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Effective Learning Strategies for College Students with Asperger's Syndrome

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EFFECTIVE LEARNING STRATEGIES FOR COLLEGE
STUDENTS WITH ASPERGER'S SYNDROME

A Thesis
Presented to
The Graduate Faculty
Central Washington University

In Partial Fulfillment
of the Requirements for the Degree
Master of Education
Higher Education

by
Jamie Susanne Gilbert

July 2014

CENTRAL WASHINGTON UNIVERSITY

Graduate Studies

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ABSTRACT

EFFECTIVE LEARNING STRATEGIES FOR COLLEGE

STUDENTS WITH ASPERGER'S SYNDROME

by

Jamie Susanne Gilbert

July 2014

More and more students with Asperger's Syndrome (AS) are being accepted into college without having the proper foundation in place to successfully graduate with a Bachelor's degree. Students with AS need support systems in place to properly prepare them to face the challenges of college. The purpose of this study is to discuss the current research in regards to effective learning strategies that lead to academic success for college students with AS and to further discuss how to implement the learning strategies in higher education institutions. A single-subject study, using both qualitative and quantitative analysis, was performed. It involved one male participant, who was over the age of 18, currently enrolled as a college student, and who had a diagnosis of AS since 2011. The study identified which learning strategies are the most effective for him and what barriers could be standing in the way of his success.

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CHAPTER 1

INTRODUCTION

More and more disadvantaged students are being accepted into college without having the proper foundation in place to successfully graduate with a Bachelor's degree (Wilmer, 2008). "With 42 percent of students entering college underprepared and an estimation that 80 percent of future jobs will require the skills that a college education provides, we must find better methods to prepare these students and assist them in achieving their academic goals" (Wilmer, 2008, p. 5). Can at-risk students, like those diagnosed with Asperger's Syndrome (AS), graduate successfully on their own, or could student learning strategies be implemented to help these students with AS become successful in higher education and hence, increase the graduation rate?

AS is a pervasive developmental disorder on the Autism Spectrum (Butler & Gillis, 2010). Individuals with AS often demonstrate deficiencies in social interactions, problems in social communications, and also engage in repetitive behaviors, interests, and activities. Some of the indicators of the disorder are the inability to make or discern eye contact, differentiate facial expressions, and comprehend body language; these individuals also tend to speak too loudly or even too softly, perform stereotyped behavior, and have trouble staying focused on one subject, finding it almost impossible to move on to another topic (Butler & Gillis, 2010).

AS acquired its name from Dr. Hans Asperger, who originally described the disorder in 1944 (Klin & Volkmar, 1997). He noticed the similarities to Autism in his patients; however, he noted that his clients were higher functioning yet had issues with social interactions, verbal communications, and tended to focus intently on only one

interest at a time. The *DSM-IV* listed it as an official diagnosis in 1994, and the diagnosis remained the same for the next 19 years (Klin & Volkmar, 1997). The diagnosis changed officially in May of 2013 when the current *DSM-V* manual came out; the authors eliminated the official diagnosis of AS and grouped the symptoms under Autism Spectrum Disorder (“CDC-Diagnostic Criteria”, n.d.). However, the Centers for Disease Control (CDC) did note that individuals who have already been diagnosed with AS, prior to the *DSM-V* being published, can be re-diagnosed with Autism Spectrum Disorder without having to go through another complete evaluation. For the purpose of this study, the title AS will continue to be used since the study’s participant was diagnosed with AS in 2011 (prior to the new *DSM-V*) and has not yet been re-diagnosed under the new identification of Autism Spectrum Disorder.

According to Higbee, Dwinell, McAdams, GoldbergBelle, and Tardoal (1991), a lack of personal development can be the cause of deep personal concerns for students with AS due to their struggles with their learning disorder. The authors (1991) mentioned that deeper rooted issues, not connected to the students’ learning disorder, could also affect these students and make certain characteristics of AS appear more prevalent. These other issues can range from financial issues, an illness in the family, isolation, unrealistic choices about their college degree choice, low self-esteem, difficult time transitioning from their home to a college campus, and other stressors. (Higbee et al., 1991).

The need for research in the area of learning strategies for college students with AS is increasing, as is the need to provide students with AS with learning strategies, and congruent support services, to help them become successful college students. With the implementation of student learning strategies, their academic success would increase,

drop-out rates would decrease, and universities could find an increase in their budgets by retaining more students (Wilmer, 2008). It is true that college may not be the right path for every student, but many at-risk students, if given the proper tools, could blossom in a college setting and become very successful (Wilmer, 2008).

Purpose of the Study

According to the CDC (2014) 1 in 8 students has a diagnosis of AS. The National Center for Education Statistics states that there are 17,487,475 students enrolled in higher education institutions; therefore, if the CDC statistics are accurate, over 2,000,000 of these students could possibly have a diagnosis of AS (“Digest of Education Statistics”, 2013). More research needs to be completed to help these students develop learning strategies, so they can successfully transition into higher education institutions from high school. Many high schools only prepare students with AS to graduate and transition into a vocational program that prepares them to work. Not enough is being done to help these students gather the tools for academic success beyond high school. The research will demonstrate that if college students with AS are allowed to develop and implement learning strategies, they can achieve college success.

Limitations of the Study

One of the limitations of the study was that only one participant was involved. The author also has a teenage son with AS, so it was imperative that when conducting the interview and writing the results that no previous personal bias affect the study. For that reason, careful consideration was given to the questions asked and the learning strategy assessment used to safeguard against any observer bias. To control for personal bias, a learning strategy assessment was given to the participant. However, to control for

possible bias at the time of the participant's interview, the participant returned 3 days later to take the assessment a second time in order to strengthen the internal validity.

Research Question

What are effective learning strategies that lead to college success for a college student with AS? Effective learning strategies are ones that have been implemented into the student's life that assist in achieving college success; college success is then defined as a student in good standing who continues to move toward the completion of an undergraduate degree.

Definition of Terms Used

Academic Outcomes: specific, observable behaviors evidenced by students who have achieved educational objectives (“Learning Outcomes Assessment Planning Guide”, n.d.).

Accommodations: changes that helps a student overcome or work around their learning deficiency (“Supports, Modifications, and Accommodations for Students”, n.d.)

Asperger's Syndrome: a pervasive developmental disorder on the Autism Spectrum (Butler & Gillis, 2010).

At-Risk Students: students who are considered to have a higher probability of failing academically or dropping out of school. (“At-Risk Definition”, n.d.)

Autism Spectrum Disorder: a group of developmental disabilities that can cause significant social, communication and behavioral challenges (“CDC-Diagnostic Criteria”, n.d.).

Autism: comes from the Greek word "autos," meaning "self." The term describes conditions in which a person is removed from social interaction -- hence, an isolated self (Kuhn & Cahn, 2004)

BREADTH classes: General Education Requirements

Close Ended Question: limit the respondent to express an opinion without being influenced by the researcher (Foddy, 1993)

Coping Skills: the behaviors, thoughts, and emotions that you use to adjust to the changes that occur in your life ("How Do You Cope?", n.d.)

Disorder: a disruption of normal physical or mental functions ("Disorder", 2009)

DSM Manual: *Diagnostic and Statistical Manual of Mental Disorders*

Inclusive Education (inclusion): students with disabilities are supported in chronologically age-appropriate general education classes in their schools and receive the specialized instruction delineated by their individualized education programs (IEP's) within the context of the core curriculum and general class activities (Halvorsen & Neary, 2001).

Learning Strategies: a student's approach to learning and using information ("Strategic Instruction Model", 2009)

Open Ended Question: Allows the respondent to express an opinion without being influenced by the researcher (Foddy, 1993)

Pervasive Development Disorder: a severe and pervasive impairment in the development of reciprocal social interaction or verbal and nonverbal communication skills (American Psychiatric Association, 1994)

Retention: the measure of the proportion of students who remain enrolled at the same institution from year to year (Hagedorn, 2005).

Stigmatization: those who bear the stigma (Goffman, 2009)

Student Development: the ways that a student grows, progresses, or increases his or her developmental capabilities as a result of enrollment in an institution of higher education (Rodger, 1989)

Student Support Services: University support that aids the student in being successful (e.g. parent, peer mentor, study group, academic advisor, career counselor, teaching assistant).

CHAPTER II
LITERATURE REVIEW

Asperger's Syndrome

According to Glennon (2001), AS can be identified by the onset of non-verbal behaviors, and it distinguishes itself by an individual's lack of eye contact, lack of facial expression, and peculiar body postures. The diagnosis itself is based on a list of symptoms that are listed in the previous *Diagnostic and Statistical Manual of Mental Disorders (DSM IV-TR, 2000)*: impairment in social interaction, repetitive and restrictive stereotyped patterns of behavior, activities, and interests, substantial social and occupational impairments, and delays in language; these impairments can lead to difficulties in making friends, a lack of awareness of non-verbal social cues, poor motor skills (both fine and gross), narrow areas of interest, inflexibility in regards to changes in routine, and an inability to understand another person's perspective (Glennon, 2001).

Barriers to College Success

Melissa A. Sullivan (2009) published the poem "Lost" by a student with AS. The poem summed up what it is like for a student with AS to process incoming information:

Lost

The movement is all around me,
Their lips, their hands, their faces.
The words come tumbling like a mighty sea,
With waves and without spaces.
The movement then slides away,
I know it will come another day.
When it does, I'll know what to say.
But it'll be too late,
They'll have moved away.
I feel this rush inside of me.
I move, I want to set it free.

I open my mouth,
The movement is gone.
I know I had some wonderful song.
I wander around as my head spins with sound,
I just need more time inside this square mound.
I'll come through that doorway,
I'll know what to say.
I just need more time, maybe today? (p. 53)

Due to their limitations, students with AS are limited on their ability to socialize and interact with their peers, keep up on their assignments, and communicate effectively (Pisula & Lukowska, 2011). Compound this with being overwhelmed with loud sounds, congestion, and disarray, and these students' behavior can be seen as erratic; this erratic behavior can lead to the barrier of stigmatization (Pisula & Lukowska, 2011).

Stigmatization is defined as judging, and sometimes acting upon, misperceptions about a certain group of individuals, which can lead to harmful outcomes for the persons being stigmatized (Butler & Gillis, 2010). The stigmatization may start with adolescents, but while adolescents with AS mature into adults, the stigmatization can follow them into college, work, and personal situations, and can affect their ability in obtaining housing, receiving health care, and building relationships, which in turn can further affect the loss of their self-esteem (Butler & Gillis, 2010).

There is an abundance of research on social interaction and stigmatization against people with AS. The research tends to blame the stigmatization on the students' lack of social skills, but research is scarce when searching for other reasons for the stigmatization, such as having a lack of empathy and understanding from the peers and adults who come in contact with the student with AS (Pisula & Lukowska, 2011).

The stigma leads to the student with AS having very unfavorable experiences in their classes and extracurricular activities (Pisula & Lukowska, 2011). According to Pisula and Lukowska (2011), 71% of students with AS feel isolated from their peers compared to a total opposite shift of 92% of normally developed students who feel a significant connection to the same peers.

Support from other students, teachers, and administrators is limited for these students with AS, which escalates their anxiety and behaviors, creating a huge need for the use of coping skills and learning strategies (Pisula & Lukowska, 2011). The end result is the student with AS feeling a need to continuously switch schools or even give up and withdraw. Parents tend to blame the school in general, and hope that a new school will have the empathy and understanding their children need. According to Pisula and Lukowska (2011), the students with AS blame their poor school circumstances on the rejection, scorn, and lack of acceptance they receive from their peers. Evidence of their true perceptions is limited, but what is true, according to Pisula and Lukowska (2011), is that “social support has an important role in formation of psychological well-being and serves as a buffer against stress against various groups of adolescents” (p.188). The students with AS need the same social support for their psychological well-being as students without any type of diagnosis, and this social support could also protect them against the stigma that is holding them back (Pisula & Lukowska, 2011).

Butler and Gillis (2010) hypothesized that the social behaviors students with AS generated had a greater effect on the stigmatization they faced compared to if their critics only knew about their label but had not witnessed their behavior. Additionally, they hypothesized that if these same peers, who would have potentially judged them, had a

prior knowledge or experience with AS, the stigmatization would have decreased (Butler & Gillis, 2010).

They created a 2x3 between-subjects design with two independent variables, which were described as label and behavioral for the purpose of testing their hypothesis (Butler & Gillis, 2010). The difference between the label's two levels was presence and absence of the label, "Asperger's Disorder" (p. 742). There were then 3 levels of behavioral descriptions: (1) social behaviors of adolescents with AS, (2) milder deficits that are not usual for adolescents with AS, and (3) a control level that had no characteristics belonging to adolescents with AS. Participants were assigned to one of the 6 levels, and given self-report questionnaires utilizing a scale for social distance similar to that of a Likert scale. The research agreed with the hypotheses and concluded that adolescents with AS indeed experience stigmatization hypothesis (Butler & Gillis, 2010). The research went on to show a statistically significant impact and large effect size, which signified that the behavior of the adolescent with AS accounts for a large amount of the stigmatization they endure. The outcome goal of this study was to educate future researchers and therapists for the need to decrease the stigma towards people with AS (Butler & Gillis, 2010).

Stigmatization is only one of the barriers that adolescents with AS face on the long road to inclusion in school and in their extracurricular activities. Interventions are urgently needed for adolescents with AS; yet there are little evaluations on strategies devised to help define and implement them (Broderick, Caswell, Gregory, Marzolini & Wilson, 2002). Ample research suggests the need for adolescents with AS to change their behaviors and find ways to socially integrate into their classrooms and any other

type of social situation they desire to be a part of. Yet, research is lacking for methods to help the “normal” students and adults educate themselves about AS, and consequently, learn tolerance and cultural awareness, so that they may meet the students with AS halfway and also help them feel socially included and accepted (Broderick et al., 2002).

The students with AS are constantly excluded from activities due to their alleged socially inappropriate behavior (Broderick, et.al., 2002), but there is no definition listed in the research for what the researchers deemed “socially inappropriate.” Are the students with AS truly being socially inappropriate, or are the people who are labeling them unaware of their disorder and therefore, misinterpreting the behaviors of the student with AS altogether? Despite all of the research focusing on social skill deficits in adolescents with AS, research is lacking in other areas that these students are also deficient in, such as their problems with loud noises, taste sensitivity, fear of large crowds, and other distractions that take all of their attention, and therefore increases their anxiety (Broderick et.al., 2002). Focus may not only be on teaching the student with AS social skills, but also teaching them self-advocating and coping skills while at the same time teaching their peers and mentors tolerance and cultural awareness. Only then will the two groups be able to come to a point of positive inclusion (Broderick et al., 2002).

In a study to join together the general and special education curriculum, the researchers found that the students with AS had positive attitudes toward achieving an inclusive education; however, their teachers were found to have a far from positive attitude toward working with these same students (Gao & Mager, 2011). Even with there being laws giving students with AS, and other students with other disorders, the right to be included in the general classroom, the laws will never truly be upheld until educators,

themselves, learn tolerance for these children and educate themselves on their behaviors (Gao & Mager, 2011).

According to the UN Convention on the Rights of the Child (2014), a mentally or physically, disabled child should enjoy a full and decent life in conditions that ensure dignity, promote self-reliance and facilitate the child's active participation in the community. Inclusion should not be a rule that is imposed onto the educator, but instead a way of promoting the development of education and society. This in turn promotes the human dignity of the student with AS (Nordstrom, 2010).

Educators promoting students with AS self-dignity would in turn learn to define inclusion as (1) valuing the civil position of the student with AS, (2) positively promoting their learning and development, and (3) providing inclusion for the assistance of full and equal participation (Nordstrom, 2010). Nordstrom (2010) studied students with intellectual disabilities and their teachers. She wanted to observe the interaction between students with disabilities and peers with similar disabilities in comparison to students with disabilities and their peers without disabilities (Nordstrom, 2010).

In school settings, peers seemed to interact on a horizontal and somewhat equal level with their non-disabled peers, while being on a lower vertical level than their teachers and other adults in authority (Nordstrom, 2010). Yet, the authors (2010) observed that the horizontal level between peers did not exist if the peer had a disability. The mere awareness that a peer has a disability moved the student with a disability to a subordinate position among his or hers able-bodied peers; therefore, causing a disconnect between the two sets of peers. For this reason, Nordstrom's (2010) research indicated

that the disabled student would tend to sit or work in solitude, also causing an increase in their social withdrawal.

A skill “typical” students have in obtaining friendships is the ability to communicate and understand another friend’s feelings, but students with AS assume that other students perceive social situations the same way they do; therefore, they are unaware of the misinterpretation their lack of social skills causes others without AS (Chamberlain, Kasari & Rotheram-Fuller, 2007). Friendships need a high-level of interpersonal skill and the knowledge of how to articulate and read another person’s feelings; these are skills an adolescent with AS is lacking. If they struggle with such intuitive skills that come naturally to “typical” students, will they be able to navigate within their school or social system without some type of intervention? These students need more support in the regular school setting in order to have positive participation in school groups and activities (Ericksson, Welandar, & Granlund, 2007).

If students with AS are going to be able work towards inclusion in the school or any social setting, they must first be allowed to participate and develop strategies to be successful (Ericksson et al., 2007). The question, though, is even if they are allowed to participate, are they truly being included? The students were observed (with AS and non-AS) in 185 different activity settings, and it was discovered that the students with AS were excluded from the main activity in 39 out of the 185 observations. Also, over time, the student with AS became less engaged entirely (Ericksson et al., 2007).

Since these students tend to be more passive, the researchers believe it is necessary for the school and teachers to intervene and assist with the students’ with AS engagement with their non-AS peers (Ericksson et al., 2007). They concluded that

intervening is not only important in facilitating the student's with AS participation, but in aiding in their inclusion. What seem to be missing in the research is the reasons for the students' withdrawal from the main activities in the first place. If the withdrawal is due to processing issues for the student with AS, then forcing them to participate could make their anxiety worse, and could consequently cause them to withdraw further. "Problems with friendships and loneliness can lead to less participation in school and leisure activities and to less motivation and lower levels of academic achievement" (Ericksson et al., 2007, p. 499).

Effective Learning Strategies

Succeeding in college can be rather difficult for a student with AS due to navigating new relationships, changing academic and social schedules, deciphering social and verbal cues, and feeling misunderstood - for the mere fact that they have trouble showing their inner stress and their need for coping skills and learning strategies - since they do not know how to express their needs (Glennon, 2001). A student with AS may just tune out the people around them as a coping mechanism, and this can appear to a professor or other students as the student with AS not caring, which is not the case. Sometimes just providing a safe place to retreat, so they can figure out how to express their worries, is extremely helpful; safe places could look like a counselor or advisor's office, special need's support center, dorm room, a peer mentor's room, or other location the student with AS chooses to disclose on a college support plan (Glennon, 2001).

The fear of the unknown can lead to unfathomable anxiety triggers for a college student with AS (Glennon, 2001). Designing a transition or action plan before classes begin each quarter or semester could ease the anxieties of a student with AS

tremendously. Such items that could possibly be included in this type of plan: a tour of the campus prior to moving in, setting up a schedule that details the order of the student's day, mapping out the student's food sources, asking the university book store and library for their off-peak hours and posting them on a bulletin board in the student's room, requesting meetings with professors before each academic quarter or semester, setting up a planning system that works for the student (such as using a journal, post-it note board, and digital planner, but a system designed toward the student's strengths and needs, meeting with the student's roommate and any of his/her friends prior to moving in, identifying the student's chosen safe places prior to starting school, meeting with any of the student's designated school support staff and also posting their phone numbers and available hours on the designated bulletin board (including emergency phone numbers), finding stress reducing activities on campus, and the list can extend further depending on the student's individual needs (Glennon, 2001).

Accommodations are important to students with AS, but also providing learning strategies based on the students' strength and needs can be just as, if not more, beneficial to the students' academic outcomes (Safran, 2002). However, before implementing a learning strategy plan, attempting a few accommodations can help spearhead the process; for instance, allowing the students with AS to sit in a calming place in the classroom, sending out announcements in advance if there are going to be any changes in the curriculum or class schedule (this may need to be done by email, text, or through a peer mentor), locating a possible peer mentor within the classroom for communication and study skills, never taking comments personally (educating oneself about the inability of most students with AS to recognize social cues), promoting a positive learning

environment, and seeing if the students have a Health Insurance Portability and Accountability Act (HIPAA) in place for contacting parents/guardians or other support systems, if need be, for extra support (Safran, 2002).

Students with AS respond better in the classroom through visual and audio learning aids, since some may have issues with their gross and/or fine motor skills (Saphran, 2002). By providing these students with visual aids - the option of taking notes and exams on a laptop/tablet, allowing extra time for exams or just a quiet, calm test taking environment, or even a buddy student that can take extra notes for them or a teaching assistant that can be there when the student with AS is taking the test, in order to answer any questions concerning the clarity of the questions on the test, or sometimes just having the opportunity to have a test question reworded - can make all the difference (Saphran, 2002).

Instead of passing judgment on the abilities of college students with AS, there needs to be some accountability with the institution and the professors as well (Michael & Trezek, 2006). What this means is that college students with AS are still in the learning process and will need temporary supports to be successful, but to do that, administration and professors need to also educate their staff on the various learning difficulties and how to support those students, so they can enhance those students' performance, thus increasing graduation rate outcomes (Michael & Trezek, 2006). All students, regardless of their learning ability, should have the opportunity to work towards a degree in higher education, and the university should respect the following mission statement "to ensure all students benefit from learning in ways that allow them to participate fully in public and economic life" (Cope & Kalantis, 2000, p.9).

According to Michael and Trezek (2006), learning comes in all shapes and form; therefore, just because a student learns differently does not mean they cannot learn. By teaching to only one or two learning styles, students like the ones with AS are kept from not only the chance at achieving a degree in higher education, but the opportunity to pursue a career they have passion for and one that showcases their strengths (Michael & Trezek, 2006). By going beyond the basic script literacy, students with AS, and ones with other learning disorders, can develop awareness, multidimensional metacognitive skills, scholarly thought, and become contributing members of society. Michael and Trezek (2006) went on to say “if we want all our students to be able to participate in all aspects of society, why are some – in fact, why are any students – left out of the general educational vision of literacy we hold as fundamental to human success and progress?” (p. 315).

Even if the college administrators and professors do not want to restructure their teaching strategies, they need to consider the need to, since more and more students are arming themselves with their government rights subsequently due to the implementation of the Individuals with Disabilities Education Act (IDEA) in 1991 (Konur, 2007). This law requires that those administering education need to provide all students, regardless of a disability, an appropriate education. For this reason, more and more research is appearing that addresses strategies to college success for students with AS and other learning disorders. Some helpful learning strategies that students with AS disclosed that are helpful to their success are as follows: creating study short cuts, singing or chanting the text, associating a visual with the material, creating diagrams or sketches,

abbreviating, rewriting or creating hand written or digital flash cards, and many more (Heiman & Precel, 2003).

Other effective learning strategies would be allowing more time on tests (being pressured for time triggers anxiety), providing alternative methods of administering exams, being allowed breaks during exams, and focusing on content and not spelling during an exam (Heiman & Precel, 2003). Students with AS are not the only students that need learning strategies, their fellow students have been found to use similar strategies for academic preparation; such as, writing short notes in the text, highlighting the most important parts of the paragraph, rephrasing facts for comprehension, and also requesting that time pressure be removed from test taking (Heiman & Precel, 2003).

Student Development

Alexander Astin, Professor of Higher Education Emeritus at the University of California Los Angeles, developed the Theory of Student Involvement (I-E-O) theory based on a student's inputs, environment and outputs (Astin, 1984). This theory applies to students with AS because it assumes that no single approach to student success is adequate for all students and attempts to identify the learning strategies that best meets the need of the individual student. This theory stresses the importance of identifying a student's strengths and limitations and then helping them use that knowledge in obtaining positive outcomes, such as, graduating from a higher education institution (Astin, 1984).

Astin's (1984) IEO theory takes into consideration various resources needed for student development; for instance, physical facilities (laboratories, libraries, and audiovisual aids), human resources (well-trained faculty members, counselors, and support personnel), and fiscal resources (financial aid, grants, research funding). Astin

(1984) maintains that if adequate resources are brought together in one place, student learning and development will occur.

Heaney and Fisher (2011) conducted a case study with 139 participants evaluating the factors that influence student retention rates. The framework of the study was based on Astin's (1984) IEO theory. The students were selected after the researchers obtained pre-entry characteristics from the registrar to guarantee that the students being surveyed were students who had been conditionally admitted to the university (Heaney & Fisher, 2011). These students were then given a 40-item survey; this survey was based on the College Persistence Questionnaire (CPQ) design, which is a tool that is used help identify students who may be at risk and need early intervention. This survey is useful for identifying risk factors within a college environment, but it also creates a weakness for the study because it is not identifying the risk factors that are occurring in the students' external environment (Lounsbury, Saudargas, & Gibson, 2004).

The study found that high school GPA or ACT scores do not predict whether a student will stay enrolled in college or not. The study also found that other factors such as, "age, in-state residency, ethnicity, gender, first-generation status," and "...financial-aid eligibility did not predict persistence" (Heaney & Fisher, 2011, p.68). The ACT and previous GPA have long been used as indicators for the success of students, but with recent research showing that it may not be an indicator, there may have to be a new alternative (Heaney & Fisher, 2011). The study looks at 7 academic and environmental characteristics: student orientation of the faculty, visits home during fall semester, course absences, connection between coursework and future goals, use of resources, and adjustment to coursework habits. The only characteristic out of the seven to show no

relationship with the persistence of college students was college absences. Three of the characteristics that stood out from the other six were the visits home, use of resources, and the adjustment to course work habits (Heaney & Fisher, 2011). The study found that too many visits home can negatively affect whether the student returns to school for a second year. It also found that if a student used on campus resources, such as the math lab or supplemental instruction, the chances of the student returning a second year increased. Lastly, the study found that if students started working on their homework earlier in the afternoon, compared to later that night, their chances increased as well (Heaney & Fisher, 2011).

Another part of the study that stood out was the fact that when the students were asked about helpful influences in their studies, the students who were persistent contributed these influences to self-regulated strategies, where departing students contributed them to influences such as professors and advisors (Heaney & Fisher, 2011). The persistent students also gave more detailed responses, compared to the departing students (Heaney & Fisher, 2011).

According to Kegan (1994), “It is not enough for us to know what our students understand, we must also know the ways they understand it” (p. 284). More research is showing the need for a shift in education from a teacher-centered model to a learner-centered model (Claxton, 1999). Due to the rapid changes in our world due to technology and other frameworks, “young people need to have the capacities to create their own frameworks through which they can learn, evaluate and develop alternative strategies for learning” (O’Toole, 2008, p. 72). According to Claxton (1999; 2004a), educators must consider the emotional, social, and cognitive facets that are needed for lifelong learners.

“Educators can set the expectation that learners of all ages are at the centre of their own learning and create environments that support this” (O’Toole, 2008, p. 72).

By providing students with the learning strategies to be successful in college, it helps them develop self-determination (Field, Sarver, & Shaw, 2003). Self-determination is “combination of skills, knowledge and beliefs that enable a person to engage in goal-directed, self-regulated, autonomous behavior (Field et al., 2003, p. 339) This leads to a student with a learning disorder, such as AS, to “take control of their lives and assume the role of successful adults in our society” (Field, Martin, Miller, Ward, & Wehmeyer, 1998, p. 2). This leads to these students developing strategies that nurture independence, not dependence (Field et. al., 2003).

According to psychosocial theorist Arthur Chickering’s (1969) vectors of college student development, for all college students to be successful in higher education, they need to develop the necessary academic skills for college coursework, the skills needed to handle hard situations when they arise, and the coping skills/learning strategies needed for independence (Hadley, 2006). Chickering’s (1969) theory not only takes into consideration a student’s academic and emotional skills, but how their environment will affect the successful use of those skills. Chickering (1969) stressed the importance of students to develop the ability to manage their behavior while learning how to become independent.

In the future, if higher education institutions focus on student development and develop learning strategy assessments for all students, they will not only be able to increase the retention rates for students with AS, but for all students (Zins & Elias, 2006). Reiterating Chickering’s (1969) theories, he was able to demonstrate the importance of

considering a student's environment on their academic success. If higher education institutions not only provide academic assistance, but instead collaborate with other departments around campus and also provide social and emotional learning supports for students with AS, these students could possibly develop the skills necessary to recognize and manage their emotions; develop empathy for others, make responsible decisions, establish positive peer and faculty relationships, and learn to handle difficult situations (Zins & Elias, 2006). This collaboration will not just help these students be successful in college, but will give them the tools they need to go out and be successful in the world.

Literature Review Summary

Through the review of the literature concerning college students and AS, there was limited research on how proper learning strategies could affect the student's success. There was more research on the barriers that stood in the way of the college student with AS's success, but in turn, there is a huge need for the research to focus on providing learning strategies that could lead to the success of the college student with AS. Identifying these learning strategies could be a positive turning point in the lives of the college students with AS.

CHAPTER III

METHODS

This was a single subject study using both qualitative and quantitative analysis. It involved one male participant, who was over the age of 18, and he was currently enrolled as a college student at Central Washington University and had a diagnosis of AS since 2011. After receiving approval to proceed with the case study from the Human Subjects Review Committee (HSRC), the participant was located by reaching out to university professors who had previously had a student with AS in one of their classes and the student had openly identified to the professor as having a diagnosis of AS. The professors who felt they had a likely candidate, then contacted the students and gave them my contact information in case they were interested. The participant in the study then contacted me and requested to participate in the study. He came to a private room on campus at a time of day that worked best for him.

The participant was then presented the informed consent, was informed in more detailed about the study, and he then signed consenting to participate and that he was indeed over the age of 18 and had a current diagnosis of AS. Next, he was given a pre-learning strategies assessment prior to his interview. He was then interviewed to discover what learning strategies are leading to his success as a college student and to also determine what strategies may not be as effective for him.

The participant was asked both close-ended and open-ended questions (see Appendix A). Some examples of interview questions included:

- 8) What are some examples of how professors have provided you with an alternative way of learning? Be specific.
- 9) What were your learning strategies when you weren't doing well in school? (schedule, doing assignments, etc.,)
- 10) Have you become more successful (having good standing) in your classes?
 - a. What learning strategies do you feel have contributed to your success?
- 11) Describe your typical school day? (the time you start class, when you study, do you have a job?)
- 12) Who would you identify as a support service for you?
- 13) What student support services have you accessed on campus? Off campus?
- 14) What natural support services have you developed?

Even though the participant agreed to have the interview audiotaped, he was informed that his name and any other identifying factors would be removed and were completely confidential; the purpose of the audio was for playing back for accuracy purposes only. The participant will not be identified in the research report, except for the fact that he is a college student, over the age of 18, currently enrolled at Central Washington University, and has a diagnosis of AS. After the study was complete, all identifying factors were removed and fictitious identifiers were given to the participant.

Prior to the interview, the participant filled out a Pre-Learning Strategy Assessment. The Learning Strategy Assessment completed by the participant was an

adaptation of Cohen, Oxford, and Chi's (2003) Learning Strategy Survey; their survey was based on Oxford's (1994) previous Style Analysis Survey along with Reid's (1995) Learning Styles in the ESL/EF classroom (pp. 208-215) and Ehrman & Leaver's (2001) E&L Questionnaire. The purpose of the college student with AS completing the Learning Strategy Assessment was to locate any indicators of the learning strategies that were most effective in supporting his ability to learn. Three days following the pre-assessment and interview, the participant returned to fill out a post-assessment. The purpose was to decrease the possibility of observer bias and to discover if the participant might fill out the assessment differently once he was more comfortable.

The reason Cohen, Oxford, and Chi's (2003) Learning Style Survey was adapted for this study was due to their previous success in using it as an assessment for working with English as Second Language (ESL) students (Reid, 1987). The authors learned that students have 4 basic learning styles: visual learning, auditory learning, kinesthetic learning, and tactile learning; therefore, they decided to test their assessment with ESL students in order to discover if their learning strategies differed from English speaking students. The survey was mailed out "to 43 university-affiliated intensive English language programs across the United States, the faculties of which had volunteered to participate in the study" (Reid, 1987, p.92).

They received 1,234 surveys back from these 43 participating universities. Completing the survey were respondents representing 98 countries, from 29 major fields of study, and from 52 different language backgrounds. All of the surveys returned showed similar results and that ESL students overwhelmingly preferred kinesthetic and tactile learning styles and held a negative preference for group learning. An interesting

fact that their study mirrored was that in other studies Japanese students were the only ESL students to assess opposite of the other language learners (Reid, p. 92). Due to the reliability and validity of this previous data, I chose to use the survey in this study as well.

CHAPTER IV

RESULTS

The participant was presented 13 questions and 3 follow-up questions concerning his time enrolled in higher education and how having a diagnosis of AS may have affected his ability to be successful in college. After thoroughly reading and signing the informed consent, the participant again verified that he was over the age of 18, diagnosed with AS in 2011, and will be entering his third year of college in the upcoming fall quarter. He stated that his first year of college was very difficult on him emotionally; he believed he overloaded himself and consequently became overwhelmed and started to shut down.

When asked how he chose his major, the participant shared that his major is in the sciences because he feels he can find a career that he will be able to make a good income at and also obtain the skills to be successful at as well. He added that he has not had opportunities in his major classes to request alternative methods of completing an assignment; therefore, he has relied on his study partner method to assist him in his success. He realized this past year that it is almost impossible for him to make friends with students the same age, so he started approaching students at least 3 or 4 years older than him to be his study partner. This has been a very successful learning strategy for him, and he joked that he loves when he has notices something in the lecture that his study partner misses and he will tell him, “see – you need me too”.

The participant said that he did not realize how great a learning process college would be for him in regards to learning about himself and what learning strategies he

needs to succeed. He said that one of the hardest things he had to learn was that it was okay to fail as long as he learned from it and was able to apply what he learned when he returned to retake a course. He said even though that he was currently a student in good standing, he did fail one of his major classes this past spring quarter. The student shared that he became overwhelmed with the class and started to shut down. Even though he failed, he decided to go and discuss what had happened with the professor. To his surprise, the professor was very positive and shared with him that many successful people in life have failed a class. What leads to these peoples' success, the professor told him, is the ability to learn from their disappointments and to return to the course in the future, apply what they learned, and walk away successfully. The professor added that it has been his C students who seem to never give up and who keep trying no matter how hard the course becomes; his professor added that these students are the ones that have gone on to be the most successful in their careers. The professor is not quick to give up on the students who are struggling because he realizes they are fighting to learn the information and once they do, it sticks with them and they are able to take that information into their careers. This was very inspiring for the participant and he said by sharing this information that the professor gave him hope.

When asked if he was currently enrolled full-time, the participant replied yes and noted that he was taking 12 credits. The student then added that this summer he has been able to reflect on his first two years in college. He said he definitely noticed a pattern to his successes and setbacks. He believes he is a seasonal learner; meaning that he has a stronger ability to focus in his classes during the fall and winter than he does during his

spring courses. This has helped him to arrange his schedule, so that his major classes, which push him to be more of a sequential learner, are scheduled in the fall and possibly winter, but that he needs to schedule his less mentally stressful classes in the spring. He added that it would be helpful in the spring to enroll in classes that he had a passion for; he said these classes would keep him motivated to learn.

When asked if he could provide any examples of professors who provided him with alternative methods of learning, the participant stated that during his sophomore year, while struggling with an English class, his mentor suggested he approach his English professor about alternative methods to completing the assignment. He admitted that this was extremely hard for him to do, but he trusted his mentor and set up an appointment with his English professor. At the appointment, they discussed his strengths and weaknesses, and the professor quickly learned that the student enjoyed creating films. Consequently, the professor offered the student the option to create films in place of 3 papers. He still needed to fulfill the requirements of the paper, but in film format instead of written format. The student said that the professor thought that after the first film the student would not want to create another film because of the time involved in creating a film in contrast to a short paper. However, his professor quickly learned that committing time to an assignment was not an issue with the student; he just needed a method that best expressed his abilities and thoughts, and film did this for him. He completed 3 assignments through the use of film, and he ended up earning an A in the course.

When asked to provide learning strategies that may not have helped him, the participant turned the interview back to his freshman year and how he chose his courses.

He mentioned that his father chose most of them for him. At first he said that he picked his own classes, but once he had set his schedule, his father felt he should take more credit hours; consequently, his father logged on and refigured his schedule. He said he realized too late that the work load was too much, and by the time he was able to communicate to anyone that he couldn't handle the amount of coursework, his grades were irreversible. According to the participant, failing some of his classes was detrimental to his self-esteem and he did not know if he had what it took to stay in college, let alone achieve success in college.

Due to the issues he underwent his freshman year, his mom searched for a mentor at the university who was willing to help him discover learning strategies that would help him succeed. The mentor that agreed to help him is a professor from the Special Education Department at the university and is also a Board Certified Behavior Analyst. First, the professor and the student met in her office and discussed his previous year, such as, what time he scheduled his classes, how much time he had between classes, and how many days of the week he attended classes. According to the student, he informed the professor that his classes started early in the morning and were back to back, 5 days of the week. The majority of his classes were also breadth classes that he was not interested in and that they also demanded a huge amount of his time.

Next, the mentor asked what the best days and times that he preferred to attend class. The student said he quickly learned that he did not perform well in the morning hours, and that he also performed better if he had a gap between classes, so he would have time to study or just have a transition time to gather his thoughts before starting

another class. He said he also realized that quality was more important than quantity and that it was important to scale down the amount of classes he was taking the previous year. While working with the professor, he realized that time restrictions on tests were extremely stressful for him, so he met with Disability Services (DS) on campus and was able to receive a classroom accommodation for test taking and was able to begin taking tests and quizzes in the DS department in a quiet room without the time restriction pressures.

He also shared other learning strategies that were not helpful to him, such as (1) having someone else plan out his schedule and decide what is best for him, (2) Digi pen for note taking, (3) books on CD or online, (4) working alone, (5) group projects, (6) not having choices on the times he takes his courses, and (7) having to search for support services (they should be easier for him and others to locate).

He also added that the main difference between his freshman and sophomore years was “experience.” The student said he felt that his freshman year was a lesson in what did not work and what not to do, and that his sophomore year was spent putting the puzzle pieces together to understand what he needed to change in order to succeed in his classes. He said he still struggles, but now he has developed tools to evaluate why he is struggling, and he has also built relationships, so he can seek out others and discuss what possible changes he should make before it is too late to do anything about a possible class derailment.

When discussing certain learning strategies that have been beneficial for him and ones that have not, he compiled a list. Beneficial learning strategies for the student: (1)

control over the time and day of his classes, (2) classes being offered more than in just one certain quarter, (3) college faculty mentor other than the major advisor (though still wants the major/academic advisor as well), (4) peer mentor/note taker/study partner, (5) major study sessions/groups, (6) alternative methods to completing an assignment, (7) extra time for test taking, (8) private, quiet place to take tests, (9) books on DVD – a more visual/auditory component, (10) time between classes to complete homework, as he needs his personal time in the evenings to regenerate for the next day, (11) friends in his major (he has been able to watch them and mirror back their behaviors, which has helped him to fit in), and (12) for professors to look at the whole paper/test when grading – he added that he becomes very frustrated when taking a test and he missed one component and then received a zero for the entire test; he believes that professors should focus more on whether a student is learning and not being so quick to assign a grade.

The participant added that his current GPA is approximately 2.5, but he is working hard on improving this score by retaking classes that he struggled with in the past. Even though, he still has his daily struggles, he found his sophomore year to be less stressful than his freshman year. He contributed that to the fact that he has learned to advocate for himself and discovered learning strategies that lead to his success than repeating past ones that sabotaged it. Another learning strategy that he has found is balance; he balances his academics with activities he looks forward to; and with his mentor, he set up a reward system for himself. Based on achieving his academic goals, he then rewards himself – small daily rewards such as, playing music and making

YouTube videos with friends to quarterly/yearly goals of living independently from his parents and purchasing more movie equipment.

When asked to share a typical school day for him, first he said, he tries not to take any classes before at least 11 a.m. He said he is not a morning person, so having the morning to be able to acclimate to his day is really beneficial in having a positive school day. He always wakes up at least two hours before class though, and makes sure to arrive outside his classroom one hour prior to the beginning of class. Once he is in class, he does his best to take notes on the lecture. He said when leaving a lecture, he is still not positive what the professor just said, so he will go sit down with his notes, read through them, and start to process the lecture.

Next, he will meet up with a classmate and compare notes; he said he is very calculated on what classmate he pairs up with. He said he does better by asking questions and listening, so that it is imperative that he finds a study partner that learns better by talking and discussing. He joked that he is aware that his constant questions can annoy his study partner, but now that he is in his major, he has built a group of study partners that have become accustomed to what he needs and the reason he is asking so many questions. He added that even after they have met to compare notes that they will then email each other their individual notes; this helps each of them fill in the gaps that may be missing for the other person from the lecture. This is one of his favorite parts about studying because he realizes that even though he needs the extra help, that he does pick up on things in lectures that his classmates miss, so his notes are actually beneficial to them as well. He appreciates being able to be helpful in return.

However, he described himself as an introvert, but added that on the inside he is very enthusiastic about learning, so once he finds a study partner(s) he can rely on, it is much easier for him to approach them and quiz them about what he does not understand about the lectures. Nevertheless, he added that even though he has gained confidence in seeking out classmates for help, he is still uneasy about approaching his professors.

He identified some of his major support services as his mentor, study partners, and some of his professors. He said he would advise these professors on various methods to help them provide a more inclusive classroom to various learning styles, he said the most important advice he could give them is to ask them to allow for leeway. He explained that all college students with AS that he knows (including himself) are hard workers, so it is not the work load that they are struggling with, it is the path to achieving the work; therefore, if professors would recognize that, then they might be willing to allow the students with AS to steer off course sometimes. He said he does not steer off course because he is avoiding his work, he does it because he needs to take another route. By faculty and staff recognizing that students learn differently, they might see that they the students need to perform differently as well.

Prior to the interview the participant took the Learning Strategy Assessment, the assessment results (see Table 1) demonstrated the student: (1) is comparably a visual and an auditory learner; (2) is more introverted than extroverted; (3) is an abstract thinker; (4) is a discovery learner, yet still understands the importance of scheduling deadlines; (5) is both global and particular in learning; (6) is better at summarizing material; (7) is stronger at compartmentalizing his learning; and (8) is a deductive learner.

- 1) In regards to his visual and auditory strengths, the student prefers watching a video or television show to understand a concept. Having a professor lecture with visuals is extremely helpful as it helps him to visualize the pictures, numbers, and words in his head, so that he can process it later. He learns best by listening than reading and then can retain the information if he immediately meets with one designated peer study partner and discusses the material immediately. The student said he loves to bounce ideas back and forth with this designated person; it helps him remember the information more quickly in preparing for assignments or tests. He also prefers oral directions for assignments or tests over written ones. It is also helpful for the student to listen to music or when he studies.
- 2) Even though, his interview and assessment indicated that the participant was introverted, he does prefer studying with one other person. He said he may seem quiet and silent when working with others, but in his head it is the opposite. He said he is energized by the inner world and is constantly thinking about how to learn a new concept; he does like to experience something first in order to make sense of it. However, working in groups on projects is exhausting for him and if he must work with others, he has preferred groups of two.
- 3) The student's assessment also indicated that he was an abstract thinker. He discussed that he has a very vivid imagination, which helps him in discovering more possibilities and ideas for approaching a project or assignment. Due to his curious and creative side, the student believes he is able to add original

ideas to the class discussions. However, in working in groups, he prefers a set work plan and is thrown off if a classmate changes the plan for the project once it has begun. The work plan also helps him stay accountable as he said he can quickly get side tracked with other things he has on his mind.

- 4) When dealing with ambiguity and deadlines, the participant's scores were almost equal. He said this was possible since he tries very hard to plan his assignments out in advance, so that he knows that he is understanding the directions correctly and will be able to meet his deadlines. However, he also enjoys discovery learning and having the ability to pick up the study material naturally and through discussions with his study partner.
- 5) In receiving information, the student has a global style preference, which means he is more comfortable in discussing the concept while he is still trying to process and learn about it. He said it is very easy for him to see the overall idea, and even if he misses certain details, it does not mean he does not understand. For instance, he said sometimes when he tries to tell a joke, he can remember details of the joke, but not the punch line.
- 6) The participant finds it easier to synthesize information than analyze it. If he is able to look at the whole idea, it makes it easier for him to understand. Also, he tends to make an outline of his thoughts first in order to discover key points and then he will put his assignment or project together from there. He definitely prefers activities that help him pull his ideas together.
- 7) The participant indicated that when committing material to memory, he will notice differences and be able to sort and store the pieces in separate

compartments. By doing this, the material holds more meaning for him and he is able to retrieve what he needs quite easily; therefore, once he grasps the concepts he is learning, he can accurately apply them to the course and real world applications. His being able to compartmentalize was noticed when he completed the learning assessment. He was asked to come back and take the assessment a second time in order to control for reliability; his test results the second time were identical to the first test.

- 8) Finally, the assessment demonstrated that he is a deductive learner. By having the ability to compartmentalize, the participant is able to apply theories and rules to specific coursework and then pull out what he needs and apply it to his work. What the participant has gained from discovering his learning strategies is that it is only the beginning; he needs to go one step further and build a support system that aids him in utilizing these learning strategies in his college classes; he believes this will definitely lead to future success in college and into his career.

The student stressed that one of the biggest errors he believes others make about college students with AS is that they believe they are all alike. He said that if more interviews with other males with AS that are his same age, with a similar personal background, and with the same major, some similarities may be found, but he is confident that their learning strategies would all vary; therefore, that is why he believes it is so important for professors and administrators to focus on the student's strengths and needs and not the diagnosis or label.

The purpose of the college student with AS completing the Learning Strategy Assessment was to locate any indicators of the learning styles that were most effective in supporting his ability to learn. Three days following the pre-assessment and interview, the participant returned to fill out a post-assessment. When the pre- assessment results were compared to the post-assessment results, the results were identical; not just the overall scores, but each individual item as well. Therefore, based on the pre-test and post-test scores, there was no significant difference found between the tests. See Table 1 below.

Table 1		
<i>Learning Strategy Preference Pre-test/Post-test Scores</i>		
Part 1: How I use my physical senses		
<u>Learning Strategy Preference</u>	<u>Pre-test</u>	<u>Post-test</u>
Visual	28	28
Auditory	29	29
Tactile/Kinesthetic	24	24
Part 2: How I expose myself to learning situations		
<u>Learning Strategy Preference</u>	<u>Pre-test</u>	<u>Post-test</u>
Extroverted	14	14
Introverted	17	17
Part 3: How I handle possibilities		
<u>Learning Strategy Preference</u>	<u>Pre-test</u>	<u>Post-test</u>
Random-Intuitive	22	22
Concrete-Sequential	18	18
Part 4: How I deal with ambiguity and with deadlines		
<u>Learning Strategy Preference</u>	<u>Pre-test</u>	<u>Post-test</u>
Closure-Oriented	11	11
Open	12	12
Part 5: How I receive information		
<u>Learning Strategy Preference</u>	<u>Pre-test</u>	<u>Post-test</u>
Global	15	15
Particular	14	14
Part 6: How I further process information		
<u>Learning Strategy Preference</u>	<u>Pre-test</u>	<u>Post-test</u>
Synthesizing	17	17
Analytic	14	14
Part 7: How I commit material to memory		
<u>Learning Strategy Preference</u>	<u>Pre-test</u>	<u>Post-test</u>
Sharpener	9	9
Leveler	7	7
Part 8: How I deal with language rules		
<u>Learning Strategy Preference</u>	<u>Pre-test</u>	<u>Post-test</u>
Deductive	18	18
Inductive	12	12

CHAPTER V

DISCUSSION

The interview and assessment reflected that the student in this study believed he may not successfully graduate from college if not given the opportunity to develop the learning strategies needed to be successful in his courses. His insight was also reflected in the literature. Instead of focusing on what this population of students can do, educators tend to focus on what they cannot do; unfortunately, this leaves them working in circles and never being able to move ahead academically (Kegan, 1994).

Educating administrators, advisors, professors, and other university faculty on AS and other learning disorders is the first step to bringing awareness that a learning disorder does not mean that a college student with AS cannot prepare for college, it just means they learn differently and may need temporary supports put in place to help them discover the best learning strategies for college success (Michael & Trezek, 2006). One way this could be achieved is by the university hiring a Special Needs Coordinator to help students with AS not only navigate the university experience, but also by coordinating mentors, advisors, and other services, to aid the student with devising learning strategies that lead to the student's success (Saphran, 2002).

This is not meant to suggest that students with AS have their coursework reduced, instead it is proposing that they meet the same goals and objectives as their peers, but just receive assistance in discovering the best learning strategies to aid them in achieving these goals. This would help them in forging their own path to their goals and objectives (Saphran, 2002).

Professors could also adopt differentiated instructional techniques. Pathways to this type of classroom success could materialize by providing multisensory formats through building websites, creating videos instead of papers or speeches, or demonstrating coursework through performance art. By allowing these multisensory techniques within the classroom, it enhances each student's learning, whether they have a disorder or not; it adds to the richness and effectiveness of the academic content. More and more research is showing the effectiveness of multisensory learning for all students; therefore, the student would not need an accommodation if the courses were already designed to allow for various methods of instruction and completion. This would also demonstrate that diversity is a priority of the university and its employees and of the utmost importance (O'Toole, 2008).

The literature demonstrated that not all students will identify themselves and indicate that they indeed have AS or a learning disorder; they may be hesitant to do so due to the fear of stigma that is attached to having a label. These students can be at a higher risk for dropping-out than the students who actually identify. The reason this happens is that the non-identifiers do not have access to the same supports that their peers have that do identify (Pisula & Lukowska, 2011). A way around this might be to give each student that enters the university, whether they have identified or not, a learning strategies assessment, so that they might be paired up with an appropriate advisor or mentor that can help them acclimate to their new learning environment (Cohen et al., 2003). This not only provides students with AS with the proper tools for success, but it can increase graduation outcomes for all incoming students.

Central Washington University could make use of their various departments and recruit mentors such as the participant did. There is a large pool of students that could also be accessed to volunteer as mentors; they would gain experience for their selected careers in education and provide a service to this population of students. This will not only increase graduation rates, but will also lead to students with AS becoming successful members of society.

Ultimately, the “typical” college student has definitely evolved in the past century and cannot fit the definition written to describe them hundreds of years ago; with technology and a fast-paced world, universities need to come up to speed as well. Some administrators may not think there is place in higher education for students who learn differently, but with federal and state funding cutbacks increasing yearly, these administrators may want to take a look at the target populations that they are missing, and start working towards building inclusivity, which in turn could increase revenue. Due to there being more and more students that are in need of various learning strategies to be successful in the classroom, universities need to start changing the way they do business and realize that with expanding their student support services and abandoning their twentieth century methods of doing business, they can open their doors to a whole new population of student.

Students are evolving as fast as the technology age is progressing. Expecting students to have only one strategy to learning does not build an all-inclusive learning environment, nor does it make financial sense. Universities truly need to rethink the way the way they present their curriculum. By increasing their student support services and

educating their staff on the different learning styles, disorders, and strategies, classes can be designed so they are interdisciplinary and multisensory. By building a classroom that is inclusive to all learners, it is not just helping the students with AS and the rest of the at-risk student population, but it is also teaching the rest of the student body tolerance and that the university truly supports diversity; in administrator terms, though, meeting the needs of more students also translates into more dollars for the university.

To move into the next level of university instruction, the ones in charge need to make sure that they are not judging the book by its cover and are actually opening up the book to see what is truly inside; since every student is unique, subsequently, the student's education should be as well.

Recommendations for Future Research

A consideration for future research would be the education of the peers and faculty as mentors of the college students with AS on the subject and behaviors belonging to students with AS. Helping teach the "typical" students tolerance and skills for assisting and teaching their learning challenged peers how to achieve a lesson or an activity will not only bring the "typical" students a new awareness, but will teach them patience and empathy. This can also lead to an increase in self-esteem for the "typical" college student due to the satisfaction of teaching new skills to one of their learning challenged peers. This could be very gratifying for both sets of peers; 1) for the college student with AS for being included and being able to participate with less anxiety, and (2) for the "typical" college student for learning the ability to look outside themselves and come to the aid of a fellow student.

Future research could also examine perceptions of faculty and staff on the need to provide alternative methods to the completion of an assignment. This current study could also be taken further, and instead of only interviewing and assessing the student with AS, it would be interesting to follow him through graduation. This would demonstrate how his learning strategies and supports would evolve and maybe even change. It would also be helpful to observe the student in the classroom and interview his supports: mentor, study partners, parents, friends, and any other supports the student indicated.

Due to the change in the *DSM-V* criteria, the numbers of students with AS are increasing daily. It would make fiscal sense that higher education institutions look seriously into how they can support these students and help them develop and implement the learning strategies they need to succeed in college and into their careers. It will be a win-win for everyone involved.

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APPENDIXES

APPENDIX A

Interview Questions

1. How old are you?
2. Are you currently enrolled as a college student?
3. Do you have a current diagnosis of Asperger's Syndrome?
4. When were you diagnosed with Asperger's Syndrome?
5. What year in school are you?
6. How did you choose your major, and how has that contributed to your success?
 - a. Do you feel like you are more successful in your Major classes?
7. Are you enrolled Full Time?
 - a. How many credits to take on average per quarter
8. What are some examples of how professors have provided you with an alternative way of learning? Be specific.
9. What were your learning strategies when you weren't doing well in school? (schedule, doing assignments, etc.,)
10. Have you become more successful (having good standing) in your classes?
 - a. What learning strategies do you feel have contributed to your success?
11. Describe your typical school day? (time you start class, when you study, do you have a job?)
12. Who would you identify as a support service?
13. What student support services have you accessed on campus? Off campus?

Follow up questions to assessment?

1. Depending on student's assessments, will ask if he or she agrees with the assessment?

2. Having this assessment knowledge, could it help you in designing your plan for fall?
3. Could it help you in approaching professors in asking to provide an alternate method of doing an assignment?

APPENDIX B

Learning Strategy Assessment

For each item, circle your response:

- 0 = Never**
- 1 = Rarely**
- 2 = Sometimes**
- 3 = Often**
- 4 = Always**

Part 1: HOW I USE MY PHYSICAL SENSES

- | | | | | | |
|---|---|---|---|---|---|
| 1. I remember something better if I write it down. | 0 | 1 | 2 | 3 | 4 |
| 2. I take detailed notes during lectures. | 0 | 1 | 2 | 3 | 4 |
| 3. When I listen, I visualize pictures, numbers, or words in my head. | 0 | 1 | 2 | 3 | 4 |
| 4. I prefer to learn with TV or video rather than other media. | 0 | 1 | 2 | 3 | 4 |
| 5. I use color-coding to help me as I learn or work. | 0 | 1 | 2 | 3 | 4 |
| 6. I need written directions for tasks. | 0 | 1 | 2 | 3 | 4 |
| 7. I have to look at people to understand what they say. | 0 | 1 | 2 | 3 | 4 |
| 8. I understand lectures better when professors write on the board. | 0 | 1 | 2 | 3 | 4 |
| 9. Charts, diagrams, and maps help me understand what someone says. | 0 | 1 | 2 | 3 | 4 |
| 10. I remember peoples' faces but not their names. | 0 | 1 | 2 | 3 | 4 |
| A - Total _____ | | | | | |

- | | | | | | |
|--|---|---|---|---|---|
| 11. I remember things better if I discuss them with someone. | 0 | 1 | 2 | 3 | 4 |
| 12. I prefer to learn by listening to a lecture rather than reading. | 0 | 1 | 2 | 3 | 4 |
| 13. I need oral directions for a task. | 0 | 1 | 2 | 3 | 4 |
| 14. Background sound helps me think. | 0 | 1 | 2 | 3 | 4 |
| 15. I like to listen to music when I study or work. | 0 | 1 | 2 | 3 | 4 |
| 16. I can understand what people say even when I cannot see them. | 0 | 1 | 2 | 3 | 4 |
| 17. I remember peoples' names but not their faces. | 0 | 1 | 2 | 3 | 4 |
| 18. I easily remember jokes that I hear. | 0 | 1 | 2 | 3 | 4 |
| 19. I can identify people by their voices (e.g., on the phone). | 0 | 1 | 2 | 3 | 4 |
| 20. When I turn on the TV, I listen to the sound more than I watch the screen. | 0 | 1 | 2 | 3 | 4 |
| B - Total _____ | | | | | |

- | | | | | | |
|---|---|---|---|---|---|
| 21. I prefer to start doing things rather than checking the directions first. | 0 | 1 | 2 | 3 | 4 |
| 22. I need frequent breaks when I work or study. | 0 | 1 | 2 | 3 | 4 |
| 23. I need to eat something when I read or study. | 0 | 1 | 2 | 3 | 4 |
| 24. If I have a choice between sitting and standing, I'd rather stand. | 0 | 1 | 2 | 3 | 4 |

- | | | | | | |
|--|---|---|---|---|---|
| 25. I get nervous when I sit still too long. | 0 | 1 | 2 | 3 | 4 |
| 26. I think better when I move around (e.g., pacing or tapping my feet). | 0 | 1 | 2 | 3 | 4 |
| 27. I play with or bite on my pens during lectures. | 0 | 1 | 2 | 3 | 4 |
| 28. Manipulating objects helps me to remember what someone says. | 0 | 1 | 2 | 3 | 4 |
| 29. I move my hands when I speak. | 0 | 1 | 2 | 3 | 4 |
| 30. I draw lots of pictures (doodles) in my notebook during lectures. | 0 | 1 | 2 | 3 | 4 |

C - Total _____

Part 2: HOW I EXPOSE MYSELF TO LEARNING SITUATIONS

- | | | | | | |
|--|---|---|---|---|---|
| 1. I learn better when I work or study with others than by myself. | 0 | 1 | 2 | 3 | 4 |
| 2. I meet new people easily by jumping into the conversation. | 0 | 1 | 2 | 3 | 4 |
| 3. I learn better in the classroom than with a private tutor. | 0 | 1 | 2 | 3 | 4 |
| 4. It is easy for me to approach strangers. | 0 | 1 | 2 | 3 | 4 |
| 5. Interacting with lots of people gives me energy. | 0 | 1 | 2 | 3 | 4 |
| 6. I experience things first and then try to understand them. | 0 | 1 | 2 | 3 | 4 |

A - Total _____

- | | | | | | |
|---|---|---|---|---|---|
| 7. I am energized by the inner world (what I'm thinking inside). | 0 | 1 | 2 | 3 | 4 |
| 8. I prefer individual or one-on-one games and activities. | 0 | 1 | 2 | 3 | 4 |
| 9. I have a few interests, and I concentrate deeply on them. | 0 | 1 | 2 | 3 | 4 |
| 10. After working in a large group, I am exhausted. | 0 | 1 | 2 | 3 | 4 |
| 11. When I am in a large group, I tend to keep silent and listen. | 0 | 1 | 2 | 3 | 4 |
| 12. I want to understand something well before I try it. | 0 | 1 | 2 | 3 | 4 |

B - Total _____

Part 3: HOW I HANDLE POSSIBILITIES

- | | | | | | |
|--|---|---|---|---|---|
| 1. I have a creative imagination. | 0 | 1 | 2 | 3 | 4 |
| 2. I try to find many options and possibilities for why something happens. | 0 | 1 | 2 | 3 | 4 |
| 3. I plan carefully for future events. | 0 | 1 | 2 | 3 | 4 |
| 4. I like to discover things myself rather than have everything explained to me. | 0 | 1 | 2 | 3 | 4 |
| 5. I add many original ideas during class discussions. | 0 | 1 | 2 | 3 | 4 |
| 6. I am open-minded to new suggestions from my peers. | 0 | 1 | 2 | 3 | 4 |

A - Total _____

- | | | | | | |
|--|---|---|---|---|---|
| 7. I focus on a situation as it is rather than thinking about how it could be. | 0 | 1 | 2 | 3 | 4 |
| 8. I read instruction manuals (e.g., for computers or VCRs) before using the device. | 0 | 1 | 2 | 3 | 4 |

9. I trust concrete facts instead of new, untested ideas. 0 1 2 3 4
10. I prefer things presented in a step-by-step way. 0 1 2 3 4
11. I dislike it if my classmate changes the plan for our project. 0 1 2 3 4
12. I follow directions carefully. 0 1 2 3 4

B - Total _____

Part 4: HOW I DEAL WITH AMBIGUITY AND WITH DEADLINES

1. I like to plan language study sessions carefully and do lessons on time or early. 0 1 2 3 4
2. My notes, handouts, and other school materials are carefully organized. 0 1 2 3 4
3. I like to be certain about what things mean in a target language. 0 1 2 3 4
4. I like to know how rules are applied and why. 0 1 2 3 4

A - Total _____

5. I let deadlines slide if I'm involved in other things. 0 1 2 3 4
6. I let things pile up on my desk to be organized eventually. 0 1 2 3 4
7. I don't worry about comprehending everything. 0 1 2 3 4
8. I don't feel the need to come to rapid conclusions about a topic. 0 1 2 3 4

B - Total _____

Part 5: HOW I RECEIVE INFORMATION

1. I prefer short and simple answers rather than long explanations. 0 1 2 3 4
2. I ignore details that do not seem relevant. 0 1 2 3 4
3. It is easy for me to see the overall plan or big picture. 0 1 2 3 4
4. I get the main idea, and that's enough for me. 0 1 2 3 4
5. When I tell an old story, I tend to forget lots of specific details. 0 1 2 3 4

A - Total _____

6. I need very specific examples in order to understand fully. 0 1 2 3 4
7. I pay attention to specific facts or information. 0 1 2 3 4
8. I'm good at catching new phrases or words when I hear them. 0 1 2 3 4
9. I enjoy activities where I fill in the blank with missing words I hear. 0 1 2 3 4
10. When I try to tell a joke, I remember details but forget the punch line. 0 1 2 3 4

B - Total _____

Part 6: HOW I FURTHER PROCESS INFORMATION

1. I can summarize information easily. 0 1 2 3 4
2. I can quickly paraphrase what other people say. 0 1 2 3 4

- | | | | | | |
|--|---|---|---|---|---|
| 3. When I create an outline, I consider the key points first. | 0 | 1 | 2 | 3 | 4 |
| 4. I enjoy activities where I have to pull ideas together. | 0 | 1 | 2 | 3 | 4 |
| 5. By looking at the whole situation, I can easily understand someone. | 0 | 1 | 2 | 3 | 4 |

A - Total _____

- | | | | | | |
|---|---|---|---|---|---|
| 6. I have a hard time understanding when I don't know every word. | 0 | 1 | 2 | 3 | 4 |
| 7. When I tell a story or explain something, it takes a long time. | 0 | 1 | 2 | 3 | 4 |
| 8. I like to focus on grammar rules. | 0 | 1 | 2 | 3 | 4 |
| 9. I'm good at solving complicated mysteries and puzzles. | 0 | 1 | 2 | 3 | 4 |
| 10. I am good at noticing even the smallest details involved in a task. | 0 | 1 | 2 | 3 | 4 |

B - Total _____

Part 7: HOW I COMMIT MATERIAL TO MEMORY

- | | | | | | |
|---|---|---|---|---|---|
| 1. I try to pay attention to all the features of new material as I learn. | 0 | 1 | 2 | 3 | 4 |
| 2. When I memorize different bits of language material, I can retrieve these bits easily—as if I had stored them in separate slots in my brain. | 0 | 1 | 2 | 3 | 4 |
| 3. As I learn new material in the target language, I make fine distinctions among speech sounds, grammatical forms, and words and phrases. | 0 | 1 | 2 | 3 | 4 |

A - Total _____

- | | | | | | |
|--|---|---|---|---|---|
| 4. When learning new information, I may clump together data by eliminating or reducing differences and focusing on similarities. | 0 | 1 | 2 | 3 | 4 |
| 5. I ignore distinctions that would make what I say more accurate in the given context. | 0 | 1 | 2 | 3 | 4 |
| 6. Similar memories become blurred in my mind; I merge new learning experiences with previous ones. | 0 | 1 | 2 | 3 | 4 |

B - Total _____

Part 8: HOW I DEAL WITH MULTIPLE INPUTS

- | | | | | | |
|--|---|---|---|---|---|
| 1. I can separate out the relevant and important information in a given context even when distracting information is present. | 0 | 1 | 2 | 3 | 4 |
| 2. When I produce an oral or written message in the target language, I make sure that all the grammatical structures are in agreement with each other. | 0 | 1 | 2 | 3 | 4 |
| 3. I not only attend to grammar but check for appropriate levels of formality and politeness. | 0 | 1 | 2 | 3 | 4 |
| 4. When speaking or writing, I feel that focusing on grammar is less important than paying attention to the content of the message. | 0 | 1 | 2 | 3 | 4 |

5. It is a challenge for me to both focus on communication in speech or writing while at the same time paying attention to grammatical agreement (e.g., person, number, tense, or gender). 0 1 2 3 4
6. When I am using lengthy sentences in a target language, I get distracted and neglect aspects of grammar and style. 0 1 2 3 4

A – Total ____

Part 1: HOW I USE MY PHYSICAL SENSES

If you came out as more visual than auditory, you rely more on the sense of sight, and you learn best through visual means (books, video, charts, and pictures). If you are more auditory in preference, you prefer listening and speaking activities (discussions, lectures, audio tapes, role-plays). If you have atactile/kinesthetic style preference, you benefit from doing projects, working with objects, and moving around (games, building models, conducting experiments).

Part 2: HOW I EXPOSE MYSELF TO LEARNING SITUATIONS

If you came out more extraverted on this survey, you probably enjoy a wide range of social, interactive learning tasks (games, conversations, discussions, debates, role-plays, simulations). If you came out more introverted, you probably like to do more independent work (studying or reading by yourself or learning with a computer) or enjoy working with one other person you know well.

Part 3: HOW I HANDLE POSSIBILITIES

If you scored more random-intuitive, you are most likely more future-oriented, prefer what can be over what is, like to speculate about possibilities, enjoy abstract thinking, and tend to disfavor step-by-step instruction. If your style preference was more concrete-sequential, you are likely to be more present-orientated, prefer one-step-at-a-time activities, and want to know where you are going in your learning at every moment.

Part 4: HOW I APPROACH TASKS

If you are more closure-oriented, you probably focus carefully on most or all learning tasks, strive to meet deadlines, plan ahead for assignments, and want explicit directions. If you are more open in your orientation, you enjoy discovery learning (in which you pick up information naturally) and prefer to relax and enjoy your learning without concern for deadlines or rules.

Part 5: HOW I RECEIVE INFORMATION

If you have a more global style preference, you enjoy getting the gist or main idea and are comfortable communicating even if you don't know all the words or concepts. If you are more particular in preference, you focus more on details and remember specific information about a topic well.

Part 6: HOW I FURTHER PROCESS INFORMATION

If you are a synthesizing person, you can summarize material well, enjoy guessing meanings and predicting outcomes, and notice similarities quickly. If you are analytic, you can pull ideas apart and do well on logical analysis and contrast tasks, and you tend to focus on grammar rules.

Part 7: HOW I COMMIT MATERIAL TO MEMORY

If you are a sharpener, you tend to notice differences and seek distinctions among items as you commit material to memory. You like to distinguish small differences and to separate memory of

prior experiences from memory of current ones. You can easily retrieve the different items because you store them separately. You like to make fine distinctions among speech sounds, grammatical forms, and meaningful elements of language (words and phrases). If you are a leveler, you are likely to clump material together in order to remember it, by eliminating or reducing differences, and by focusing almost exclusively on similarities. You are likely to blur similar memories and to merge new experiences readily with previous ones. If you are concerned about accuracy and getting it all right, then the sharpener approach is perhaps preferable. If you are concerned about expediency, then being a leveler may be the key to communication.

Part 8: HOW I DEAL WITH LANGUAGE RULES

If you are a more deductive learner, you like to go from the general to the specific, to apply generalizations to experience, and to start with rules and theories rather than with specific examples. If you are a more inductive learner, you like to go from specific to general and prefer to begin with examples rather than rules or theories.

APPENDIX C

CENTRAL WASHINGTON UNIVERSITY RESEARCH PARTICIPANT INFORMED CONSENT

Study Title: Effective Learning Strategies for College Students with Asperger's Syndrome **Principal Investigator:** Jamie Gilbert, Graduate Student, Education, gilberja@cwu.edu **Faculty Sponsor:** Henry Williams, Department Chair, Advanced Programs (509)963-1415

1. What you should know about this study:

- You are being asked to join a research study.
- This consent form explains the research study and your part in the study.
- Please read it carefully and take as much time as you need.
- Ask questions about anything you do not understand now, or when you think of them later.
- You are a volunteer. If you do join the study and change your mind during or right after testing, you may quit at any time without fear of penalty or loss of benefits.

2. Why is this research being done?

The purpose of this research is to discuss the current research in regards to effective learning strategies that lead to success (good academic standing) for college students with Asperger's Syndrome and further discuss how to implement these learning strategies in higher education institutions.

3. Who can take part in this study?

- One Current Central Washington University Student
- At least 18 years or older
- Has a Current Diagnosis of Asperger's Disorder

4. What will happen if you join this study?

If you agree to be in this study, we will ask you to do the following things:

Participate in a 1-2 hour private interview discussing different learning strategies and success in a college environment and filling out a learning strategies assessment. The questions will be provided to you beforehand, so you have time to look them over them, and once the interview is finished your participation is complete.

5. What are the risks or discomforts of the study?

This study contains minimal risk, which means you will not experience anything that you would not experience in your daily life. For example, you may experience some discomfort when you discuss the challenges that you have had in the college environment. However, you do not have to answer any question with which you are not comfortable.

6. Are there benefits to being in the study?

Through this interview you may gain knowledge about your learning strategies and discover what works best for you, which you could possibly find beneficial. If you take part in this study, you may help others in the future. By demonstrating successful learning strategies for Asperger's Syndrome, other students with the diagnosis will learn that they, too, can succeed in higher education.

7. What are your options if you do not want to be in the study?

You do not have to join this study. If you do not join, it will not affect your grade in any class or any of your privileges as a CWU student.

8. Will you be paid if you join this study?

You will not be paid, offered other financial rewards, or offered any other form of compensation in return for your participation.

9. Can you leave the study early?

You can agree to be in the study now and change your mind later. If you wish to stop at any time, please tell us right away. Leaving this study early will not affect your standing at CWU in any way. If you leave the study early, the investigator may use information already collected from you.

10. What information about you will be kept private and what information may be given out?

- I will collect your name and I will also record the interview if that is something you are comfortable with. I will keep the data in a locked filing cabinet in my home office. I will be the only one that has a key, and there will be no names or any other identifiers kept in the cabinet that link the data to you. No identifiers that link you to the research will be put in the report.
- *Information that will be public:* Gender, Age, and the Diagnosis.
- *Information that will be confidential:* Anything that is outside of what is mentioned above.

11. What do you do if you have questions about the study?

Email the principal investigator, Jamie Gilbert, at gilberja@cwu.edu.

12. What do you do if you have concerns about your rights as participant in this study?

This study has been reviewed by the CWU Human Subject Review Council. You may contact the HSRC if you have questions about your rights as a participant or if you think you have not been treated fairly. The HSRC office number is (509) 963-3115.

13. What does your signature on this consent form mean?

By signing this consent form, you are not giving up any legal rights. Your signature means that you understand the study plan, have been able to ask questions about the information given to you in this form, and you are willing to participate under the conditions we have described.

A copy of the form will be given to you.

Participant's Name (print):

Participant's Signature

Date: _____

Signature of Investigator: _____ Date: _____

CWU Human Subjects Review Approval: July 3, 2014

Do not use after this date: July 2, 2015