, more specifically, what is offered to their

learners who have specific learning disabilities. These changes are not just made to the programs as a whole. They are also applied to the training and knowledge of the staff that are teaching new skills to the students enrolled in their courses.

According to deBettencourt, Hoover, Rude, & Taylor (2016) the push toward integration and the need for alternative training of teaching staff is based on several contributing factors. These factors include; the increased diversity in the student population, the need for additional and organized funding, the need for a change in how course information is delivered, a change in the roles of doctoral graduates, and a shortage of special education doctoral teachers (teachers with doctorates in special education). In addition, with other program specific components, these factors are the leading causes in why there is a change in how higher education teachers are trained.

In their research, deBettencourt et al. (2016) discovered that the need to change roles of the faculty is the largest motivator for the change in training of staff. Previously, it was believed that the function of higher education institutional faculty was to do research, teach courses, and serve the institutions mission. With the change in legislation opening up the world of higher education to a more diverse population, rapid change in ethological advances, and the change in the overall view of educational systems as a whole, faculty members have a changing role.

The new role of faculty members according to deBettencourt et al. (2016) is that they must include an increase of publishing work, an integration of new technological advances into their research, increase of writing and receiving grant funds, and providing online courses to increase the accessibility of knowledge to a wider population. A larger variety of staff duties takes a toll on the institution and the faculty

itself. The additional training or abilities make for the reduction of staff position and a need for staff members to be more versatile and flexible, creating a short supply of both funding and teaching candidates. The increase in grant proposals and research helps close some of the gaps and the increase of technology and the provision of online classes opens courses up to a greater number of students, helping the university include unique learners as well increase income.

The change in training goes beyond that of university staff. The increase of diversity in overall student populations creates a need for a change in how special education degree, graduate, and doctoral programs are run. It is important to note that both the overall population of students is growing more diverse as well as the makeup of the special education population itself. In the article, deBettencourt et al. (2016) state that the special education population is becoming more culturally and linguistically diverse. This has caused education programs to focus on more responsive teaching methods. In addition, these programs are going through continual revisions to keep up with the ongoing changes.

Due to all these changes, it is no wonder that deBettencourt et al. (2016) made an argument for the need of management and an increase of funding. As mentioned in the introductory portion of this work, the change in legislation enable the federal government to withhold funding from institutions that do not comply with the protections the IDEA, ESEA, 504, and the ADA provided. There is a benefit to these changes on both special education students and teachers. The larger and more diverse the special education community becomes the more there is a need for teachers and doctoral staff to provided quality appropriate education.

In her 2004 article, Rao synthesized data from numerous studies that looked at the impacts IDEA, NCES, and Section 504 had on the population of higher education students. She found that the percent of students with disabilities that were over the age of sixteen and had attended a higher education program climbed from 29 percent in 1986 to 45 percent in 1994. These results have sparked the interest of many professionals in the education community. Now, there are a wide range of universities, postsecondary training programs, and research facilities that are continuing to look at the affects and changes that increased inclusion in these settings has on the student bodies and the institutions themselves.

The next step in understanding the effectiveness of the supports that are currently being provided for higher education students with unique needs and abilities is to hear the students' perspective of how their disability affects their ability to access the higher education curriculum. If a student is not able to access education in the same manner as their peers, it can take a great toll on their confidence, self-esteem, and overall participation in classes, potentially leading to a higher dropout rate, lower enrollment, and an effect on the populations overall mental health.

Thesis Questions

The following thesis questions will be addressed: How are students with Dyslexia being included in the higher educational system? What positive and negative effects does their disability have on their experiences? Additional questions that will be examined include; how can the inclusion of students with dyslexia be supported through the transition secondary and higher education programs? What supports and assessments are used in higher education institutions for dyslexic students.

Abbreviations

504- Section 504 of the Rehabilitation Act

ACT- American Collage Test

ADA- Americans with Disabilities Act

ADHD-Attention Deficit Hyperactivity Disorder

BDI-II -Beck Depression Inventory-II

DSM- Diagnostic and Statistical Manual of Mental Disorders 5

ELL-English Language Learners

ESEA-Elementary and Secondary Education ACT

FAPE-Free Appropriate Public Education

HEI-Higher Education Institution

ICT- Information and Communication Technologies

IDEA- Individual with Disabilities Education ACT

IEP-Individualized Education Plan

LD-Learning Disability

LRE-Least Restrictive Environment

NCLB-No Child Left Behind

SAS-Supplementary Aids and Services

SLD-Specific Learning Disabilities

Voc ED-Vocational Education

VR-Vocational Rehabilitation

Definition of Terms

Section 504 of the Rehabilitation Act- A statute meant to protect the civil rights of students with disabilities to ensure their needs are equally met compared to people who are not disabled.

Americans with Disabilities Act- Law that prevents the discrimination of people based on their disabilities or needs

Attention Deficit Hyperactivity Disorder- A condition that impacts a person's self-regulation abilities in the areas of impulse control attention and activity levels.

Beck Depression Inventory-II- An inventory used to determine the severity of a person's depression

Diagnostic and Statistical Manual of Mental Disorders 5- A document put forth by the American Psychiatric association to help in the classification and diagnosis of mental disorders.

English Language Learners- Students who have English as a second language

Elementary and Secondary Education ACT-An act passed to shorten achievement gaps as well as poverty gaps ensuring equal access to education for all students regardless of social standings.

Free Appropriate Public Education-Rights protected by section 504 that ensure students with disabilities have access to public education that allows them to have equal access to education as compared to their non-disabled peers.

Higher Education Institution- Also known as post-secondary education, an institute that provides education after high school.

Individual with Disabilities Education ACT- A law that ensures FAPE is provided to qualifying students with disabilities.

Individualized Education Plan- Document that outlines the needs and services provided to qualifying students with disabilities that will enable them to access education at the same level as their non-disabled peers.

Learning Disability- A disability that impacts the acquisition of knowledge compared to same-aged peers

Least Restrictive Environment- The right a child with a disability has to learn alongside their non-disabled peers for as much time as is appropriate based on their level of need.

No Child Left Behind- An act in 2001 that reinstated the ESEA and provided Title One funding.

Supplementary Aids and Services- Services and supports that are given in regular education classrooms and other settings, other education-related settings, and in extracurricular and nonacademic settings, to enable children with disabilities to be educated with nondisabled children to the maximum extent appropriate based on their needs.

Specific Learning Disabilities- Similar to a LD, a disability in a specific area of knowledge acquisition compared to same-aged peers.

Vocational Education- Education that prepares students for various job opportunities and fields.

Vocational Rehabilitation- Supports given to people with disabilities that help them better access and maintain employment and employment opportunities.

CHAPTER II: LITERATURE REVIEW

According to the Minnesota Department of Education's Specific Learning Disability Companion Manual (2011), Specific Learning Disabilities are students that struggle with the ability to process language whether it is in spoken or written forms. These types of disabilities can impact students in a variety of ways. From writing and spelling to processing auditory cues all the way and successfully completing mathematic problems, Specific Learning Disabilities have a great deal of impact on the students who qualify under the area of SLD.

As one can imagine, having a Specific Learning Disability greatly impacts the learner academically. Additional impacts go beyond the realm of academia. The resiliency of the students impacted by these disabilities is also affected in addition to their ability to cope, make inferences, and advocate for themselves. Due to the impacts that the disability has on these students, it is important to consider what resources are provided to these students as they enrolling higher education programs. Are these resources sufficient? What differences between nondisabled peers can be contributed to the effects of their disability?

It is important to note that students with Specific Learning Disabilities are all impacted in different ways. For this reason a more pointed light will be shown on students with Dyslexia. Though in recent years the DSM V has changed to viewing academic learning disabilities as Specific Learning Disorders that are defined for the individual (American Psychiatric Association, 2013), prior to this studies were done under the apparent name of the specific disability, and it is for this reason both the terms Specific Learning Disabilities and Dyslexia will be used.

The Student's Voice

With the increase of enrollment of students with unique needs and learning disabilities in higher education programs, there has been an increase in research on the experiences of these students. In the journal article, *Experiences of College Students With Disabilities and the Importance of Self-Determination in Higher Education Settings*, written by Getzel and Thoma (2014), the experiences of college students were observed. One of the most prominent discoveries made through the data collection process was that, in order to get supports from universities, students had to disclose that they had a disability, what type of disability they had, and to what degree. There was no availability for privacy or anonymity.

As Getzel and Thoma (2014) continued their research, they discovered that the true indicator for success in students with disabilities in higher education settings was their awareness of their disability and how it affects their learning. Often students who did not have a full understanding of their disability would fail courses. It was only after those failures that students disclosed their disability and begin to advocate for their needs. This sparked the question of what self-advocating attributes are needed in order for these students to personally feel successful.

The students that were interviewed in the Getzel and Thoma (2014) study reported that they found several characteristics necessary in order to be productive and successful in their respective programs. These characteristics include; having strong problem solving abilities, self-awareness, having a strong support system, and self-management skills. In addition, the students that felt the most confident about their abilities were ones that took advantage of the services that were offered at the

university such as; work labs for various subjects, creating relationships of understanding with their teachers, study sessions, editors, and tutors.

I had to become aware of myself and the reality of my situation to know what I can and can't handle at any point in time; identify resources, determining who I needed to talk with and getting the supports I needed.

(Getzel and Thoma, 2014, p. 81)

In review of the research and after the reflection of their interview results, Getzel and Thoma (2014) came to several important conclusions. The first being that students with disabilities as a whole are less likely to apply or be successful in higher education programs than their non-disabled peers. Though their disabilities do present their own challenges and hurdles that students need to navigate, there is a huge gap left by secondary institutions that are not preparing well-rounded students with disabilities.

In order for higher education students with disabilities to be successful, they must first understand how their disabilities affect their ability to learn. In addition, they must also have a strong transition plan and understanding of their goals as they exit their secondary programs. If high schools are not successful in teaching their students self-awareness, they will have a harder time adjusting once they start a post-secondary program.

Getzel and Thoma (2014) were not the only ones who focused on the student's experience. In a study done by Pino and Mortari (2014) the main purpose was to use a narrative synthesis of literature to enable students with dyslexia to have a voice in a review, that gives a picture of issues of inclusion and the participation of students in Higher Education Programs, along with how these issues are perceived by the students

and possible recommendations for future research. It also focused on how the inclusion of these students can be fostered in the higher education setting and further promoted to benefit students with Dyslexia and other learning disabilities.

Several themes were prevalent across studies and participant groups. Many of the original studies had many participants that struggled with accepting or understanding their initial diagnosis of Dyslexia, all of which greatly impacted how they perceived their education experiences. In addition, the students' experiences with writing and if they had instructors who were competent in understanding specific learning disabilities played a huge role in their success in their courses.

Though assistive technology was available, it often was not formatted and developed with the needs of students with dyslexia in mind. This, coupled with if students chose to disclose their disability, impacted whether assistive technology was used or proper training was given on how to use it. Out of the assistive technology that was used, the animation software tool proved moderately beneficial in increasing students' learning.

The group of dyslexic students as a whole valued explicit visual models, one-to-one supports, repetition, and formative feedback in the courses. They felt that, in the incorporation of these elements, the teacher better catered to their needs overall. When it comes to involvement in an online school platform there were both deficits and benefits that were available to students with dyslexia. These include learning through concise materials and materials that were formatted in alternate ways. Finally, it was found compared to their general education peers, students with Dyslexia had an

increase of coping strategies that they used to better access the curriculum they were presented with.

Another student commented, “I would say it is hard at first, but it gets easier to self-advocate.” And finally one student summarized the importance of knowing herself and the need to persevere when she stated, “Perseverance. Just stick with it, believe in yourself.”

(Getzel and Thoma, 2014, p. 81)

When reviewing both the Getzel and Thoma (2014) study, and the Pino and Mortari (2014) study, along with their source’s studies it was found that many of the original studies had many participants that struggled with accepting or understanding their initial diagnosis of Dyslexia, all of which greatly impacted how they perceived their education experiences. Wagner, Newman, Cameto, Garza & Levine (2005) found similar results that stated how the students perceived their diagnosis and their abilities effected how they approach education and learning as they perused higher education or careers. In addition, Getzel and Thoma (2014) study, and the Pino and Mortari (2014) found that the students’ in experiences with writing and if they had instructors who were competent in understanding specific learning disabilities played a huge role in determining success in their courses.

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The group of dyslexic students as a whole valued explicit visual models, one-to-one supports, repetition and formative feedback within courses. Students felt that by incorporating these elements, teachers better catered to their needs overall. When it comes to involvement in an online school platform, there were both deficits and benefits for students with dyslexia, including learning through the use of concise materials and materials that were formatted in alternate ways. Finally, it was found that, compared to their general education peers, students with Dyslexia had an increase of coping strategies that they used to better access the curriculum they were presented with.

The information gathered by Getzel and Thoma (2014) proves critical to understanding what interventions need to be provided for these students in order for them to better access higher education, just like what is required for unique learners at any grade level. In addition, this information shows that, like younger learners, these students have both strengths and weaknesses. Focusing and playing off the strengths can enable students with Dyslexia to feel more comfortable participating in higher education programs which helps both the students as individuals and higher education institutions as a whole.

Pino and Mortari also focused on giving students a voice and the ability to share perspectives. The main purpose of their study was to use narrative synthesis of the literature to enable students with dyslexia to have a voice in a review that gives a picture of issues of inclusion and the participation of students in Higher Education Programs, along with how these issues are perceived by the students and possible

recommendations for future research. It also focused on how the inclusion of these students can be fostered in the higher education setting and further promoted to benefit students with dyslexia and other learning disabilities

Several themes were prevalent across studies and participant groups. Many of the original studies had many participants that struggled with accepting or understanding their initial diagnosis of Dyslexia, all of which greatly impacted how they perceived their education experiences. In addition, the students' experiences with writing and if they had instructors who were competent in understanding specific learning disabilities played a huge role in their success in their courses.

Over the recent years, there has been an increase and push toward inclusivity in education. This includes the needs of students with specific learning disabilities in Higher Education. The need or support for students with dyslexia and similar disabilities is abundant but varies for each individual. Based on review of prior studies that were based off of subject interview and opinion, Pino and Mortari (2014) discovered several overarching themes when it comes to the needs and preferences of students with dyslexia that were able to be measured. These themes were; the coping strategies of students with dyslexia, being identified as dyslexic, the interactions with academic staff, accessibility and adjustment in higher education, and using ACTs and ICTs results.

Fifteen studies were determined applicable and used as the basis of their findings. These studies were chosen based on the cohesion of their research and the commonality of their headings and research topics. Data was gathered through review of the overall text and correspondence with the original authors.

This data revealed that students with dyslexia require several accommodations in order to be successful in an educational setting, including in higher education. The accommodations that are found successful are based on individual need, if training of assistive technology is provided, if the professor has a background and understanding of working with students who have specific learning disabilities, and if the students personally disclose that they have Dyslexia.

Another proponent of need that was found across studies was how to support students in understanding and accepting their disability. The issue of supporting students in understanding and succeeding with their disability was prevalent in several of the fifteen studies. The amount of coping skills that students with Dyslexia have and use in order to be successful in higher education was much greater than their non-disabled peers. This shines light on the resiliency of the students and the need to accommodate and amend the traditional higher educational system to further include their needs and understand their abilities in order to truly foster their strengths and showcase their abilities.

Non English Speakers

Dyslexia is something that people all over the world have. There is, however, limited information and empirical evidence about people with dyslexia who do not speak English. There are also few mental profiles of students with dyslexia who do not speak English who are enrolled in higher education. The purpose of this study was to gather this type of information. The subjects would have their cognitive abilities put into a profile of their abilities was developed to see how these students performed against a

control group of their peers. The results of the study were then compared to similar studies of English speaking students to see if both studies aligned or differed. The study was completed by Tops, Callens, Lammertyn, Hees, & Brysbaert (2012). The study was both qualitative and quantitative and the results are as follows.

Students were screened for deficiencies and placed in to the control group or the group of students who have Dyslexia. Students with Dyslexia were chosen by the manner of which they were diagnosed, the years they attended their higher education program, and their completion of all appointments throughout the research process.

The Kaufman Adolescent and Adult Intelligence battery based standardized test was used to measure the cognitive abilities in the first year higher education students. The *Interactive Dyslexia Test Amsterdam-Antwerp* was also used to compare results. This is also a standardized batteries test. Both assessments are used for the diagnosis of students with Dyslexia. In *the Kaufman Adolescent and Adult Intelligence test* crystalized intelligence and fluid intelligence were assessed across ten subtests. In the *Interactive Dyslexia Test Amsterdam-Antwerp* students were assessed on their reading and writing skills were assessed using a standardized computer program. Finally the GL&SCHR, which is a Dutch reading and writing assessment for younger adults was used. Each test was picked to decrease retest effects based on the tests that were used for initial qualification. These tests paired with Dutch reading and calculation standardized tests were used as the source of data.

The results were broken down in to several areas. These areas were; literacy skills, cognitive skills, and a comparison between Dutch speaking and English speaking results. The literacy skills showed that students with Dyslexia were lower in the areas of

writing and reading with a greater deficit in spelling and sentence writing than their non-disabled peers. The degree of struggle was comparable in both of the aforementioned areas. These deficiencies were more pronounced for Dutch word reading and were not more pronounced in their second language. The largest area of deficiency was in reading speed. For each group of students, both Dyslexic and non-Dyslexic students had almost equal abilities in text comprehension when the text was read out loud.

The results in overall cognitive abilities were equally interesting. Between the two groups there was no difference in intelligence and differences in IQ's were insignificant. The group of students with Dyslexia did prove to be slower at processing textual information that was given to them; however, in memory, the two groups were equal except for in the areas of short term phonological memory. Still, the differences in phonological processing were negligible. The group of students with Dyslexia struggled more than the control group with mathematics, most noticeably in the areas of multiplication and division. Finally, the Dyslexic group of students had deficits in naming letters, digits and colors compared to their control group peers.

A final intriguing aspect of our study is that although the vast majority of students fall within the remit of the phonological deficit hypothesis of dyslexia, some 5 % has clearly deviating results. These are nearly equally divided over false positives and false negatives. It will be interesting to examine whether these exceptions are statistical errors, or whether indeed a small segment of dyslexics has a deficiency that consistently deviates from the general pattern. This is a typical example where case studies can augment the findings of a group analysis. It is

also a reminder that student-centered facilities are more than the blind application of a series of tests.

(Tops et al., 2012, p. 200)

Compared to American studies, the results for this research have a significant correlation coefficient. This outcome was determined by comparing the outcomes of two other studies. In order to determine a true correlation, the text comprehension data was not included in the comparison. This was because, unlike the other studies, the Dutch text comprehension assessment was read by the test subjects and simultaneously read out loud by the computer.

There has been increase in information and research completed on students with Dyslexia in higher education and how their disability affects their performance compared to their nondisabled peers. Less research has been done on students in higher education with dyslexia who do not speak English. There is a need to gather data in order to better understand how to support students with Dyslexia throughout their time in higher education programs. In addition, with limited knowledge it is difficult to determine in what ways these students need to be accommodated.

Based on the results of Tops et al. (2012), students with Dyslexia struggle with reading and writing, primarily spelling developing sentences, and overall processing time of written text. Due to their needs, students with Dyslexia should be accommodated in the following ways by means of incorporating the accommodations into the overall organization of course work and exams. Students need to be provided text to speech software and the use of spellcheckers and word completion software to help with the high frequency of spelling errors. They would also be given extended time

for assignments due to their weakness in assignments or exams that are time limited. The use of a calculator is suggested for students with Dyslexia due to their deficit in internalizing mathematic tables.

There is one final accommodation needed for students with Dyslexia enrolled in higher education programs. These students need to understand their disability and the limitations it presents them with. Knowing this gives the students the advantages of finding coping techniques and ways to accomplish their goals and finish the assignments in a manner that is equal their non-disabled peers. This could include but is not limited to participating in higher education part time and taking exams over several sessions.

As we start to dive into the realm of accommodations that are needed to support students with Specific Learning Disabilities, it is important to note that each student is different. Due to this, not only can study results vary but so can the range of accommodations that higher education institutions offer, all of which can have an impact on how effective interventions appear to be.

Accommodations

When considering what accommodations are available for any student, they must first qualify as having a disability under the ADA. If students have met the ADA's qualifications and criteria for a disability category there are many accommodations that can become available to them. Wilhelm (2003) discussed many of the accommodations available to these students. It is important to note that accommodations that are received are based on individual student need. For example, two students that struggle

with examines due to processing concerns may still have different accommodations for tests. One may have extended time due to the slow written language processing compared to their same aged peers and another may just need a quiet setting to allow them to better focus and process a written exam.

The accommodations that are discussed by Wilhelm (2003) included several different categories based on disability type. For example, if a student has a profound disability or a disability that impacts their ability to participate in class, they could qualify for a course waiver. An example of a course waiver being used is most commonly done for physical impairments or medical concerns often for physically rigorous or active classes. Accommodations that allow for students to still participate in courses include; up to double time for exams, distraction free settings, extended time for projects and homework, impunity for spelling errors, alternative forms for tests and projects (ie. oral exams over written exams), note takers, readers, scribes, and tutors. Some accommodations are often fulfilled by the teaching staff themselves. This can include recorded lessons, pre-written notes or printed out sides, and sound systems/closed captioning to help students hear and better understand lectures. All these accommodations are determined by the ability of the institution and the need of the student.

Accommodations under the ADA must be tailored to the student's functional impairment. For instance, students with ADHD are often given double time on exams. However, there is no evidence that extra time ameliorates the effects of this condition; one of the characteristics of many ADHD individuals is that they work too quickly.⁷⁹ Similarly, a

student with panic disorder that manifests during exams is not "helped" by extra time and a separate room for exams. Effective accommodation might include allowing the student "to stop the exam, leave the room for up to one hour, and perhaps even to take medication to treat the attack."⁸⁰ Experts in the field of reading disabilities note that while extra time and separate rooms for exams are commonly requested by individuals with dyslexia and other reading impairments, other accommodations might better serve someone with a reading disability. These might include: "audiotape versions of examinations, a reader, assistance in completing answer sheets, extended breaks, large print examinations, or a verbal copy of printed instructions read by the proctor."⁸¹

(Wilhelm, 2003, p. 233)

As the number of students with disabilities has been increasing, there has been an interest world-wide in what additional accommodations should be made. In addition to what accommodations are being used around the world, researchers have wondered whether or not these accommodations are being implemented properly and how effective they are.

There has been some research done on the previously mentioned accommodations that are provided for students in higher education programs. One such study was conducted by Taylor, Duffy, & England (2009). The main purpose of this study was to take a critical look at the accommodations made for students with Dyslexia in higher education programs in the UK and determine what form of delivery is most

appropriate for these students. This study was conducted over the course of four years and it showcased the differing types of accommodations that were made for the students who participated in the study. Such accommodations included how the coursework was delivered, how assessments were administered and supporting the transition to and from higher education. Taylor, Duffy, & England posed five questions: “How should the transition from school/college/work to higher education be managed for students with dyslexia? What provision is appropriate in higher education for students with dyslexia? How should students with dyslexia be taught in a higher education institution? How should students with dyslexia be assessed in a higher education setting? How should students with dyslexia be supported in a higher education setting?”

Based on the results of the study there were several accommodations that were deemed as necessary in order to enable students with Dyslexia to be successful. The first is large font versions of any consumable in order to support the students’ reading rates. The next is to make consumable in different colors “to alleviate symptoms associated with impairment of the magnocellular component of the visual system” (Singleton and Henderson, 2006). If colored paper is not available, then colored lenses or transparencies may be used as well.

Laptop computers and processing software were also deemed necessary for the success of many of the students. Laptops also provide a way to access a virtual learning environment which supports note taking and the ability to accommodate assessments. This, along with extra support groups in writing and math, enable the Dyslexic students to be successful. These types of accommodations can be customized based on the needs of each learner, specifically the group size and meeting frequency

of support groups. Finally, the use of visuals supports for learners with Dyslexia also proved to be effective, but audible lessons were proven to further hinder the phonological processing for dyslexic students.

There were also adjustments made in the assessment of the students that participated in the study. The most beneficial accommodations were extended time, use of a computer, scribes, large fonts, colored paper, extended time for course work, and alternative forms of assessment. All of these accommodations were proven to help students with Dyslexia. These accommodations are used presently in the United States for many students with specific learning disabilities that are in primary and secondary classrooms (Singleton and Henderson, 2006).

The final area that was shown to need adjustments was in the support of students and their ability to understand expectations and making a comfortable transition. This means they need individual support in knowing what needs to be done and how it needs to be accomplished in order to be successful in the courses. Without this increased support students lack confidence, understanding and have a tendency to drop out of higher education programs.

Now that accommodations for qualifying students have been expanded, it is important to note that some institutions do service and/or support students who do not qualify under the ADA standards. Wilhelm (2003) recants the Guckenberger v. Boston University court case. The premise of the case was the revoking of course waivers for students who did not qualify under the ADA. As the case proceedings continued, it was found that the Special Education Director of the University would still give “simple” accommodations to students even if they did not have the appropriate documentation

with qualifications under the ADA. These accommodations included a quieted exam area and extended time for assignments.

There have also been several books that have been published to help students with Dyslexia access better study skills. One such book is *The Study Skills Toolkit for Students with Dyslexia* by Monica Gribben. Gribben (2012) compiled several different tools that can be used to help people with Dyslexia to be more successful in school. Gribben highly stresses organization to help promote timelines and understanding as students transfer from secondary to post-secondary workloads. This can be done by using many different types of graphic organizers. Gribben then proceeds to break down learning tools into three groups. The groups are based on learning type. There are strategies for visual learners, auditory learners, and tactile learners that will help each type of learner access curriculum in a more successful way.

Once a student can recognize their area of strength Gribben (2012) suggests that they would then be able to set up a proper foundation for their learning. This includes but is not limited to, study strategies that fit their learning style, a study space that is conducive to their needs, and an understanding of the areas they will need additional support in based on their learning type. Gribben then suggests that students will then be ready to address their next set of obstacles. These obstacles include changing their procrastination habits (which are common among students with Dyslexia). This is due to the fact that many have anxiety toward work that they know will be difficult for them to do. Gribben continues to give tools that help provide organization for students that relate to specific types of work. This will be discussed in the reflection portion of this thesis.

Transitions

Students who receive accommodations during their time at higher education institutions were most likely qualified for special education services during their previous years in school. Students can qualify as early as pre-school with disabilities that range from developmental delay to Autism or Emotional Behavioral disorders. When it comes to Specific Learning Disabilities, students are more commonly seen qualifying between during elementary and middle school years, though many go unrecognized until high school or even post-secondary education.

High school is a very critical time for students with disabilities with aspirations of continuing their education or training. Students over the age of fourteen or who are turning fourteen during the life of their due process paper work must have a Transition Plan that will help them move forward with their post-secondary goals and plans. This includes working, living, and education. These plans are meant to support and enable students with unique needs to access Higher Education at the same rate as their non-disabled peers.

Though it is a critical time, research has shown that students are not always prepared properly for the transition between high school and post-secondary education. Eckes and Ochoa (2005) explain that one way that students are not fully prepared for their transition is the understanding of the laws and protections for special education students and how they differ once they graduate high school. Once a student graduates from high school and starts their post-secondary path they no longer are protected under IDEA. Now their main form of protection is through the 504 Act and the ADA. Like 504, the ADA has a special section known as Title II that protects the civil rights of

students with disabilities and prevents institutions from discriminating against students due to their unique needs and abilities.

Another issue when it comes to the transition process that students often face is where the responsibility lies for supporting and getting services for students with disabilities. Eckes and Ochoa (2005) discuss how during their years in primary and secondary school it is the school's job to make sure that all the needs of each student are met. This means it is their job to test students, equip them with accommodations and modifications as well as track their progress. Due to the difference in legislature, Higher Education Institutions are actually prohibited to see out any information about a student's ability status.

This greatly impacts students who are not accustomed to having to advocate for themselves. In addition, they are being exposed to an entirely new system and environment. This educational culture shock often results in students not receiving or not knowing how to get the accommodations that they need to be successful. This results in low grades and a higher dropout rate.

The third area in the transition process the students are often not informed about is the responsibilities of the instructor. In the research, Eckes and Ochoa (2005) found that unlike many kindergarten through 12th grade teachers, Higher Education instructors are not required to take any training on teaching or working with students with disabilities. In addition, teachers are often unaware or ill-equipped to provide the accommodations that are required for these students by law. This leaves the students in charge of how they will get their needs met in their new educational environment.

Since there has been such an increase in the amount of students enrolling into higher education programs, it is easy to understand how and why the diversity of the higher education student population has also increase. It is common to walk onto a university campus and see students of all varying, races, ages, and abilities. Due to the diversification of this population, there has been an increase in studies that look at readiness of various groups of new students. Hadley, Morrison, and Hempell (2005) looked at the commonalities between first year students and the disabilities they were recording. They found that Dyslexia was the most common reported Disability among first year university and college students.

“Dyslexia is the most common learning problem reported by first-year college students with learning disabilities. Students with dyslexia experience such reading problems as poor reading fluency, uneven and inconsistent comprehension and retention of material read, difficulty identifying and differentiating main ideas in readings, and difficulty following written directions. Attention Deficit Hyperactivity Disorder (ADHD), the inability to consistently apply concentration for long periods of time, is oftentimes diagnosed with dyslexia. Nearly 25 percent of college students with learning disabilities may also have ADHD. In addition to being easily distracted, students with ADHD may find it difficult to follow a train of thought to its conclusion, easily feel overwhelmed, and have difficulty breaking down and/or organizing information, thoughts, or tasks. College students with dyslexia have to deal with the unique challenges

presented by their disability as well as the daily stressors of the college environment.”

(Hadley, Morrison, and Hempell, 2005, p. 1)

Hadley, Morrison, and Hempell continue to explain that students who are that lucky will have a knowledgeable student advisor that can point them in the direction of how and where to get supports as they continue along on their collegiate journey. All students must still meet the same requirements needed to gain enrollment into a higher education institution. The shock and changes that happen for the students with disabilities during the transition between high school and college can be more shocking and hard to navigate then it is for most students.

In their summary, Hadley, Morrison, and Hempell explain why the transition can be so hard for these students. Students in high school were protected by IDEA. Students had to be directly provided the supports that were needed in order for them to access the general education curriculum at the same rate as their non-disabled peers. Once students graduate they are still protected but no longer by IDEA. They are protected instead by Section 504 and the ADA. It is now up to the students to request accommodations. Some students are unaware of this while others previously may have had bad experiences with IDEA and receiving services. This may cause them to want to go without accommodations. Additionally, students may have a sense of pride or embarrassment about having Dyslexia and want to forgo accommodations completely.

Other groups have also researched the transition of students with Dyslexia from high school into higher education programs. Levinson and Ohler (1998) did just that. They indicated that the best way for students with Dyslexia and other disabilities to

transition from school to work or higher education is to have a strong transition plan with strong transition assessments. Once students have been thoroughly assessed, their transition plan team will have a better idea about their strengths, needs. These assessments cover the areas of social, emotional, interpersonal, occupational, intellectual, independent living and physical needs. The findings of these assessments are the basis of the student's transition plan.

In addition to transition plan assessments, Levinson and Ohler suggested that the best practice to best prepare students for transitioning out of high school is to make sure they are assessed in the areas that they want to pursue, followed up with after assessments, and go through a period of safe withdrawal from services that would not be provided outside of high school. This is suggested so that a transition team can appropriately determine the readiness of the student to leave the safe confines of high school and special education teams behind.

While Levinson and Ohler paint a beautiful picture of the transition process, this is something that does not always come to fruition. Students are given a transition IEP upon turning fourteen. There is often a huge gap between then and when students are actually transitioning. In addition, not all students are tested in the areas that they are most interested in. This may set them up with invalid expectations about their own abilities or a lack of awareness of the needs that they will need to advocate for once they move on from high school. Finally, there are all too often, as Hadley, Morrison, and Hempell explain, students who had bad experiences in high school that cause them to become jaded or completely unaware of the new responsibilities they will have to take on as the move to the work and higher education realms.

Though there are many positive things happening for students as they transition to higher education such as personal growth, becoming accustomed to new environments, participating in a diverse population, and a huge jump in resiliency/ self-reliance, there are some negative outcomes of the transition process. Nelson and Gregg (2012) found that students with Dyslexia often struggle with an increase of anxiety and depression. Students with Learning disabilities, including Dyslexia and ADHD have higher rates of anxiety and depression than their non-disabled counterparts. More specifically, it was found that, out of these students, the female participants had even higher levels of anxiety and depression than the males who participating in the study.

The study was made up of three critical groups. There were 60 students who had Dyslexia, 60 students with ADHD, and 30 students that had both Dyslexia and ADHD. There were also 60 students in the control group which was made up of students that did not have either dyslexia or ADHA. In addition, all groups were even when it came to the amount of males and females that were in each group. Students were also screened to ensure that all students had been evaluated by the University of Regents' Center for Learning Disabilities between the years of 2005-2009. All participants were also between the ages of 17 and 24. The assessment that were given were the BDI-II and the BIA.

Beyond Schooling

Levinson & Ohler (1998) also did research based on transitioning students from post-secondary education wherein they looked at the transition of students with

disabilities and added the importance of being prepared for both higher education and the job force Levinson & Ohler detail a practice that most special education teachers of transition aged students (students over the age of 14) are familiar with. This is the transition plan. A transition plan takes into consideration a student's strengths, interests, and areas of need and devises a plan on how to support their progress toward, living, working, and community involvement once students become independent of their parents. This is known as the transdisciplinary transition model and involves the steps of assessment of the needs and areas of strength of the student, creating a plan to facilitate further growth and support, initial training, placement into a job, and follow up to ensure the placement was successful.

Levinson & Ohler were not the only researchers who looked at the needs of people with Dyslexia beyond the classroom. In *Learning, and Living: A Guide to Planning Your career and Finding a Job for People with Learning Disabilities, Attention Deficit Disorder and Dyslexia*, Brown (2000) expresses a step by process to finding a job for those individuals with unique needs. Brown's book includes tips about trade schools, continuing education, and even applying to the work force or graduate school. This guide along with the transition plan are just a few helpful tools to support adults with Dyslexia as they make their way in the world.

Another similar book; *Supporting Dyslexic Adults in Higher Education and the Work Place* by Nicola Brunswick (2012) also gives supportive tips and ideas for students with disabilities in further advancement. Brunswick, like the work of Brown and Levinson & Ohler, focuses on each student as an individual. Several different tips for organizing, learning skills, ways to succeed, and how to prepare for new tasks are all

outlined in Brunswick's work. There is also a focus on self-advocacy that relates back to previous research that states that students with Dyslexia that are comfortable with or acknowledge the strengths that can be found in having Dyslexia are often more successful and report lower levels of emotional distress.

In 2012, Brunswick wrote another article titled: Dyslexia in UK Higher Education and Employment: An Introduction and Overview. In this article, Brunswick discusses the increase of people with Dyslexia in both higher education institutions and in the workplace based on United Kingdom polling and statistics. Based on Brunswick's summary of findings, there has been a similar trend in the United Kingdom (UK) to the United States wherein a higher number of people with Dyslexia are enrolling in higher education or reporting their disability in the workplace. Additional similarities were found in the feelings of those in the UK to those in the United States on the lack of preparation and understanding of the workload and expectations that are imposed once they have graduated secondary education. A similar social/emotional experience was reported as well.

Many adults across the UK and US report increased stress and anxiety due to their disability. Jordan, McGladdery, & Dyer discuss this in their article Implications for math's anxiety, statistics and psychological wellbeing. They reported that, though their studies do not show that people with Dyslexia have overall higher anxiety or stress compared their non-disabled peers, students with Dyslexia have higher anxiety in areas of work that are more difficult for them. This includes mathematics, reading, writing, and spelling, depending on the individual and their areas of strength and weakness. Similar findings can be found in The Dyslexic Adult: Interventions and Outcomes - An

Evidence-based Approach by McLoughlin & Leather (2013). Like Brunswick, Jordan, McGladdery, & Dyer, they have a focus on the mental health needs of people with Dyslexia and other disabilities. These mental health needs are best seen and addressed through the assessment process, which can give a complete profile of an individual's strengths, and areas of need when it comes to their disability.

When an adult has been identified as dyslexic and starts working with an appropriately trained person it is often the first time in their life that they have felt properly understood. It is inevitable, therefore, that the relationship that develops is such that dyslexic people feel that they can unburden themselves. They will wish to talk about their anxieties and frustrations as well as other personal problems.

“It is perhaps easier to tackle the learning difficulties than it is to pursue the emotional backlog that resides in you. I have a lot of anger still about the failed tasks and why none of the professionals who taught me stopped to ask what is wrong with this child who couldn't produce the written work equal to that of her other skills. I wish I had been diagnosed as a child and never blamed for what was wrong.”

(McLoughlin & Leather, 2013, p. 47)

Assessments

Critical to the transition process and for the education process as a whole, it is important to properly assess students with Dyslexia as well as other Learning Disabilities in order to provide them the equal chance to access their education. The

first step in the assessment process is to identify students who may possibly have Dyslexia. Farmer (2002) indicates that Dyslexia does not impact a student's overall intelligence. The best way to find students who potentially have Dyslexia is to look for students who have been under performing academically despite their intelligence level. Once these students are identified, that can be given an array of different assessments that can break down their areas of need. Some examples of the possible assessments are the Wechsler Adult Intelligence Scale and the Wide Range Achievement Test in the area of reading. McLoughlin & Leather (2013) take a similar approach with a variety of achievement tests as well as an overall assessment of the psychological profile of adults with Dyslexia and other disabilities.

Farmer goes on to describe two areas of concern when it comes to identifying students with Dyslexia. The first is often the people with Dyslexia are actually generally backward poor readers also known as GBRs. People who are GBRs are different from those with Dyslexia because they have an insufficient intelligence; whereas people who have Dyslexia have a specific area of disability.

The second area of concern that Farmer described is when people have poor reading or writing skills due to English not being their primary language. These students have needs in acquiring fluency in the English language. It can become even more difficult to determine a student are of needs when they have both Dyslexia/a Specific Learning Disability and are English Language Learning. These students need support in a varying degree of areas when it comes to modifications and adaptations for both learning and assessing.

To determine the needs of such students, Farmer describes the approaches that can be taken toward assessments in order to get the best picture of the student and their needs as a whole. Primarily, testing needs to be paired down to only the most necessary tests that are the most appropriate for each individual student.

Clearly we try to reduce the number of diagnostically useful tests that identify the most discriminating tasks. However, while there is a huge literature on childhood Dyslexia there is a dearth of research on adult Dyslexia, making the identification of a few critical tests difficult. Although we can extrapolate because of evidence that Dyslexic adults learn to compensate for their problems.

This means that we have to rely heavily on the rather few adult studies...

The major factor in deciding the components of a test battery is, of course, theoretical orientation. So someone who hold that Dyslexia is a phonological problem is likely to discount tests of, say, visual memory. The battery of Hatcher and er al. (in press), for example, reflects their view that Dyslexia is a problem of impaired phonology. It emphasizes phonological skills and gives no attention to the possibility that visual memory may be a cause if Dyslexia...

(Farmer, 2002, p. 12)

Along with what is done to assess students, Farmer also discussed how students felt about the assessment process. Farmer clearly spells out that the overarching feelings toward the assessment process was negative, though some

subjects reported having some positive feelings toward the assessment process. Farmer explains that this is due to the fact the assessment process is asking the subjects to perform tasks that they find difficult. This causes both stress and anxiety amongst the participants regardless of their feelings toward the process. Farmer dives into many other aspects of the assessment process and how his subjects responded to it as a whole. These aspects will be discussed further in depth in section three of this paper.

To finalize what features were looked at during the evaluation process, Farmer looked at what characteristics people with Dyslexia possess. This includes, but is not limited to, areas of need and or strength in phonemic awareness, no word reading, short-term memory, IQ, single word reading, and single word spelling. In addition, Farmer also looked at background indicators to further his understanding of each participant as a whole. These background factor include, educational history and genetic loading.

Farmer (2002) also investigated the writing abilities of people with dyslexia compared to non-dyslexics to better understand the assessment process. This was done by giving both groups standardized writing assessments and comparing the results of these assessments to one another. Based on the results it was found that people with Dyslexia struggle in several areas when it comes to writing. These people struggle with spelling, confusion of small words, omission of words, awkward handwriting and slow writing speed, an unexpected difference between oral and written expression, difficulties adopting the appropriate code of

writing, slowness and difficulties in detecting errors in proofreading, and restricted or inappropriate vocabulary.

Though through assessment it was found that these areas of writing can be particularly difficult for people with Dyslexia, Farmer also detailed ways that these areas of needs can be supported. Spelling support can come easily with auto correct and spell check. Spelling and grammar checks can also be used to support correctly choosing small words such as their, they're, and there. Writer's workshops or support centers can be used to ensure words are not omitted. Text to speech software can be used to support faster writing and to allow for the higher ability of oral expression to transfer over into written work. Peer reviewers and the editing process as a whole can be used to support adopting the appropriate code of writing, as well as using outside editors to bypass misses in proofreading. Finally, thesauruses and google searches can support a wider vocabulary and a differentiation in phrases.

Though a lot of focus has been given to the assessment of writing and reading when students are tested for Dyslexia, there are several other areas that are evaluated during the assessment process. These areas include numeracy, emotional and mental health, and prior educational experiences. In assessing numeracy, Farmer (2002) was able to show that students with learning disabilities struggle with input and output problems, working memory issues, anxiety and low self-esteem when it comes to mathematic computations, and gaps in mathematical knowledge.

In the areas of emotional and behavioral needs, Farmer discovered many consistencies across participants. The main similarity corresponds to anxiety when it comes to academic tasks. In addition, most participants struggle with self-esteem. These participants lack the confidence in their abilities due to many negative past experiences. In addition, many students feel as though they are less intelligent when compared to their non-disabled peers. Though participants often feel this way, Farmer suggests and shows that there is no actual correlation between Dyslexia and IQ. In addition, people with Dyslexia often have stronger self-advocacy skills and coping skills due to having to adapt continually to an environment that is not conducive to their learning styles and without adequate resources to support their needs.

Farmer also had students review the assessment process and give feedback on if they felt there could have been any improvements on the process as a whole one participant reported the following.

I was assessed with having problems with number and special awareness. I was very relieved to know what I have. I was assessed with having dyscalculia which is a specific learning disability very similar to dyslexia which means I suffer from poor special awareness and number blindness. I was given a scrap of A4 lined paper with my condition on it and I kept it with me everywhere because it helped me believe I wasn't stupid. It was worth more to me than anything else in the world.

(Farmer, 2002, p. 90)

The feelings presented by this specific student correspond with the feelings of many others across the first hand research and reflection that has been recorded as a part of this thesis. The commonality among subjects across research projects has been shown and has become very impactful on research going forward.

Strengths and Abilities

Though there has been a large focus on the needs of people with learning disabilities and Dyslexia in particular, there have been many texts that reference and detail the strengths. One such text is *The Dyslexic Advantage* by Eide and Eide (2012). This text details how the strengths that many people with Dyslexia have helps foster success in professional and personal lives. In this text, it is written that people with Dyslexia have strengths in MIND. This stands for Material Reasoning, Interconnected Reasoning, Narrative Reasoning, and Dynamic Reasoning. These four areas of strength enable people with Dyslexia to have successful productive lives.

Material Reasoning is the first strength that Eide and Eide explain. Material Reasoning is what often draw people with Dyslexia to engage in building activities and careers. This is due to two reasons. One is that people with Dyslexia are often better at spatial relation tasks then written or computing tasks and Eide and Eide also found that when looking at the occupations of people with Dyslexia's parents they more commonly had jobs in building fields then those who had careers in other fields.

Interconnected Reasoning was the second area of strength that it was found that people with Dyslexia possess more frequently. People with Interconnected reasoning have the ability to find connections and commonalities across different objects, ideas, and opinions. People with Dyslexia that possess strength in this are often able to join together ideas and principles that would to many not seem related. This is done with the end result being both more versatile and uncommon.

The strength of Narrative Reasoning is the third strength that Eide and Eide (2012) discuss. This strength corresponds to an individual's ability to store information in their long term memory. This can commonly be seen in a person with Dyslexia's ability to be able to interpret and internalize written works without being a strong reader. Eide and Eide refer to long-term memory as being broken into two groups. The difference and break up of long-term memory is best described in Eide and Eide's own words.

Long-term memory, which will be our focus in this chapter, also has two branches: procedural memory and declarative memory. Procedural memory holds the "procedures and rules" that help us remember how to do things. Declarative memory stores "facts about the world".

Declarative memory can be further divided into episodic and semantic memory. Episodic memory (also called personal memory) contains factual memories in a form that simulates events,

episodes, or experiences. Semantic memory stores facts as abstract and impersonal data, stripped of context or experience.

(Eide & Eide, 2012, p. 116)

It is the episodic portion of long term memory that many people with Dyslexia often have a strength in compared to their non-Dyslexic peers. This means they are good at remembering experiences, stories they have heard, and information that has been entrenched in stories. This also means that people with Dyslexia have a higher tendency to be creative and focus on artistic fields of work.

Dynamic reason is the final area that Eide & Eide, (2012) discuss as being a strength for people with Dyslexia. Dynamic reasoning is a person's ability to predict. This means that those who are better at Dynamic reasoning than others are able to work more qualitatively. This quality can transfer into being a stronger worker in a field where duality and diversity is needed.

Another book that details the strengths of those with Dyslexia is, *The Gift of Dyslexia: Why Some of the Smartest People Can't Read...and How They can Learn* by Ronald Davis. Davis (2010) details many strengths of people with Dyslexia that all wrap up into the individual's ability to master task at a faster rate that is comprehensible to their non-Dyslexic peers. This is due their stronger picture thinking skills, intuition, multidimensional thought process, and their overall higher levels of creativity.

All of these factors all people with Dyslexia to master skills at a faster rate than those without the skill sets in these areas. This is similar information to that of Eide & Eide. The two corresponded people with Dyslexia and a higher aptitude

for creativity, prediction, scenic thinking, and the ability to have flexible and the aptitude to apply diverse thinking strategies to problem solve and draw correlations between ideas across disciplines. All of this wrapped together equal faster acquisition of skills and mastery of a variety of abilities.

A third text that speaks to the strengths of individuals with Dyslexia is In *The Mind's Eye: Visual Thinkers, Gifted people with Dyslexia and other Learning Difficulties, Computer Images and the Ironies of Creativity* by West (1997).

West's findings were very similar to the ones of Eidi & Eide and Davis. He too found a correlation between Dyslexia and creativity. People with Dyslexia can recognize images at a higher rate than many individuals. This plays into their higher levels of creativity.

In addition, due to their struggles with linear thinking, people with dyslexia rely heavily on the right hemisphere of their brain. This area controls visual/special reasoning and non-verbal thought to name a few. It is because of this heavy reliance on right brain functioning that Davis feels that many famous academics and creatives were able to gain the momentum and knowledge at a higher level. They became open to new ways of acquiring information and used new methods of problem solving that many atypical thinkers had not tried. Davis stated that this change in thinking is not something that occurs strictly in the arts, but great scientists, inventors, politicians and mathematicians across the ages have been able to employ this strategy to enable them to make great discoveries.

Davis (1997) also contests that big thinkers such as Albert Einstein and Michael Faraday, Winston Churchill, Thomas Edison, and Nikola Tesla were all

successful due to their Dyslexia. He argued that many scientific and academic discoveries have been halted due to a lack of flexible thinking. Major breakthroughs were enabled due to the many great thinkers flexibility of thought and willingness to change or alter their way of thinking in order to reach a new level of understanding. To Davis, it is fair to say that without these individuals having Dyslexia that it is possible that some of the most important modern-day scientific advancements may not have happened when they did. In reflecting on how different individuals think, Davis chose correctly when he plucked a quote from Robert Frost's "The Figure a Pome Makes" to articulate the beautify that can be found in focusing on specific elements and ideas This breathes new life into ideas to be used for a complete new process that many others may not have otherwise seen as a possibility.

Scholars and artists thrown together are annoyed at the puzzle of where they differ. Both work for knowledge; but I suspect they differ most importantly in the way their knowledge is come by. Scholars get theirs with conscientious thoroughness along project lines of logic; poets theirs cavalierly and as it happens out of books. They stick to nothing deliberately, but let will stick to them like burrs where they walk in the fields....The artist must value himself as he snatches a thing from a previous order with not so much as a ligature cling to it of the old place where it was organic....There must have been the greatest freedom in material to move about in it

and to establish relations in it regardless of time and space,
previous relation, and everything but affinity.

Robert Frost, "The Figure a Poem Makes," *Complete Poems*

(Davis, 1997, p. 185)

Dyslexia and the Arts

Many other studies have shown other influencers that impact and support people with Dyslexia was going into artistic fields. Bacon and Bennett (2013) discuss how having support from family, schools, using Dyslexia as a strength, and having a passion for art, all impact the likelihood of people with dyslexia going into an art related field. They explain that the experience of those with Dyslexia greatly impact how they view their abilities and how they choose their career path. People who have had supportive parents and a positive school experience have a higher tendency to see their Dyslexia as a gift. Those who are supported to use their artistic talents to further themselves may be more likely to choose that path when they are ready for a higher education program.

Hickman & Brens (2014) took the research further and reviewed art teachers who identified as Dyslexic and what tools they used to help them be successful. Hickman & Brens chose to answer the question "What learning strategies, used by art teachers with Dyslexia, can be used as pedagogical tools?" their population consisted of three art teachers that identified as being severely Dyslexic. The three teachers were informally interviewed and observed in their classrooms. Several things were discovered through this study. It was

found that self-reflection enabled the teachers to be more empathetic especially to students who struggled academically.

The Hickman & Brens (2014) study also found that all three teachers preferred to implement lessons that used a wide range of media, were three dimensional, and produced a sort of “craft”. It was also found that there was a large amount of oral feedback given by the three teachers in comparison to the amount of written feedback that was given. This is consistent with people with Dyslexia who struggle with written communication, but excel in the area of oral communication, which showcases the workplace implications of Dyslexia. Across all three participants there was also an evident positive focus on being able to think in unexpected ways. This was shown during the interview process. All three teachers indicated that thinking in an atypical manner was a strength of Dyslexia, confirming Bacon and Bennett's (2013) notion of using the strengths that come with having Dyslexia to help foster additional gifts in artistic fields.

In following the work of Davis (1997), Gobbo (2010) looked at the work of infamous artist Robert Rauschenberg. Rauschenberg was a painter whose work contributed to the start of the *Pop Art* movement in America (Spencer, 2010). Gobbo (2010) discusses how Rauschenberg used his Dyslexia as a catalyst for his work.

Rauschenberg's first significant piece, *“This Is the First Half of a Print Designed to Exist in Passing Time”* (c.1949) depicts a series of wood cut operations on a field moving from black to white. This show of process and time is very similar o the way people with

Dyslexia understand chronology. They tend to prefer visual time lines rather than hearing about or reading an explanation of passing events. Rauschenberg used a similar approach again much later in his career when in 1997 he presented his *¼ Mile or 2 Furlong Piece*, a multi paneled work with 200 components that runs about 1,000 feet long. Autobiographical in nature, it includes motifs and processes from his artistic life. He presents elements related to language such as letters and signs along with geometric patterns, print transfers, and art reproductions all accompanied by a “sound scape”. A fascination with sound and many of the almost stereotypical reversals and mirrorings that are sometimes associated with dyslexia surface in Rauschenberg’s work through his life.

(Gobbo, 2010)

This truly shows that when given the correct support and proper positive mentality Dyslexia can be used as a catalyst to greatness.

Wolff & Lundberg (2002) also reviewed research in regards to Dyslexia leading the way to great artistic abilities. They suggested that this is due to different brain structures. Wolff & Lundberg noted that there was limited evidence to support this, but did discover that, through their examination of two study groups (students with Dyslexia who were enrolled in non-art degrees, and those who were participating in art programs at their universities), there was a higher number of students who showed identifiers of having Dyslexia in the art program

as a whole. In addition, the rigor of the art school programming was comparable to that of the non-art fields. This showed that the intelligence level of those with Dyslexia was comparable to their non-disabled peers.

CHAPTER III: DISCUSSION AND CONCLUSION

Summary of Literature

There are several overarching ideas that are evidenced across the literature that has been accumulated and grouped to provide the basis of this paper. The first theme that is evident is the increased anxiety and stress that comes with a learning disability. Students with Dyslexia have higher levels of anxiety, self-doubt, and lower self-esteem when it comes to performing academic tasks than their non-disabled peers. This impacts their overall academic performance and can cause lower grades or lower tests scores.

The second overarching theme that was found across the text was the higher levels of resilience and problem solving. This often goes hand-in-hand with higher levels of anxiety. Students with Dyslexia are often accustomed to having to think creatively to find ways to access education at the same rate as their peers who do not have Dyslexia. This means that they are accustomed to facing difficulties and finding the answers to solve their own areas of need. That being said, these students can often be less likely to accept accommodations due to feelings of embarrassment related to their disability in addition to developing their own resources to solve their problems.

Professional and School Applications

There are several professional and school applications that can greatly impact a student with Dyslexia's successfulness. The first is to train new teachers to understand and recognize the need for alternative teaching methods. If up-and-coming teachers are taught to include more visual and verbal aspects into their lessons students with differing needs will have a better access to education. In addition, if there is an increase in awareness of the acceptance of different learning styles, students will have a higher rate of acceptance and understanding of themselves.

This increase in professional awareness trickles down and better supports the students in school. If these professional applications are applied directly to the students, the benefits will include a faster acquisition of knowledge and increased longevity of staying in the educational system. With increased awareness of their own needs, students will also have a higher success rate as they transition into higher education or vocational programming.

Limit of Research

Due to the unique and specific focus for this topic, there has not been an exceptionally large amount of research done on adults with Dyslexia and how they are supported during their higher educational journey. Additionally, a limited sample pool lowers the validity of results along with gaps in the complete understanding of what is being done across higher education institutions. With a broadening of a scope to all Specific learning Disabilities, there is a lack of qualitative research to support

information that is specific to adults enrolled in higher educational programming who have Dyslexia.

A secondary limit to the current research is timing. It is only in the last several decades that there has been an increase in students with varying disabilities being accepted at higher rates into higher educational institutions than in the past. With this new influx, the research and understanding of its implications are all very new. This phenomenon creates a need for continual research and investigation on current practices to be continued for decades to come in order to get a true scope of the needs of adults in higher education institutions with Dyslexia.

Implications of Future Research

The implications of future research are very expansive due to the newness and novelty of the current research. With the foundation built, there are several areas of research that could be expanded upon. One is the effectiveness of the diversification of teaching and learning strategies and how, if at all, these better support the acquisition of knowledge. There would need to also be an exploration of what specific new techniques are the most effective.

There could also be additional research about the mental health of students with Dyslexia. Since the current research has shown higher levels of anxiety and resilience, additional information can be gained by developing more expansive mental health and self-sufficiency profiles of students with Dyslexia. This information could impact not only

how the students function in a school setting, but how educational institutions as a whole provide services and supports to these students.

Finally, there is always a need for additional research in understanding the neurological aspects of Dyslexia. Since it has been proven that there is no correlation between Dyslexia and IQ, further research can be done on the use of the right versus left hemispheres of the brain and how people with Dyslexia store and categorize information. With additional knowledge in this area, better interventions and trainings can be provided for people with Dyslexia enabling them to better access their hidden strengths and talents, as well as participating in tasks that they would otherwise find difficult.

Conclusion

In the past several years, the amount of students enrolled in higher education who have a specific learning disability is on the rise. This is true in both the UK and the United States (Pino & Mortari 2014). Pino and Mortari (2014) explain that the reason for this increase could be due to the increase in accommodations and supports that are now available for these students. This increase occurs, in part, to increase awareness of their needs, as well as changes in legislation that makes higher education more accessible to students with disabilities. Students with Dyslexia and other processing disorders often have trouble processing text and participating in the text based structure that most university and higher learning programs adhere to. This results in an increase of anxiety, stress, and depression in these students, which may result in lack of confidence and participation in higher education as a whole. Pino and Mortari (2014)

conducted a study to determine if accommodations for these students such as extended time, scribes and spell checkers help support the inclusion of these students.

The entirety of my education experience has been intertwined with this issue. Growing up, I was always in the lower-level reading groups. I needed my mom to help me learn how to memorize the spelling of words using rhymes and photos. In high school, I learned to infer and base most of my knowledge on classroom discussion and activities, as compared to my peers who could reference the text. In college, I focused on the visual arts and worked with my hands, took psychology classes full of discussions, and had my boyfriend read my textbooks out loud to me. When I graduated and got my first job as a paraprofessional, I was ecstatic to be working with so many students who learned just like I do and who faced the same struggles I went through during my learning experiences. I was given a number by one of my coworkers of a place I could get evaluated as an adult. This, unfortunately, did not change the system. Graduate school came with courses that had syllabi longer than most books I have read. Extended time was given, but the stigma and embarrassment of being a twenty-six year old who does not know how to spell “neighbor” lived on in the giggles of group projects and spelling mistakes made on white boards.

My students still faced similar experiences as well. Teachers became exasperated because they assumed students were just lazy—not understanding the amount of courage it takes to get up in front of their peers and read “incorrectly”. Because of those students’ experiences, I became more open and involved. I would read out loud with them as much as possible, happily stumbling and asking for their help. I offered extra points if someone found my spelling errors on the white board. This

showed me the key point that many of the following research article focused on: inclusion. The acceptance to include and incorporate these students into the classroom along with their needs is something that needs to continue on past primary and secondary education classrooms.

My experience in the classroom, both as a teacher and as a student, has caused me to become more passionate than ever about the inclusion of students with dyslexia in the higher education system. Whether students are trying to better their lives for themselves, or are seeking knowledge in a field to share their strengths with the next generation, accessibility to higher education and accommodations to make their dreams a reality is a key focal point. Studies suggest students with Dyslexia struggle more than their non-disabled peers with written exams, spelling, sound mapping, reading speed, and text comprehension (Callens, Tops & Brysbaert, 2012). According to Taylor, Duffy, & England, (2009) further support transitioning to the job force, how courses are taught, and how lessons are implemented may also be required in order to ensure students with Dyslexia are successful in higher education. Pino and Mortari's (2014) study explores the question: *How can the inclusion of students with dyslexia be fostered in mainstream educational settings from primary schools to Higher Education?* This question sparked many others in my mind. As I continue on my educational journey and the thesis process, I am searching to answer the question; how are students with Dyslexia being included in higher education?

It is my personal experiences and the experiences of those like me that has pushed the research and investigation forward to understand the trials that people with Dyslexia go through. Their strengths and the weakness play a major role in who these individuals

are. In understanding those teachers can better prepare themselves and their students to navigate in a world that is not always understating of different types of thinkers. With an increase in acceptance and an increase of awareness people with Dyslexia can continue to be critical members of society that both enhance and diversify the ways others think and live.

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