

Southern Illinois University Carbondale
OpenSIUC

Research Papers

Graduate School

Summer 6-29-2017

COLLEGE STUDENTS WITH AUTISM SPECTRUM DISORDER IN HIGHER EDUCATION

George D. Lowery

Southern Illinois University Carbondale, gdlower@gmail.com

Follow this and additional works at: http://opensiuc.lib.siu.edu/gs_rp

Recommended Citation

Lowery, George D. "COLLEGE STUDENTS WITH AUTISM SPECTRUM DISORDER IN HIGHER EDUCATION." (Summer 2017).

This Article is brought to you for free and open access by the Graduate School at OpenSIUC. It has been accepted for inclusion in Research Papers by an authorized administrator of OpenSIUC. For more information, please contact opensiuc@lib.siu.edu.

COLLEGE STUDENTS WITH AUTISM SPECTRUM DISORDER IN HIGHER
EDUCATION

by

George Lowery

B.S., Southern Illinois University Carbondale, 2010

A Research Paper

Submitted in Partial Fulfillment of the Requirements for the

Master of Science

Rehabilitation Institute

in the Graduate School

Southern Illinois University Carbondale

August, 2017

RESEARCH PAPER APPROVAL
COLLEGE STUDENTS WITH AUTISM SPECTRUM DISORDER IN HIGHER
EDUCATION

By
George Lowery

A Research Paper Submitted in Partial
Fulfillment of the Requirements
For the Degree of
Masters of Science
In the field of Rehabilitation Counseling

Approved by:
Dr. Carl Flowers, Chair
Dr. Keith B. Wilson

Graduate School
Southern Illinois University Carbondale
June 30, 2017

AN ABSTRACT OF THE RESEARCH PAPER OF

GEORGE LOWERY, for the Masters of Science degree in REHABILITATION COUNSELING, presented on JUNE 30, 2017, at Southern Illinois University Carbondale.

TITLE: COLLEGE STUDENTS WITH AUTISM SPECTRUM DISORDER IN HIGHER EDUCATION

MAJOR PROFESSOR: Dr. Keith B. Wilson

Although there is a wealth of literature available on children with Autism Spectrum Disorder (ASD), the scholarship regarding adults with ASD is much thinner. Serving adults with ASD in higher education is an emerging area of research in the study of autism in adulthood. As more people are being diagnosed with higher functioning forms of ASD, it is logical to assume that some adults with ASD will choose to pursue some form of post-secondary education. Despite the increase in students with ASD, very few institutions of higher education offer disability-specific services for students on the autism spectrum. The purpose of the current research is to review the body of professional literature pertaining to serving college students with ASD. This review focuses on the challenges faced by college students with ASD, the academic accommodations, modifications, and psychosocial interventions that student affairs educators, faculty, and rehabilitation professionals can implement to address these issues.

Keywords: Autism Spectrum Disorder, College students, and Accommodations

TABLE OF CONTENTS

<u>CHAPTER</u>	<u>PAGE</u>
ABSTRACT.....	i
CHAPTERS	
CHAPTER I-Introduction.....	1
CHAPTER II-Survey of Relevant Literature.....	11
CHAPTER III- Implications, Recommendations and Conclusions.....	36
REFERENCES	45
VITA.....	51

CHAPTER I

INTRODUCTION

Statement of problem

Until recently, Autism Spectrum Disorder (ASD) research has focused primarily on children. However, ASD is a lifelong disability, and now that more people are being diagnosed, more research is needed on ASD across the life span. Serving students with ASD in higher education is an emerging area of current and future research in the study of autism. As more people are being diagnosed with ASD without co-occurring intellectual disability (ID), it is logical to theorize that more adults with ASD will pursue some form of post-secondary education. As more adults with ASD decide to continue their education beyond high school, it is likely they will face new challenges, and will require a specific set of accommodations and interventions that are specific to college students with ASD. This is why a more comprehensive understanding of ASD, and how to accommodate college students with ASD, is important to student affairs educators who work with students with disabilities, and rehabilitation professionals alike. In order to gain a full understanding of ASD, it is important to understand the most recent prevalence data regarding ASD.

Prevalence of Autism Spectrum Disorder

It is estimated that about 1% of the total global population has an ASD diagnosis (Autism Society of America, 2015). In the United States about 15% of children meet the diagnostic criteria for an ASD diagnosis (Christensen et al., 2016). A careful analysis of the available prevalence data indicates 1 in every 42 males is diagnosed with ASD, while 1 in every 189 females is diagnosed with autism (Centers for Disease Control and Prevention, 2016). Overall, in the decade between 2000 and 2010, the number of people with ASD increased by nearly 120%.

The high increase in prevalence makes ASD one of the most diagnosed developmental disabilities (Autism Society of America, 2015). In the eight years between 2002 and 2010, the number of people with ASD rose 6 to 15% per year (Centers for Disease Control and Prevention, 2016). ASD affects more males than females; current estimates show that more than 3 million Americans are on the autism spectrum. (Slack, 2014).

Autism Spectrum Disorder Incidence

In 2014, the incident rate among white non-Hispanic children with ASD was 15.5 per 1000, as compared to 10.1 per 1000 in Hispanic children. Incident rates of ASD among African-American non-Hispanic children were 13.2 per 1000 in 2014 (Christensen et al., 2016). Although ASD can affect children from all racial and ethnic backgrounds, it is most common in white non-Hispanic children.

Almost 40% of people with ASD have some level of co-occurring intellectual disability (ID). Nearly 25% of people with ASD have extremely compromised intellectual function. People with ASD and intellectual disability generally have IQs of between 71 to 85. A greater majority of people with ASD have IQs of 85 or higher, which indicates average to above average intelligence. Just under 40% of people with ASD possess average or above average intelligence (Children's Hospital of Philadelphia, 2014). While ID can be seen in people with ASD, most adults on the autism spectrum have average to above average intellectual ability.

The Cost of Autism Spectrum Disorder

Serving people with ASD costs the United States over \$230 billion annually. The cost of serving a person with ASD with no intellectual disability is \$1.4 million annually. The cost doubles if a person with ASD also has co-occurring intellectual disability (Autism Speaks, 2014). ASD is one of the most costly developmental disabilities in America.

The History of Autism Spectrum Disorder

The term 'autism' was first used in the early 1900s to describe adults with schizophrenia; particularly those individuals who exhibited signs of social isolationism and patterns of self-centered behavior (Sole-Smith, 2014). The first officially recognized discovery of Autism Spectrum Disorder as it is known today was made by Dr. Leo Kanner in 1943. Kanner studied 11 children who exhibited many of the characteristics that define ASD today. Children in the study displayed an extreme desire for no social interaction with others. The children also exhibited an almost excessive need for strict adherence to routine. In addition, many of these children showed above average abilities in such areas as recall. Kanner called his newly discovered condition Infantile Autism (Baker, 2013).

A year later in 1944, Dr. Hans Asperger identified a similar, but less severe form of autism. Today this disorder is known as Asperger Syndrome (AS). People with AS tend to exhibit fewer intellectual deficits. For example, people with AS, or what today would be known as High Functioning Autism (HFA), have fewer delays in the development of language. However, children with AS tend to engage in non-age appropriate use of language. Children and adults with AS show marked deficits in socialization and emotional intelligence. Dr. Asperger noted in his original study that children with AS showed some deficits in physical movement. Like the children in Kanner's study, people with AS often engage in repetitive behavior and show signs of obsession with personal interest. Like Infantile Autism, the condition that Asperger discovered was apparent in early childhood and was a lifelong disability. Asperger originally classified the condition he discovered as a personality disorder (Deisinger, 2011). Today, however, Asperger Syndrome is no longer considered a standalone condition, but a milder form of ASD.

Throughout the 1950s and 60s, researchers thought that ASD was actually childhood onset schizophrenia. At this point in the history of psychotherapy, psychoanalytical theory was the approach of choice in treating mental illness. Experts believed that maladaptive parent-child relationships were a primary causal factor in the development of autism (Baker, 2013). The perceived connection between the parent-child relationship and autism gave rise to the Refrigerator Mothers theory. Dr. Bruno Bettelheim hypothesized that autism was caused by a lack of emotional attachment between mother and child (Simpson, Hanley, & Quinn, 2002). In a 1998 study by Wakefield et al., it was suggested that the measles-mumps-rubella (MMR) vaccine was the cause of autism in children (Rao & Andrade, 2011). As the scientific understanding of ASD and its causes grew, science has disproven both the Refrigerator Mother theory and the vaccine controversy.

In the 1970s the reliance on psychoanalytical theory to explain ASD declined and scientists found evidence of a biological basis for ASD. It was also at this point in the history of ASD that the high rate of co-occurrence between intellectual disability and ASD was established. Ten years later, autism was classified as a disorder different from that of childhood onset schizophrenia. This was when the common deficits associated with ASD were first mentioned in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM). At this time, autism was considered to be Pervasive Developmental Disorder (PDD). In 1987, the definition of ASD was refined to include Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS). This diagnosis was used to categorize people who meet some, but not all diagnostic criteria for ASD. Between 1994 and 2000, the diagnostic criteria were further refined to make the diagnosis of ASD a complex undertaking. In this six year span, several more disorders were added to the autism spectrum. These additions included Asperger's Syndrome and Rett's syndrome. In 2013,

ASD was again redefined in terms of its most common characteristics, including deficits in communication and social interaction, as well as the presence of restrictive and repetitive behaviors. According to the DSM-5, deficits in both areas of function must manifest early in life (Baker, 2013). Throughout its history, ASD has gone from being classified as a psychiatric disorder to a biological developmental disability with an array of possible causes.

Etiology of Autism Spectrum Disorder

Autism Spectrum Disorder is a biologically based neurodevelopmental disorder that typically affects children within the first two years of life. However, many cases of ASD are left undiagnosed until children are of school age. Many experts believe the most likely cause is neurological abnormality (Grandin, 2007), specifically in the shape and manner of brain function (Dissanayake, 2011). Aside from abnormal brain development, scientific evidence has also been discovered that suggests a relationship between human genetics, environment, and the development of ASD. Twin studies show that ASD tends to run in families. The findings of these studies support the hypothesis that in part, the cause of ASD may be genetic (Autism Society of America, 2015). It is unclear what exactly causes ASD, but it is thought to result from brain or genetic abnormalities that may be linked to environmental factors.

Description of Autism Spectrum Disorder

Characteristics of autism spectrum disorder. ASD is what is referred to in the professional literature as a spectrum disorder. A Spectrum Disorder is one in which people experience a wide range of deficits. For some, a spectrum disorder may be severely disabling, and others may experience little to no loss of function. For example, some adults with ASD are able to live independently, while some must live in an assisted living facility where moderate to major supports are available (National Institute of Neurological Disorders and Stroke, 2015).

Autism Spectrum Disorder is characterized by deficits in several key areas of human functioning. People with ASD will have difficulty with communication and interpersonal socialization. In order for these deficits to be attributed to ASD, they must be present in more than one social environment and must not result from other developmental issues. Social environments include school, family, and peer relationships; deficits in communication and social interaction must manifest in a minimum of three of the following ways. A person suspected of having ASD must exhibit signs of an inability to engage in social discourse with others. For example, people on the autism spectrum often exhibit extreme discomfort with affectionate action toward them by others. Affectionate actions can include physical touch (American Psychiatric Association, 2013; Carpenter, 2013). In addition to difficulties in social situations, people with ASD also show evidence of impairment in both verbal and nonverbal communication. Impairments in nonverbal communication often seen in people with ASD can range from a lack of eye contact with others, to an inability to comprehend body language or emotional affect of others. Problems with verbal communication may include inappropriate intonation, rate of speech, rhythm, or volume of spoken speech (Carpenter, 2013). All people with ASD will show delays in social skill development and communication.

People with ASD have difficulty cultivating personal relationships with others, including both friendships and romantic relationships. Examples of this inability to develop relationships may include an inability to engage in perspective taking, or a total lack of interest in age appropriate peer relationships (American Psychiatric Association, 2013; Carpenter, 2013). People with ASD often show a lack of empathy which may make establishing satisfying interpersonal relationships difficult.

A third characteristic of ASD is patterns of restrictive and repetitive behavior, interests, and activities. In order for a person to be diagnosed with ASD, they must exhibit at least two of the following signs and symptoms: repetitive speech, physical movements, or manipulation of objects. An example of this criteria would be an inability to use the pronoun 'I' when referring to oneself. People with ASD will often use their own name rather than 'I' when referring to themselves. Another example of repetitive speech might be disruptive vocalizations such as repetitive humming. Repetitive physical movement might include rocking or clapping (American Psychiatric Association, 2013; Carpenter, 2013). People with ASD engage in restrictive and repetitive behaviors, which may include speech, interest, or movement.

People with ASD are also very attached to routine and quite resistant to change. An example of a routine might be always having to eat the same meal at the same time on a specific day of the week. People with ASD also become very fixated on their own interests, for example, an obsessive need to watch a particular television program (Johnson & Levinson, 1988). ASD can cause extreme sensitivity to sensory stimuli. A person with autism may be unusually sensitive to heat, cold, or sound (American Psychiatric Association, 2013; Carpenter, 2013). ASD is characterized by a need for routine, narrow personal interests, and extreme sensitivity to sensory stimuli.

In order to be considered Autism Spectrum Disorder, the onset of this condition must occur early in life. Typically, in order to be diagnosed with ASD, a child must exhibit signs and symptoms by eight years of age. Typically, the first manifestations of ASD are seen at much younger ages. However, the severity of this disorder may not be fully realized until later in life when social expectations outpace the individual's understanding and socialization skills. As with other disabilities, existing deficits must significantly affect personal functioning (American

Psychiatric Association, 2013; Carpenter, 2013). Clinically, autism must be diagnosed by age eight, but it often does not affect people until later in life.

Autism and Co-occurring Medical Conditions

Research has found that ASD is more often found in people with certain medical conditions. These conditions include fragile X syndrome, tuberous sclerosis, congenital rubella syndrome, and untreated phenylketonuria (PKU) (Autism Society of America, 2015). Children with certain medical conditions have a higher prevalence of ASD.

Significance of the Problem

Now that a comprehensive background of ASD has been outlined, it is time to explore the importance of ASD in higher education. About 50,000 children per year reach adulthood in the U.S (Shattuck et al., 2012). Since more people are being diagnosed with ASD without ID, it is logical to theorize that some adults with ASD will attempt some form of higher education. According to the National Center for Education Statistics in the 2011-2012 academic year, 11% of college students identified as having a disability (National Center for Education Statistics, 2016). The Shattuck (2012) study indicates that just under 35% of young adults with ASD pursue education after high school. Likewise, 50% of young adults with ASD have employment or educational history within 24 months of graduating high school. In 2008, the percentage of adults with ASD participating in higher education was estimated to be between 0.7 and 1.9% (VanBergeijk, Klin, & Volkmar, 2008). Based on these percentages, 1 in every 130 college students and 1 in 53 students meet the criteria for a diagnosis of high functioning Autism (White, Ollendick, & Bray, 2011). It was estimated that 80% of college students with ASD did not achieve successful educational outcomes (VanBergeijk, Klin, & Volkmar, 2008). In their 2008 study, VanBergeijk, Klin, & Volkmar predict that the number of adults with ASD pursuing

postsecondary education of some type will only increase. Therefore, it is important that student affairs educators and rehabilitation professionals understand why students with ASD struggle in postsecondary education, and develop strategies to meet the needs of this growing segment of the college student population. As more students with ASD are attending college, it is increasingly important that colleges and universities address the specialized needs of students on the autism spectrum.

The Current Research

The purpose of the current study is twofold. Firstly, to examine the challenges that face adults with ASD in post-secondary education. This analysis will look at both academic as well as psychosocial issues. The second purpose of this study is to suggest effective accommodations and interventions to address the unmet needs of adult learners with ASD. The research questions that will drive this review of the professional literature are:

- 1) What challenges do adults with ASD face that make higher education problematic?
- 2) What academic accommodations and modifications might faculty and student affairs educators implement to meet these challenges?
- 3) What psychosocial interventions can be used to help students with ASD succeed in postsecondary education?

This review will conclude with recommendations that are important to rehabilitation professionals and student affairs educators who work with adult learners with ASD in postsecondary education. Ultimately, this research addresses what rehabilitation professionals and student affairs educators need to know about autism in higher education.

Research Strategy

The sources that comprise this review are scholarly articles, books, and reputable websites. The studies included in this paper were all published within the last sixteen years. All the scholarly materials used in this paper were found using either an electronic database called OneSearch, or via internet search using Google or Google Scholar. Two films related to ASD, Rain Man (1988), a well-known theatrical release, and Refrigerator Mothers (2002), a PBS documentary, are also included in the sources used in this paper.

CHAPTER II

SURVEY OF RELEVANT LITERATURE

Literature Review Method and Organization

The studies that comprise this literature review all report original research pertaining to the wide range of challenges encountered by college students with ASD, and how student affairs educators and rehabilitation professionals can effectively accommodate the academic and psychosocial needs of students with autism. The review will include studies from the United States and the United Kingdom. All of the articles were obtained using electronic resources such as academic databases and internet search engines. Some of the articles were found by reviewing the references used in works related to ASD in higher education; other articles were found via traditional database searches. Most of the studies being reviewed were published within the last eight years. Some were published within nine years, and one was published in 2001. For a study to be included in this review it had to meet the following criteria: the study needed to focus either primarily on college students with ASD or on adults with this disorder, with postsecondary education being a secondary focus. The following review will be organized thematically. The study had to include a discussion of the major themes guiding this review such as: challenges both academic and psychosocial related to postsecondary education for students with ASD, as well as accommodation and interventions used to address these challenges. This survey of literature includes studies related to the challenges of postsecondary education for students with ASD, ASD and academic accommodations, and focusing on psychosocial interventions.

Academic Challenges

Disclosure Issues

In general, the accommodation process begins with the disclosure of documented disabilities to the institution and to the faculty. Documentation entitles all students with disabilities, including those with ASD, to a set of federally mandated accommodations. These accommodations are not automatically granted to students in higher education (Brinckerhoff, Shaw, & McGuire, 1993; Brinckerhoff, Shaw, & McGuire, 1992). This is a major difference between the Individuals with Disabilities Education Act (IDEA), which governs the servicing of students with disabilities in elementary and secondary education, and the Americans with Disabilities Act (ADA), which outlines the mandated accommodations provided to students with disabilities in higher education. In higher education, students must ask for disability related accommodations and services (Adreon & Durocher, 2007). Many students with ASD fail to disclose their disability. One reason for this lack of disclosure is the negative attitude regarding ASD and college success that is shared by many college faculty members. Due to the invisible nature of ASD, many students fear that faculty will misunderstand their needs, and therefore, will not offer accommodations as they would for a student with a visible disability (Grogan, 2015). Differences in disclosure procedures from public school to higher education, and attitudinal barriers make students with ASD afraid to disclose their disability.

Cooperative Learning

Many college courses require learning activities that are based on social interactions between students. Cooperative learning tasks include small group projects and group discussion (Dente & Parkinson Coles, 2012). An analysis of the research pertaining to academic issues

facing college students with ASD reveals that learning tasks that involve social interaction are among the most problematic areas of academia for students with ASD.

Many college students with ASD have difficulty engaging in group learning activities. Difficulty with group work is often due to problems with socialization and communication (Cullen, 2015). However, there are other aspects to group learning that are difficult for students with ASD. Many students with ASD demonstrate hypersensitivity to sound, smell, and touch, which can make group work anxiety-provoking. Some students with ASD exhibit marked delays in speech and language development, which may make cooperative learning activities difficult for the student with ASD, other group members, and the instructor. Group-based assessment is a third aspect to cooperative learning that may be problematic for students with ASD. A key characteristic of ASD is deficiency in social interaction and communication. Students with ASD report that a lack of classroom-based social skills is the most difficult aspect of group learning that makes group-based assessment quite unfair to the student with ASD. Further, group-based assessment may not adequately assess what the student with ASD knows about the material being presented (Cullen, 2015; Taylor, 2005). One of the most problematic areas of academia for students with ASD is group-based learning. Difficulties with group learning range from a lack of social skills, to overload of the sensory system.

Critical Thinking Skills

A second aspect of higher education that is difficult for some students with ASD is the increased reliance on critical thinking skills that is often expected in college. Change of any kind is difficult for people with ASD. Changing from concrete thinking to abstractness is particularly problematic for students on the autism spectrum. Another aspect of critical thinking that is often difficult for many students with ASD is the understanding of concepts like audience and point-

of-view. Students who have difficulty grasping the concept of audience may monopolize classroom discussions or may not contribute enough input to such activities. Such students may offer too much detail in written work, or have difficulty changing the context of their written work, such as moving from formal writing to informal writing. Likewise, students with ASD who do not fully understand point-of-view may provide too little detail in their written work and then misunderstand suggestions for revising the work. Assignments that require a grasp of both point-of-view and audience can be doubly demanding for students with ASD. This type of learning problem may present itself in literature courses where the student must not only convey an understanding of an author's point-of-view, but also must meet the instructor's expectations for analyzing the piece through writing (Gobbo & Shmulsky, 2013). Students with ASD are at a disadvantage in courses throughout higher education that require critical thinking.

Executive Function

Executive function is the human ability to set goals, achieve those goals, and set new ones. This involves the ability to engage in long range planning; for example, college students must be able to plan a strategy for completing required work products. They must also be able to evaluate their own progress and realize when their progress is inadequate. Additionally, college students must be able to redirect their attention to the required task. Planning is one of the behaviors governed by executive functioning that is often impaired in people with ASD (Gobbo & Shmulsky, 2014).

Cognitive flexibility is another area of executive functioning that presents learning challenges for college students with ASD. Mental shifting is particularly difficult for college students with ASD. Students on the Autism spectrum can struggle with moving from concept to concept. The inability to shift mental focus can also have an adverse effect on maintaining

attention in students with ASD. Problems with attentional focus can make reading comprehension of college level material difficult for students with autism. The lack of attentional focus associated with ASD leads to conceptual confusion and problems in coping with the increased speed demands of a college course (Gobbo & Shmulsky, 2014).

Time management is an essential skill for any college student. However, this is another area of executive function that is problematic for students with ASD. A lack of adequate time management skills makes the college workload unmanageable to many students with ASD. These students typically put off academic tasks and lack an understanding of compensatory strategies to compensate for the delays (Hees & Roeyers, 2015). Deficits in executive functioning can manifest themselves in the college classroom through lapses in concentration and an inability to execute instructions or even an inability to navigate the campus independently (Dallas, Ramisch, & McGowan, 2015). Students with ASD often rely on set schedules and routines to manage their time in public school. Total dependence on routines and schedules is often problematic in higher education; class times and location can be changed, and classes can be canceled. The lack of routine in college can produce heightened levels of anxiety in students with ASD (Roberts, 2010).

Social Dynamics in the College Classroom

In addition to the more traditional academic challenges that are commonly associated with students with ASD in higher education, the social aspects of the classroom must be examined if the needs of college students on the autism spectrum are to be fully addressed. Due to a lack of social skills, college students with ASD are often unable to recognize typical social cues. A lack of social understanding can affect the flow of the learning process. For example, students with ASD may not recognize when the lecture topic has changed. Students with ASD

may not respect the personal space of other students or the professor. For example, these students may stand too close to others when interacting. A lack of understanding regarding classroom social norms may lead a student to interrupt other students or the course instructor. College students with ASD often lack eye contact with others. Faculty note the lack of eye contact as a violation of classroom social norms (Gobbo & Shmulsky, 2014).

A lack of understanding regarding the social structure of the college classroom may lead to inappropriate behavior on the part of students with ASD. Some students with ASD have a feeling of intellectual superiority. An exaggerated view of intellectual ability can cause negative feelings on the part of the typical college students. Interpersonal difficulty between students with ASD and their typically developing classmates may cause a slowdown in the flow of learning, especially when group work is involved (Gobbo & Shmulsky, 2014).

Sensory Processing

The academic environment of a college classroom involves many different types of sensory stimuli. This can lead to over-stimulation in students with ASD. Students on the autism spectrum can be effected by the lighting in the classroom or even the sound of other students typing (Hees & Roeyers, 2015).

Classroom Anxiety

According to White, Oswald, Ollendick, & Scahill (2009), as reported by Gobbo & Shmulsky (2013), evidence suggests that there is a positive correlation between intelligence and anxiety in adults with ASD. The vast majority of adults with ASD who pursue higher education are high functioning. Therefore, it is highly plausible that college students with ASD will experience some level of anxiety related to the more rigorous demands of academia. One aspect of the college classroom that tends to produce anxious emotions in college students with ASD is

over-stimulation of the sensory system. In addition to anxiety, sensory overload also leads to increased aggression in students on the autism spectrum. The potential for heightened aggression is an important aspect of ASD to be considered by instructors, because increased anxiety and aggression are typically detrimental to effective learning (Gobbo & Shmulsky, 2013).

Testing and Evaluation

Under the ADA most students with disabilities are entitled to accommodations for exams. Testing can be traumatic for typically developing students. Cases of test anxiety are often more pronounced in students with ASD. Students with autism may have deficits in their gross and fine motor control. An inability to maintain concentration can be another testing-related issue for students on the autism spectrum (VanBergeijk, Klin, & Volkmar, 2008).

Academic Accommodations

Addressing Disability Disclosure Issues

Typically, advocacy for students with disabilities at the college level is overseen by the university Disability Support Services (DSS). However, Grogan (2015) suggests that students with ASD might disclose their disability more readily if they worked with special education faculty; using special education faculty to serve as disability advocates might be more successful, due to the similarity with the K-12 school system. Students with ASD often feel that special education faculty are more in touch with the needs of students with disabilities. Since ASD is considered an invisible disability, faculty are often unaware of what appropriate accommodations may be for students on the autism spectrum, and it is essential that faculty work with other campus units to ensure that students with ASD are fully included in the academic environment (Cashin & Mulder, 2014). However, it is equally important to remember that ignorance of appropriate accommodations does not release faculty from their responsibility to provide

reasonable accommodations under the ADA, as determined by DSS. The findings of Cashin & Mulder (2014) do offer some important points about how serving students with ASD effectively must be a collaborative effort.

Accommodations for Cooperative Learning

A review of the literature indicates that one of the most common problems that college students with ASD experience is difficulty engaging in group work. There are a number of accommodations that can be made to make group work less of a challenge. Students with HFA may be able to cope with the stress of group work if instructors take some care when forming learning groups. Students with HFA tend to work more effectively with peers who are responsible and mature. Some students with ASD have delays in language development. Language deficits can present an obstacle to effective group work. It may be necessary to give students with limited language development individual rather than group work. Alternative forms of communication may be a reasonable accommodation for students with ASD that have limited language skills. Some common alternatives may include electronic communication such as email or written communication. In some cases, communication by telephone might be a useful alternative. Using these and other alternative methods of communication might make activities such as group work more accessible to students with ASD who have low language ability (Taylor, 2005).

Modification to Instructional Delivery

Some students can benefit from access to digitized learning materials. Early access to these materials is also most beneficial to students with ASD. Since deficits in information processing are often a key feature of ASD, it is particularly useful if instructors provide clear lecture notes in digitized format prior to class. Learning materials should avoid using forms of

speech such as idioms and figurative language, as these concepts can be difficult for students with ASD to grasp (Taylor, 2005).

Case Management Services

Students with ASD may require case management type services to ensure class attendance. It is not uncommon for students with autism to actively avoid attending class sessions where social interaction is a key component of learning. Students on the autism spectrum may avoid science labs or seminar style courses. A case management model might help students with ASD stay organized, so attending class is not so challenging. Electronic devices such as tablets and smart phones can also aid in helping students with ASD stay focused, so they are better able to attend class regularly (Hart, Grigal, & Weir, 2010). Case managers may even need to provide reminders and prompting to facilitate class attendance of students on the autism spectrum (Taylor, 2005).

Accommodations for Facilitating Critical Thinking

A lack of critical thinking skills often affects the academic performance of college students with ASD. Instructors can provide learning supports to facilitate the acquisition of critical thinking skills. Professors can provide instruction on how to develop and use critical thinking skills in many lower division courses. Learning tasks that involve critical thinking skills should be broken into their component parts. This modification will reduce the stress on students with ASD, and the typical student as well (Gobbo & Shmulsky, 2013). When working with students with ASD, it is wise if instructors balance their presentation of abstract ideas with related concrete concepts. Students with ASD often have difficulty grasping abstract concepts. The lack of critical thinking skills among students with ASD can lead to learning and

psychosocial problems in the classroom. By using this modification to teaching style, instructors can reduce the occurrence of many of these problems (Gobbo & Shmulsky, 2013).

All students learn differently. This is no less true for students with ASD. It is important that professors present abstract concepts in a variety of ways. Students with ASD are more likely to comprehend abstract ideas if they are presented in a manner that complements the students' learning styles (Gobbo & Shmulsky, 2013). In college, many of the learning activities involve perspective-taking. For many students with ASD, understanding the point-of-view of others is quite difficult. Professors can implement roleplaying into their instructional repertoire, and roleplaying encourages students with ASD to explore the point-of-view of others, including fellow students or the author of a work (Gobbo & Shmulsky, 2013).

Compensating for Deficits in Executive Function

Deficits in executive function cannot be accommodated for in the traditional sense. However, structural adaptations can be implemented in college courses to address these deficits. Strict adherence to routine is a key factor in the successful functioning of adults with ASD. In order to meet the educational needs of college students with autism, colleges and universities must build routine into the structure of all courses. The types of routines that have been found most beneficial to college students on the autism spectrum include: well organized and sequenced instructional time, clearly defined procedures for common academic tasks, schedules, grading rubrics, and assigned seating. Making all course material accessible to students with ASD early is an effective way to accommodate for deficits in executive function. One suggestion is to use an online platform to increase accessibility to instructional material. However, if an online medium is used it is essential that the website is easy to navigate (Gobbo & Shmulsky, 2012). Students with ASD may have impaired problem-solving abilities. Pugliese & White

(2013) reported promising results in teaching young college students with ASD problem-solving skills using a social skills group model based on the principles of Cognitive Behavioral Therapy (CBT). The results of this pioneering study clearly indicate that CBT may be an effective therapeutic approach to use when helping college students with ASD develop or improve problem-solving skills. Pugliese & White (2013) suggest that this intervention deserves more study.

Accommodating for Sensory System Overload

Sensory system overload is very common among students with ASD. Yet, it is one of the least addressed obstacles to learning for students on the autism spectrum. There are a number of low tech accommodations that can be used to address these issues. Students with ASD may benefit from wearing sun glasses in the classroom. This simple accommodation will reduce the distracting effect of lighting that some students with ASD experience. Likewise, noise reduction headphones may help students who are distracted by normal classroom noise (Hart, Grigal, & Weir, 2010). Paying particular attention to classroom arrangement can help reduce the effects of increased sensory stimulation. Some students with ASD may focus better in classes where they are located near the front of the classroom. Others may need access to exits if classroom stimulation leads to anxiety attacks. Still, other students with ASD may need to be isolated from those students who are actively engaged in class. Professors need to take the effects of classroom stimuli into consideration when developing an optimal classroom arrangement. If a professor believes that a student may be autistic, it is suggested that they offer the student choices in seating preference (Gobbo & Shmulsky, 2012).

Accommodating for Emotional Issues and Anxiety in the Classroom

Very little research has been done on managing the anxiety and other emotional issues that often accompany ASD in the college classroom. The literature suggests that many accommodations used in other problem areas can be used to address emotional issues related to ASD. For example, careful development of learning groups can reduce a general feeling of anxiety toward group work. Alternatives to outward class participation can help reduce feelings of anxiety associated with social interaction (Gobbo & Shmulsky, 2013). Professors can also reduce some of the anxiety and emotional distress of the college classroom by implementing a discussion about individual and learning differences to their courses early on in the semester. In this way, typical college students can gain an understanding of the challenges faced by students with disabilities. If typical students are better prepared for some of the psychosocial and behavioral deficits associated with ASD, they will interact more effectively with students on the autism spectrum. This can reduce the emotional stress that students with ASD may feel (Gobbo & Shmulsky, 2013).

Accommodating Testing and Evaluation Issues

Many of the standard testing accommodations that are used by students with other disabilities have been proven effective for students with ASD. Sensory stimuli in a typical classroom may heighten the severity of test anxiety being experienced by students with ASD. Sensory stimuli may also interfere with the student's ability to focus on the exam. For these reasons a separate testing area free of distracting stimuli is a reasonable testing accommodation for students with autism. Another effective testing accommodation for students with ASD is extended time for taking exams. More time to complete an exam will help reduce feelings of anxiety. Students with motor control deficits may also require more time to complete exams that

are writing intensive, or those that may require good fine motor control such as a multiple choice test using a scantron to record student responses (VanBergeijk, Klin, & Volkmar, 2008).

Universal Design for Learning in Academia

Research has suggested that employing the principles and practices of universal design for learning (UDL) can change the focus of teaching college students with all disabilities from one of accommodation, to one that emphasizes true learning. UDL is built on the individuality of learning. For example, no one student will process information or express ideas in the same way. There is no one way to foster engagement in the learning process. Every student learns differently; therefore, the approaches to learning must be tailored to each student's learning style (Colvin & Taylor, 2013).

The academic utility of UDL in higher education has been recognized by the passage of the Higher Education Opportunity Act of 2008. This law mandates that all newly designed college courses incorporate the principles of UDL. Some ways in which UDL can be used in the college classroom to address the needs of students with ASD are to use more direct language in direct instruction. Another important aspect of using UDL with students who have ASD is to create a learning environment that caters to various learning styles. Developing a student-centered learning environment will increase the probability that students with ASD are actively engaged in learning (Colvin & Taylor, 2013).

Playing to Strengths

Learning is improved when it focuses on a student's strengths. Students with ASD are often more engaged in learning when they are interested in the topic of the course. Students with HFA want to demonstrate knowledge. When the learning environment allows for such demonstration, students with ASD are more engaged in classroom activities. Students with ASD

tend to follow classroom routines and procedures rigidly. A strict adherence to routine and procedure also fosters greater engagement in learning (Gobbo & Shmulsky, 2013).

Psychosocial Issues

Independent Living

Depending on the severity of the disability, challenges related to independent living can be one non-academic issue that students with ASD struggle with. These issues are very different depending on the student's living arrangements. Students with ASD who live in off-campus housing may find it difficult to navigate public transportation. The lack of routine that is often associated with public transportation in a college community may produce anxious feelings in off-campus students with autism. Students with ASD also report difficulty in functional skills associated with independent living. These problem areas include eating, sleeping, and household tasks. Students may have difficulty maintaining a routine for completing these and other activities of daily living (Cullen, 2015). The research suggests that college students on the autism spectrum may require functional supports such as instruction on how to do laundry and manage money (Barnhill, 2014).

It is clear over-stimulation of the sensory system can lead to classroom issues. However, increased stimulation can also be a problem for those students with ASD who choose to live in on-campus housing. Just as sensory stimuli such as sound and light can lead to ineffective learning, over-sensitivity to these same stimuli might lead to psychosocial problems in social environments such as residence halls (Masterson & Meeks, 2014).

Socialization

Just as maladaptive social skills can make academia challenging for students with ASD, they also affect other aspects of college life for students with autism. College students with ASD

often report feeling ostracized by their peer group. For many students with ASD, this lack of belonging leads to loneliness (Cullen, 2015). One of the most stressful environments for college students with ASD is the residence hall. Many elements of residence hall living build on effective social skills. For example, residence hall life typically involves a number of social activities and large group gatherings such as floor or hall meetings. These types of socially intensive activities can lead to feelings of frustration for students with ASD (Dente & Parkinson Coles, 2012). People with ASD often have difficulty developing and maintaining friendships. The lack of peer relationships between students with ASD and the typical college student may occur for a number of reasons. People with autism often find it difficult to react to the emotions of others. People with ASD fixate on certain interests. Tendencies such as these might isolate students with ASD from their peers (Graetz & Spampinato, 2008). Even the most basic social situation such as eating dinner or going to the movies in a group can be problematic and emotionally taxing for college students with ASD (Glennon, 2001).

Mental Health

The increasing academic and social demands of college life can lead to the development of mental health conditions such as depression and anxiety in typical college students. These demands are doubly difficult for students with ASD. Therefore, it is not uncommon to see students with ASD develop co-occurring mental health disorders such as these. For some students with ASD, the demands of higher education can be so overwhelming that conditions like panic disorder develop (Hees & Roeyers, 2015). From a clinical standpoint, over 20% of young adults exhibit the first signs of mental illness in the college years. Almost 40% of adults with ASD will develop a more serious mental health disorder in college. The more serious

disorders seen in college students with ASD include mood disturbances and psychoses (Pinder-Amaker, 2014).

Dating and Sexuality

Many young adults with ASD are unfamiliar with dating, to say nothing of the complexities of a healthy sexual relationship. Many college students with autism may be unaware of what appropriate interactions with a potential dating or sexual partner look like (VanBergeijk, Klin, & Volkmar, 2008). Issues related to sexuality are particularly traumatic and problematic for college students with ASD.

Navigation of Campus

Some students with ASD have physical limitations and spatial processing disorders that make navigating unfamiliar environments such as college campuses challenging. Students with these types of problems might have issues finding where classes as well as various student services are located. Another concern with navigating campus for students with ASD is establishing routes that do not over-stimulate the brain (Masterson & Meeks, 2014). In addition to finding where classes and other services are physically located, part of navigating a college campus is learning to access and utilize services such as the library and dining facilities, which is especially problematic for students on the autism spectrum (Taylor, 2005).

Stress

Transitioning from high school to college is a stressful time for typically- developing college students. As a result of deficits in social functioning and communication, the stress of going to college can be doubly overwhelming for students with ASD (Glennon, 2001).

Typically developing adult learners can adapt to stress, whereas college students with ASD find dealing with stress more of a challenge.

Psychosocial Interventions

Mentoring

Recent research suggests mentoring programs can help address many of the psychosocial issues that students with ASD experience in higher education. College students with autism report that having a specific staff person at the institution to turn to in times of crisis helps them to feel safe in the college or university environment. One of the areas in which mentoring is most effective for students with ASD is in improving independent living skills. Students with ASD indicate that mentors can be most helpful in areas such as decision making and organization. Students on the autism spectrum often have a great deal of difficulty understanding ambiguity. For example, students with ASD might have some difficulty understanding residence hall policies and procedures which are not clearly and concretely stated. A mentor may help ease feelings of stress and anxiety produced by ambiguities. They may also assist in clarifying unclear rules, regulations, and policies. Student affairs educators must understand that students with ASD find the mentoring relationship most helpful when contact is in person. Students indicated that telephonic or email communication was too impersonal to foster a mentoring relationship. Students with ASD find a mentor a valuable source of general information and advice about many aspects of college life (Hees & Roeyers, 2015).

Peer Support Groups

A group-based intervention allows students to share information about the challenges they face in higher education. Peer support groups allow students to gain perspective about how ASD affects others with this disability, both academically and socially. Students with ASD find peer groups more effective than psychoeducational groups, such as social skills training (Hees & Roeyers, 2015). This is in direct contradiction to Barnhill (2014). Barnhill indicates that

psychoeducational groups, such as social skill training and instruction in activities of daily living, are among the most widely requested services by students with ASD. Adults with ASD report that a structured peer support group is effective in fostering their overall development.

Social Skills Training

Group-based psychoeducation can be a particularly valuable psychosocial intervention for college students on the autism spectrum. Social skills training can help students with ASD learn how to cope with the academic and social expectations of higher education. Social skills groups can help students with ASD develop effective strategies for managing academic issues, such as learning to work in groups, developing study skills, and addressing vocational issues. Common psychosocial issues related to students with ASD in higher education include dating and sexuality, effective and appropriate social communication, as well as social and relational boundaries (Masterson & Meeks, 2014). Social skills training is one of the most effective interventions for addressing many of the psychosocial issues that present challenges for college students on the autism spectrum.

First Year Experience Courses for Students with Autism Spectrum Disorder

Many colleges and universities offer courses for students to learn how to adapt to the academic requirements of higher education. In 2009, the University of Connecticut piloted a new first year experience course for freshmen with ASD. The course covers the same basic material as a typical introduction to college class would. However, this course also includes content specific to the challenges new students with ASD face as they attend college for the first time. The course includes social skills training, as well as strategies for adapting to the faster pace of higher education. The students in this study reported that this class was a positive experience for two main reasons. Firstly, this class allowed students with ASD to take a course similar to that of

other freshmen. Secondly, it provided students on the autism spectrum a chance to interact with other students who understand the challenges associated with ASD in the context of higher education. From a practical point of view, students in the study indicated that they learned skills and strategies that would make the college experience less overwhelming. This class covers many academic and psychosocial issues that are particularly problematic for students with autism. Specifically, this class covers socialization within the context of the college or university community. It also covers areas of executive function such as time management and problem-solving skills. This classroom based intervention produced some important findings about helping students with ASD adapt to the academic and social demands of higher education. Students with ASD must develop the capacity to extend themselves intellectually, emotionally, and socially. While the need for supportive programs and services is clear, it is also important to remember to tender support with equal challenges. Students with ASD must practice newly learned skills; therefore, repetition is essential in preparing new students with autism to succeed in higher education. People with ASD often do not respond well to the criticism of others. Nevertheless, it is important to provide students on the autism spectrum with feedback. Interventions such as the one described in this study are most effective when they focus on the student's interests and strengths (Rowley & Wenzel, 2010).

Many college students on the autism spectrum reported that social skills training has been effective in meeting their personal psychosocial needs. The ability to recognize and remember faces is one problem that was reported in this study. The most effective use of social skills groups for students with ASD is the opportunity to engage in safe social interactions with their peers (Masterson & Meeks, 2014). Social skills training is an excellent way of addressing the general psychosocial issues common to the majority of college students with ASD.

Counselling and Psychological Services

Psychological services will help students with ASD cope with the academic and social demands of college. Mental health services will also help students with ASD manage conditions such as depression and anxiety (Hees & Roeyers, 2015). Due to the increasing enrollment of students with ASD in higher education, several institutions have implemented ASD specific individual and group counselling services (Barnhill, 2014). Counseling is an effective psychosocial support for students with ASD. However, it is important that directive therapeutic modalities be used with this population. The directive therapies are more effective with people on the autism spectrum, because people with this disability often lack personal insight that makes drawing conclusions or establishing connections difficult for them. The directive approaches are particularly important when addressing the complexity of social situations. For many adults with autism, each aspect of the social situation must be thoroughly analyzed and a step by step plan must be devised for addressing such situations (VanBergeijk, Klin, & Volkmar, 2008). Due to the high co-occurrence of mental health disorders and ASD in college age young adults, appropriate counseling and other psychological services are critical to a successful experience in higher education.

Most students with ASD have limited emotional intelligence. Young adults on the autism spectrum often lack a clear understanding of their own emotions as well as the emotions of others. Campus mental health services that are geared toward meeting the needs of this growing student population should utilize psychoeducation to increase students' awareness about their disability and how it can affect emotional health. A fundamental goal of psychoeducational programming in higher education is to help students with ASD develop skills and abilities to better navigate the emotional world of young adulthood (VanBergeijk, Klin, & Volkmar, 2008).

Leisure Time Activities

Hees & Roeyers (2015) suggest that engaging in leisure time activities is an excellent method for managing psychosocial stressors related to college life. Leisure activities reduce feelings of anxiety that often accompany the higher education experience of students with ASD. A critical finding of this study is that students with ASD need to engage in leisure time activities that are outside of their established interests.

Social Interaction

Loneliness is a common emotional state for college students with ASD. Many of these students turn to family to satisfy the human need to belong. This is especially common among students with ASD who live at home. However, on-campus students reportedly turn to family for social support as well, while some students reportedly have the need for social contact met by their peers. Many students with ASD turned to the internet and social media to meet their need for social engagement. Students with ASD indicated that using social media helped them find peers that shared common interests (Cullen, 2015). Despite the feelings of anxiety often associated with developing new social relationships, socialization remains essential to healthy human development. Given the deficits in socialization often associated with ASD, activities that foster socialization are essentially important for students on the autism spectrum.

Residence Hall Life

Typically, college students who live in on-campus housing share a living space with another student. Due to social interaction, and sensory and communication deficits that are often associated with ASD, this type of living arrangement could cause stress for students on the autism spectrum. However, a single room is an accommodation that would alleviate many of the psychosocial stressors that would come with living with a roommate. In a single room, a student

with ASD would have much more control over sensory stimuli that could cause them distress. For example, the student would be able to control the noise, lighting, and temperature levels of his or her own room. A second reason why single room living might be more advantageous to students with ASD, is that they would have a safe environment to return to when they feel overstimulated (Masterson & Meeks, 2014). Residence hall living can be overwhelming for students with ASD; therefore, single room living may be one of the most effective supports colleges and universities could offer for students with autism.

In order to adequately support college students with ASD or any disability in residential life, it is important that all staff understand the basics of autism. Staff that will provide direct services to those residents with ASD will require more intensified training. This type of training will prepare professional staff to accommodate the needs of students with ASD who live on campus. More importantly, this training also prevents misjudgments about students with autism and fosters a positive campus culture towards students with disabilities. Research suggests that this type of training should focus on familiarizing staff with the features of autism spectrum disorder and providing detailed examples of the challenges a student with ASD might face living on campus (Aackles, Fields, & Skinner, 2013).

Many colleges and universities offer advanced move-in programs for students with disabilities. This is an essential support for students with ASD. Early move in programs allow students with ASD to adjust to residential life and the campus in general before the arrival of other students. This extra time for moving in lessens the mental and emotional stress of transitioning to college. In addition, these types of programs have been shown to improve the academic performance of students with ASD (Aackles, Fields, & Skinner, 2013).

People with ASD rely heavily on established routines and schedules. Unexpected activity may cause stress for students with ASD. Housing staff should arrange a schedule and a routine for completing room repairs and other general tasks. Establishing an effective working relationship between the student, staff, and DSS can lessen or prevent problem behaviors (Aackles, Fields, & Skinner, 2013).

Managing Stress

“Stress results from the interaction between stressors and the individual’s perceptions of those stressors” (Glennon, 2001, p. 188). Under this definition of stress, it is the person’s perception of events that causes the feelings of stress. If students with ASD can identify anxiety and the thoughts and actions that accompany it, they may be able to alter how they perceive and react to a stressful situation. Cognitive Behavioral Therapy (CBT) begins by helping the person recognize that the stressful feelings they associate with higher education are the result of a distorted thought process about and misconceptions of college. When using CBT with students with ASD, the modality may have to be modified to address differences in interpretation (Glennon, 2001). Glennon suggests that CBT is an effective intervention for helping students with ASD cope with the academic and social demands of higher education.

Abnormal sleep patterns are a common problem among college students with ASD. Given the pronounced effect that college-related stress has on young adults with ASD, adequate sleep is essential for students on the autism spectrum. In fact, it has been shown that students with autism who do not get enough sleep are often so overwhelmed academically that they are forced to reduce their course loads (Hees & Roeyers, 2015). Single room living in a residence hall may help students with ASD who struggle with abnormal sleeping patterns (Masterson &

Meeks, 2014). In addition to therapeutic approaches to managing stress, adequate sleep is an effective method of reducing both academic and psychosocial stress.

Supports for Navigating Campus

Colleges and universities must provide students with ASD the opportunity to learn the layout of campus. However, due to the anxiety that unfamiliar surroundings can produce in students with autism, it is wise that the transition to college takes place in the summer months. Typically, there are less students on campus in the summer. Less people will lead to less stress for incoming students with ASD (Masterson & Meeks, 2014).

Transition Programming

Another intervention that some colleges and universities use to help students with ASD acclimate to higher education is summer transition programming. These types of programs range from a student orientation designed specifically for students with ASD, to a longer length intensive transition camp. These camps may last up to 6 weeks. Transition camps give students with ASD the opportunity to experience many aspects of college life. Students involved in these transitional programs might participate in a number of psychoeducational activities. These activities include participation in college prep type courses, and group-based social skills training. Some institutions also offer tutoring services to help potential students with ASD learn to manage the academic demands of college. Optional activities were also available to help students with ASD learn to navigate the surrounding community independently. Students could go on shopping trips or concerts during their free time. The goal of transitional programs for incoming students with ASD is to help them learn independent living skills, develop effective practices for managing their time, and interact socially with other college age young adults. Most importantly, these types of interventions help students with ASD learn how to effectively

integrate the psychosocial and academic aspects of higher education into a positive experience that fosters growth and development (Barnhill, 2014).

Universal Design for Learning as a Psychosocial Intervention.

It is clear that UDL is beneficial to students with ASD in the college classroom. However, most college students with ASD are quite intellectually capable. Most students with autism struggle with the more practical issues of being a college student with a disability. UDL offers practical solutions to these types of problems. Students with ASD would find typical student orientation activities anxiety-provoking. Anxiety can be addressed by developing alternatives to large group orientation sessions. One such alternative might be to create a hybrid orientation program that includes both online elements and face to face interactions between students, faculty, and staff (Taylor & Colvin, 2013).

CHAPTER III

IMPLICATIONS, RECOMMENDATIONS AND CONCLUSIONS

Summary of Findings

A systematic review of the professional literature pertaining to students with ASD in higher education reveals several important findings. Autism affects over 3 million people in the United States. Typically, ASD affects white non-Hispanic males. Despite the fact that intellectual disability occurs in some people with ASD, the vast majority of people with autism function within the normal range of human intellect. Autism greatly impacts the U.S. economy. Throughout the evolution of ASD, scientists have moved from classifying it as a psychiatric disorder, to the more contemporary classification of autism as a bio-developmental disability with a myriad of possible causes. Science has yet to discover an exact cause for ASD; however, evidence suggests that the possible causes may range from neurological and genetic to environmental, or some combination thereof. People with ASD will show varying levels of dysfunction in areas of communication, social skill development, and relationship building. A history of certain medical conditions during childhood, such as Fragile X syndrome, increases the likelihood of developing ASD. As the number of adults with ASD pursuing education after high school increases, it becomes vitally important for rehabilitation and disability service professionals to meet the nontraditional needs of students on the autism spectrum.

Research has found that adults pursuing post-secondary education are often afraid to disclose their disability. Two of the most common reasons for the fear of disclosure are the differences in reporting requirements between high school and college, and the stigma surrounding ASD in higher education. Cooperative learning is particularly problematic for students with ASD. Difficulties with group-based learning range from a lack of social

understanding to overload of the sensory system. A key feature of academia is critical thinking. Critical thinking skills are often underdeveloped in students with ASD. Deficits in critical thinking may put students with autism at a decided disadvantage in postsecondary education. Deficits in certain areas of executive function can make academia challenging for students with ASD. Specifically, students on the autism spectrum have difficulty in areas such as planning, cognitive shifting, time management, and problem-solving. Such skills are essential to success in higher education. The inability to understand the social norms that often accompany an ASD diagnosis can slowdown the learning process. Sensory processing deficits can lead to anxiety and aggression. These emotional states can often be detrimental to learning. Testing and evaluation is a problem area for students with many types of disabilities, and these same problems are more pronounced for students with ASD.

In order to adequately meet the learning support needs of students with ASD, faculty and staff from various campus units must work collaboratively. Underdeveloped communication skills are among the most common causes of problems with group learning. Individual work or alternative methods of communication are effective as an accommodation for students with ASD. Digitizing course material is one of the most effective instructional modifications currently being used to assist students on the autism spectrum in the college classroom. Research suggests that many learning related issues being experienced by college students on the autism spectrum can be effectively addressed by expanding the current disability service model in higher education to include case management type services. Including instruction designed to develop critical thinking skills into the college curriculum, and breaking critical thinking exercises down into more manageable parts, are effective learning supports for stimulating critical thinking in students with ASD. Cognitive behavioral group therapy is currently being studied as an effective

intervention for helping college students with ASD develop problem-solving skills. Preferential seating is an effective accommodation for college students who experience problems with sensory system overload. Seating choice allows the needs of the student with autism to be met without disrupting the learning of other students. Including a discussion about individual differences in course introductory sessions will help alleviate some of the emotions that lead to behavioral issues in the college classroom that often accompany ASD. Furthermore, an open honest dialogue about ASD may reduce any feelings of anxiousness among the typically developing students. Standard testing accommodations, such as separate location, extended time, and scribes, have been found to be effective for students on the autism spectrum. Employing the principles of UDL in the college classroom will help students with ASD learn more effectively. Students with ASD are often high functioning in certain areas of learning, such as procedural thinking. Instruction is most effective when instructors use instructional methodologies which exploit these strengths.

As important as appropriate academic accommodations are to success in higher education for students with ASD, it is equally important that institutions of higher learning shift their focus to include the psychosocial aspects of postsecondary education. For only by integrating the psychosocial and academic needs of students with ASD under one all-inclusive service model, can rehabilitation and disability service providers meet the needs of the whole person.

Inadequate experience with completing activities of daily living may be challenging for students with ASD. Likewise, over sensitivity to common stimuli in shared living arrangements, such as residences halls, can make on-campus living difficult as well. Simple as well as complex social situations overwhelm the emotional stability of college students with ASD. Mental illness commonly co-occurs among young adults of college age with ASD. Factors related to the

development of healthy interpersonal relationships are particularly problematic for college students on the autism spectrum. Both the physical and intellectual aspects of navigating a college campus can be overwhelming for students with ASD. Managing stress is more of a challenge for college students with autism, as compared to the typically developing students. Mentoring has been found to be a vital part of psychosocial success among adults with ASD in higher education. Peer support groups help people with ASD develop more fully, both as college students and as young adults. Social skills training programs are critical to the psychosocial progress of college students on the autism spectrum. First year experience courses for students with ASD are most effective when course content focuses on student strengths and abilities. Social skills training is an effective intervention for addressing both general and specific psychosocial issues related to students with ASD and success in higher education. Appropriate and ongoing mental health treatment services are as important as social skills training to the psychosocial success of college students with autism. Engaging in regular extracurricular activity is an important part of psychosocial development among young adults. For young adults on the autism spectrum, it is equally important that they participate in leisure time activities that will expand their interests. Due to the lack of desire for social interaction that is often associated with ASD, it is important that college students on the autism spectrum be provided opportunities to engage in age appropriate social behavior. Typical residence hall living arrangements can be overwhelming for students on the autism spectrum. Therefore, it is critical that colleges and universities offer single room occupancy options as a housing accommodation for students with autism. Furthermore, establishing a positive and collaborative relationship between students with ASD, housing staff, and DSS is crucial to preventing psychosocial and behavioral problems in the residence hall setting. Cognitive behavioral therapy is an effective intervention for teaching

college students on the autism spectrum to cope with both academic and psychosocial stressors common to higher education. A regular sleep schedule is critical to managing stress for both typical college students, as well as students with ASD. Research suggests that it is best practice for young adults on the autism spectrum to transition to college during the summer months. It is during the summer that students with ASD are less likely to experience episodes of hyper-sensory stimulation. Summer transitional programming is an effective intervention for helping students with ASD adapt to the academic and psychosocial demands of higher education. Developing orientation programs that include both online and in person components is one way to use UDL to address psychosocial issues that are common among college students with ASD.

Interpretation and Implication of the Findings

The current body of professional literature pertaining to serving students with ASD suggests a number of significant implications for rehabilitation professionals and student affairs educators who work with students with disabilities. Students with ASD have needs beyond those addressed by the ADA and the current disability service model used in higher education. Services for students with ASD must go beyond the standard set of academic accommodations. Services for students on the autism spectrum must focus more on the social aspect of the learning process. This is going to require changes in the structure of college courses. For example, professors need to provide alternatives to group-based learning, assessment activities, and discussion based assignments.

All lower division college courses should include instruction in areas such as critical thinking, time management, and goal setting. In addition to increased instruction in already existing courses, colleges and universities need to develop more first year experience courses for

students with ASD or other developmental disabilities, similar to the course developed by the University of Connecticut.

Many of the instructional delivery modifications suggested in the literature are components of a well-organized and well-managed classroom at any educational level. In this age of technology, all instructional material should be digitized and easily accessible for both typically developing students, as well as all students with disabilities. With the widespread use of learning and content management systems (LCM CMS), like Blackboard or Desire to Learn in higher education, this would be a cost-effective and easy structural change to make in most college courses. Some faculty are fearful of using technology in the classroom. As a result, colleges and universities may have to invest resources in training faculty in the use of LMSs and CMSs. Many schools do offer training in these systems; however, they are voluntary, not mandatory. From a policy perspective, institutions may need to make training in and use of LMS and CMS a component of all courses.

The intent of the Higher Education Opportunities Act of 2008 should be expanded to include the incorporation of UDL in all courses, not just newly developed ones. Faculty must utilize instructional strategies that emphasize individualized learning and learning styles if the needs of students with ASD or any disability are going to be adequately met in higher education.

While the literature does not directly address the need for more comprehensive case management services in DSS offices, it is clear that these types of services would benefit students with ASD in many challenging areas, such as the development of organizational skills, staying on task, and attending classes. Case managers could also function as mentors for students with ASD or other disabilities. Mentoring seems to be critical to success in higher education for

students with ASD. Case managers would also be able to provide help with mastering the social dynamic of the college classroom.

In addition to the changes in the structure of academia, it is vital that colleges and universities address the psychosocial challenges of students with ASD and all disabilities. To meet the psychosocial needs of students with ASD, colleges and universities must include more psychoeducation in their DSS services. Psychoeducational services for students on the autism spectrum should include support and social skills groups. Institutions of higher education should work with outside agencies such as centers for independent living to help students with ASD develop daily living skills. University housing units could develop internal programs to help meet this need.

Due to the high co-occurrence of ASD and mental health conditions in college age young adults, it is critical that DSS offices and campus counseling centers work together to meet the mental healthcare needs of this student population. For students with autism, it is important that clinicians use the right therapeutic modalities. The more directive therapies have proven more effective with students on the autism spectrum. CBT shows some promise when used with students with ASD. In addition to treating commonly co-occurring mental health disorders like depression and anxiety, campus counseling services can help reduce the stress that many students with ASD feel upon entering the world of higher education.

Recommendations and Conclusions

Academic

The current body of professional literature pertaining to autism spectrum disorder in higher education suggests a number of areas in which more research is needed. It is clear that anxiety and other emotional issues can hinder the academic performance of students with ASD.

Despite this reality, very little research has been done on how faculty and student affairs educators can provide emotional support in the college classroom. New research should focus on developing the best practices for accommodating the emotional needs of students with ASD in the classroom.

Professional research clearly shows that faculty can have a negative view of how successful adults with ASD will be in higher education. Furthermore, the same research shows that this negative attitude makes students afraid to disclose their disability. More research must be done on how to effectively train faculty to work with students with ASD and other invisible disabilities. Neurodiversity is a hot topic in current ASD research. It is possible that research on how to apply the concept of neurodiversity might address the attitudinal issues surrounding autism spectrum disorder in higher education.

The current body of literature clearly indicates that most institutions of higher education focus much more on meeting the more traditional needs of students with ASD in the classroom. Much more research is needed on how to prepare students with ASD for the social side of academia and college life in general. The college classroom is a very different environment from the high school classroom; the social demands are very different. Colleges and universities must address, in terms of both programs and curriculum, how to best prepare incoming students with an ASD diagnosis for those differences. More research on the development of disability-specific first year experience courses will help address this lack of social preparedness in academia.

Psychosocial

Just as the social aspects of learning must be addressed in order for students with ASD to be successful in higher education, it is equally important that the social aspects of college outside of the classroom be part of the disability services model. To this end, more research and

development of psychoeducational programming is needed. Support groups and social skills training must become part of how students with ASD are served in higher education.

When addressing the needs of students with ASD, both rehabilitation professionals and student affairs educators who work with students with disabilities must take a more active role in helping students with ASD become familiar with and gain skills in areas that are not typically part of DSS services. Two of the most common issues are independent living and human sexuality.

What is inescapable is that the current disability services model in higher education does not fully meet the needs of students with ASD. The current services must expand to fully meet the needs of this growing segment of the college student population. The typical accommodations and supports are only a starting point. Rehabilitation and disability services professionals must be more concerned with the social side of higher education if they are going to provide effective accommodations and interventions that will foster educational success for students with autism. It is also quite evident that the structure of DSS must change in order to meet the needs of students with ASD. Incorporating a more comprehensive case management model is a structural change that deserves further study, as does the development of more psychoeducational programming for students with ASD and all disabilities.

Mentoring programs seem to show promising results as both an academic and psychosocial intervention. More study needs to be done on making these types of programs a general component of higher education. It is also quite clear that colleges and universities must develop programmatic interventions to address issues like independent living and human sexuality. To address these issues, legislative policy change must continue to occur. For example, strategies like UDL must be more widely used in all aspects of higher education.

REFERENCES

- Ackles, L., Fields, H., & Skinner, R. (2013). A collaborative support model for
- Adreon, D., & Durocher, J. (2007). Evaluating the College Transition Needs of Individuals with High-Functioning Autism Spectrum Disorders. *Intervention In School And Clinic, 42*(5), 271-279. Retrieved from <http://journals.sagepub.com/home/isc>
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: American Psychiatric Association.
- Autism Society of America. (2015). Causes. Retrieved from <http://www.autism-society.org/what-is/causes/>
- Autism Society of America. (2015). Facts and statistics. Retrieved from <http://www.autism-society.org/what-is/facts-and-statistics/>
- Autism Speaks. (2014). Landmark study, funded by Autism Speaks, provides crucial information for public policy and service planning across the lifespan. Retrieved from <https://www.autismspeaks.org/science/science-news/lifetime-costs-autism-average-millions>
- Baker, J. P. (2013, September 19). Autism at 70 — Redrawing the Boundaries. *The New England Journal of Medicine, 369*(12), 1089-1091. doi:10.1056/NEJMp1306457
- Barnhill, G. P. (2016). Supporting students with Asperger syndrome on college campuses: Current practices. *Focus on Autism and Other Developmental Disabilities, 31*(1), 3-15. doi: 10.1177/1088357614523121
- Brinckerhoff, L. C., Shaw, S. F., & McGuire J. M. (1993). *Promoting postsecondary education for students with learning disabilities: A handbook for practitioners*. Austin, TX: PRO-ED.

- Brinckerhoff, L. C., Shaw, S. F., & McGuire, J. M. (1992). Promoting access, accommodations, and independence for college students with learning disabilities. *Journal of Learning Disabilities, 25*(7), 417-429. doi:10.1177/002221949202500702
- Carpenter, L. (2013). DSM-5 autism spectrum disorder [PDF]. Retrieved from <https://depts.washington.edu/dbped/Screening%20Tools/DSM-5%28ASD.Guidelines%29Feb2013.pdf>
- Center for Disease Control and Prevention. (2016). Data & statistics. Retrieved from <https://www.cdc.gov/ncbddd/autism/data.html>
- Christensen, et al. (2016, April 1). Prevalence and characteristics of autism spectrum disorder among children aged 8 years — autism and developmental disabilities monitoring network, 11 sites, united states, 2012. *Surveillance Summaries, 65*(3), 1-23. Retrieved from <https://www.cdc.gov/mmwr/volumes/65/ss/ss6503a1.htm>
- Cullen, J. A. (2015). The needs of college students with autism spectrum disorders and Asperger's syndrome. *Journal of Postsecondary Education and Disability, 28*(1), 89-101. Retrieved from <https://www.ahead.org/membersarea/jped>
- Dallas, B. K., Ramisch, J. L., & McGowan, B. (2015). Students with autism spectrum disorder and the role of family in postsecondary settings: A systematic review of the literature. *Journal of Postsecondary Education and Disability, 28*(2), 135-147. Retrieved from <https://www.ahead.org/membersarea/jped>
- Deisinger, J. A. (2011, January 01). Chapter 10: History of autism spectrum disorders. In A. F. Rotatori, F. E. Obiakor, and J. P. Bakken (Eds.), *History of Special Education* (237-267). Bingley, UK: Emerald Group.

- Dente, C. L., & Parkinson Coles, K. (2012). Ecological approaches to transition planning for students with autism and Asperger's syndrome. *Children & Schools, 34*(1), 27-36. doi: 10.1093/cs/cdr002
- Dissanayake, C. (2011). Autism spectrum disorders have a neurobiological basis [Position statement]. Retrieved from <http://www.amaze.org.au/uploads/2011/08/Amaze-Position-Paper-Autism-Spectrum-Disorders-have-a-neurobiological-basis-Aug-2011.pdf>
- Glennon, T. J. (2001). The stress of the university experience for students with Asperger syndrome. *Work, 17*(3), 183-190. Retrieved from <http://www.iospress.nl/journal/work/>
- Gobbo, K., & Shmulsky, S. (2012). Classroom needs of community college students with asperger's disorder and autism spectrum disorders. *Community College Journal of Research and Practice, 36*(1), 40-46. Retrieved from <http://www.tandfonline.com/loi/ucjc20>
- Gobbo, K., & Shmulsky, S. (2014). Faculty experience with college students with autism spectrum disorders: A qualitative study of challenges and solutions. *Focus on Autism and Other Developmental Disabilities, 29*(1), 13-22. doi: 10.1177/1088357613504989
- Graetz, J. E., & Spampinato, K. (2008). Asperger's syndrome and the voyage through high school: Not the final frontier. *Journal of College Admission, 198*, 19-24. Retrieved from <http://files.eric.ed.gov/fulltext/EJ829415.pdf>
- Grandin, T. (2007). Autism from the inside. *Educational Leadership, 64*(5), 29-32. Retrieved from <http://www.ascd.org/publications/educational-leadership.aspx>
- Grogan, G. (2015). Supporting students with autism in higher education through teacher educator programs. *Southeastern Regional Association of Teacher Educators, 24*(2), 8-13. Retrieved from <http://www.srate.org/journal.html>

- Hart, D., Grigal, M., & Weir, C. (2010). Expanding the paradigm: Postsecondary education options for individuals with autism spectrum disorder and intellectual disabilities. *Focus on Autism and Other Developmental Disabilities, 25*(3), 134-150. doi: 10.1177/1088357610373759
- Levinson, B. (Director), Morrow, B. (Writer), Bass, R. (Writer). (1988). Rain man [Motion Picture]. USA: United Artists.
- Masterson, T. L., & Meeks, L. M. (2014). What support might help students with autism at university?. *Good Autism Practice (GAP), 15*(1), 47-53. Retrieved from <http://www.bild.org.uk/our-services/journals/gap/>
- Mulder, A., & Cashin, A. (2014). The need to support students with autism at University. *Issues in Mental Health Nursing, 35*(9), 664-671. doi:10.3109/01612840.2014.894158
- National Center for Education Statistics. (2016). Students with disabilities. Retrieved from <https://nces.ed.gov/fastfacts/display.asp?id=60>
- National Institute of Neurological Disorders and Stroke. (2015). Autism spectrum disorder fact sheet. Retrieved from <https://www.ninds.nih.gov/Disorders/Patient-Caregiver-Education/Fact-Sheets/Autism-Spectrum-Disorder-Fact-Sheet#top>
- Pinder-Amaker, S. (2014). Identifying the unmet needs of college students on the autism spectrum. *Harvard Review of Psychiatry, 22*(2), 125-137. doi: 10.1097/HRP.0000000000000032
- Pugliese, C. E., & White, S. W. (2014). Brief report: Problem solving therapy in college students with autism spectrum disorders: Feasibility and preliminary efficacy. *Journal of autism and developmental disorders, 44*(3), 719-729. doi: 10.1007/s10803-013-1914-8

- Rao, T. S. S., & Andrade, C. (2011, April). The MMR vaccine and autism: Sensation, refutation, retraction, and fraud. *Indian Journal of Psychiatry*, 53(2), 95-96. doi: 10.4103/0019-5545.82529
- Roberts, K. (n.d). Topic areas to consider when planning transition from high school to postsecondary education for students with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities*, 25(3), 158-162. doi: 10.1177/1088357610371476
- Shattuck, P., Narendorf, S., Cooper, B., Sterzing, P., Wagner, M., & Taylor, J. (2012). Postsecondary education and employment among youth with an autism spectrum disorder. *Pediatrics*, 129(6), 1042-1049. doi: 10.1542/peds.2011-2864
- Shmulsky, S., & Gobbo, K. (2013). Autism spectrum in the college classroom: Strategies for instructors. *Community College Journal of Research and Practice*, 37(6), 490-495. doi: 10.1080/10668926.2012.716753
- Simpson, D. E. (Director), Hanley, J. J. (Filmmaker), Quinn, G. (Filmmaker). (2002, July 16). Refrigerator mothers [PBS Documentary]. Chicago, IL: Kartemquin Films.
- Slack, Jonathan. (2015). Autism costs more than \$2 million over patient's life. Retrieved from <http://blog.autismhomesupport.com/autism-costs>
- Sole-Smith, Virginia. (2014). The history of autism. Retrieved from <http://www.parents.com/health/autism/history-of-autism/>
- students on the autism spectrum in college and university housing. *Journal of College*
- Taylor C., & Colvin K. (2013). Universal Design: A Tool to Help College Students with Asperger's Syndrome Engage on Campus. About Campus. *About Campus*, 18(3), 9-15. doi:10.1002/abc.21118

Taylor, M. J. (2005). Teaching students with autistic spectrum disorders in HE. *Education & Training, 47*(7), 484-495. doi: 10.1108/00400910510626330

The Children's Hospital of Philadelphia. (2014). Intellectual disability and ASD [PDF]. Retrieved from <https://www.carautismroadmap.org/intellectual-disability-and-asd/?print=pdf>

Van Hees, V., Moyson, T., & Roeyers, H. (2015). Higher education experiences of students with autism spectrum disorder: Challenges, benefits and support needs. *Journal of Autism and Developmental Disorders, 45*(6), 1673-1688. doi:10.1007/s10803-014-2324-2

Vanbergeijk, E., Klin, A., Volkmar, F. (2008). *Journal of Autism and Developmental Disorders, 38*(7), 1359-70. doi: 10.1007/s10803-007-0524-8

Wenzel, C., & Rowley, L. (2010). Teaching social skills and academic strategies to college students with Asperger's syndrome. *Teaching Exceptional Children, 42*(5), 44-50. doi: 10.1177/004005991004200505

White, S. W., Ollendick, T. H., Bray, B. C. (2011). *Autism: The International Journal of Research and Practice, 15*(6), 683-701. doi: 10.1177/1362361310393363.

VITA

Graduate School

Southern Illinois University

George Lowery

gdlower@gmail.com

Southern Illinois University Carbondale
Bachelor of Science in History, May 2010

Research Paper Title:

College Students with Autism Spectrum Disorder in Higher Education

Major Professor: Dr. Keith B Wilson