LEARNING STYLES AND TECHNIQUES USED AMONG UNDERGRADUATES WITH AUTISM SPECTRUM DISORDERS

An Undergraduate Research Scholars Thesis

by

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Submitted to the LAUNCH: Undergraduate Research office at

Texas A&M University

in partial fulfillment of requirements for the designation as an

UNDERGRADUATE RESEARCH SCHOLAR

Approved by

Faculty Research Advisor: Dr. Marissa Cisneros

May 2021

Major: Biomedical Sciences

RESEARCH COMPLIANCE CERTIFICATION

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This project required approval from the Texas A&M University Research Compliance & Biosafety office.

TAMU IRB #: 2020-1135M Approval Date: 02/16/2021 Expiration Date: 02/14/2024

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ABSTRACT

Learning Styles and Techniques Used Among Undergraduates with Autism Spectrum Disorders

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As universities increase their student body, the autistic student cohort requires proper support from their faculty and peers. Individuals with Autism Spectrum Disorder have specific barriers such as transference and social communication that have to be considered to properly create community based support and services. Many previous studies showed that autistic students who had additional academic and emotional support presented higher graduation rates and GPAs, whereas students with generalized support, known as mainstreaming, were more socially and emotionally depleted. For the past forty years, the learning styles of these students have been bolstered through the techniques of behavioral therapies. This paper presents the data of surveys and individual interviews of autistic students from a southern university. Through the use of the university's bulk email system, insight into this hidden population was provided and was analyzed through both quantitative and qualitative methodology. The results show a relationship between prior behavioral therapeutic intervention and satisfaction with university

life and coursework. Additionally, the data provided specifics on the resources that these students are currently using and how these programs could be improved upon from the students' perspective. As this study surveyed the effects of proper academic support, peer support, and general awareness, the study hopes to lessen the isolation of autistic students from the academic community through this research. This study aims to provide a starting point for future research which can be conducted to integrate this data into academic programs that would allow for better support of students and diversify the academic field through accessibility.

DEDICATION

To the university's intelligent and capable autistic undergraduate participants and to my friends, family, and instructors who supported me throughout the research process.

ACKNOWLEDGEMENTS

Contributors

I would like to thank my faculty advisor, Dr. Marissa Cisneros, and my principle investigator, Dr. Sarah Gatson, for their guidance and support throughout the course of this research.

Thanks also go to my colleagues and the department faculty and staff for making my time at Texas A&M University a great experience.

Finally, thanks to my friends for their encouragement and to my partner for their patience and support.

The research design reviewed for Learning Styles and Techniques Used Among Undergraduates with Autism Spectrum Disorders was in part discussed with Christopher Mathey, a PhD candidate.

All other work conducted for the thesis was completed by the student independently.

Funding Sources

This work did not have any other contributors and did not receive funding.

NOMENCLATURE

GPA	Grade Point Average
ASD	Autism Spectrum Disorder
DSM	Diagnostic and Statistical Manual of Mental Disorders
PDD-NOS	Pervasive Developmental Disorder-not otherwise specified
SPCD	Social (pragmatic) Communication Disorder
ASC	Autism Spectrum Conditions
IDEA	Individuals with Disabilities Education Act
IEP	Individualized Education Program
ADA	Americans with Disabilities Act
ABA	Applied Behavior Analysis
PRT	Pivotal Response Treatment
DTT	Discrete Trial Training
ATA	Applied Thematic Analysis

1. INTRODUCTION

1.1 Defining Autism

For the purpose of this research, the terms ASD, autistic individuals, and autism will be in reference to an autism spectrum disorder. This is to differentiate from a subset of ASD, classical autism. The term autism spectrum disorder is an umbrella term for many disorders but not limited to: classical autism, Asperger syndrome, Rett syndrome, Childhood Disintegrative Disorder, and Pervasive Developmental Disorder - not otherwise specified.[1] This study will also define ASD as a developmental disorder in accordance with symptoms appearing generally within two years, with the exception of Pervasive Developmental Disorder-not otherwise specified.[2] This is to differentiate from studies that view ASD as a solely social or behavioral disorder.

One in every fifty-four children within the United States is diagnosed with ASD[3]; therefore, it is statistically expected that a sizable portion of the student population will also have ASD, whether that be professionally or self-diagnosed. Despite the stigmatization of autistic individuals by not only the general public but also within academia, the autistic undergraduate is fairly large with two percent of the student cohort nationwide.[4]

To understand the complex dynamics of autism, the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5) 2017 Autism -5 Diagnostic Features were reviewed to understand the specific symptoms that behavioral therapies are centered around. According to the DSM-5, these diagnostic features include: persistent deficits in social communication and social interaction and repetitive, restrictive behaviors, interests, or activities.[5] These symptoms must also be present within the early developmental period[5]; however, the symptoms may not be fully

recognized until later due to perceived social and communicative abilities.[5, 6] ASD causes clinically significant impairment in social, occupational, or other important areas of current functioning; the disturbances must not be better explained by an intellectual disability (intellectual developmental disorder) or global developmental delay.[5]

1.1.1 Social Pragmatic Communication Disorder and Comorbities

Autism Spectrum Disorder is commonly associated with psychiatric comorbidity and was recently distinguished from social (pragmatic) communication disorder (SPCD) within the DSM-5 2017 diagnostic category.[5] The current debate among those within the autism spectrum community is whether or not SPCD falls under the autism spectrum.[7] Social (pragmatic) communication disorder differs from autism as restricted and repetitive behaviors are absent from SPCD.[7] Previously within the DSM-IV, a diagnosis of Pervasive Developmental Disorder-not otherwise specified (PDD-NOS) was acknowledged as the partial manifestation of autism[8]; many individuals previously diagnosed as PDD-NOS may now fall under SPCD as the PDD-NOS DSM-IV diagnostic criteria did not specify language impairments as a deficit within social communication.[9] As SPCD became a separate diagnosis category in 2013,[10] participants with SPCD will be regarded as within the autism spectrum and included within the "other" category of the survey.

Autistic individuals suffer from comparable rates of psychiatric comorbidity of other psychiatrically referred youth, however, autistic individuals had an overall increased risk for comorbidity of anxiety, elimination, and language disorders.[11] Due to the psychopathology between ASD and intellectual disabilities, social communication must be below the expected general developmental level to produce comorbid diagnoses.[12] The nature of ASD's comorbid

conditions leads to additional burdens[11] for autistic students and thus may require more additional support than a neurotypical undergraduate student.

1.1.2 Sensory Processing and Stimming

Autistic individuals experience nonnormative sensory processing that can cause discomfort and stress during certain stimuli; the sensory stimuli may result in self-injurious and aggressive behavior when overstimulated.[13] Sensory processing within this study will focus on auditory and visual processing. Several studies have estimated that the sensory dysfunction rate within the autistic cohort is over 90% with symptoms appearing within multiple domains.[14, 15] As a large portion of the population experiences this dysfunction, the sensory processing of autistic individuals must be taken into account when discussing academic accommodations and settings.

A common self-regulatory technique used among autistic individuals is the diagnostic feature of stereotyped or repetitive motor movements, now reclaimed by self-advocates as "stimming".[16] When consulting autistic adults, they identified stimming as a self-regulation mechanism yet understood the social backlash that may be received by the general population.[16] Because of this stigma, many autistic individuals are taught to suppress these methods of coping to be seen as acceptable.[17] Additionally, autistic adults may devalue the benefits of stimming due to an internalized stigma against it.[16] However, many within the neurodivergent community have pushed to normalize stimming within the US.[18]

1.2 Accommodations

For public K-12 education, more young autistic individuals are becoming involved with mainstreamed school.[19] Mainstreaming as defined for this study is the act of incorporating special needs individuals into non-specialized schools with accommodations for their needs in

accordance with laws such as the Individuals with Disabilities Education Act (IDEA) and the Americans with Disabilities Act (ADA).[20, 21] According to IDEA, children (birth through high school graduation) must be taught in the least restrictive environment for each individual child[20]. IDEA covers every child with the concept of zero reject[20]; the district itself is required to provide appropriate public education through identification, evaluation, and cost coverage of the child.[20] Included within IDEA, an Individualized Education Program is created for the child[20]; this document is designed for each individual disabled child and allows for collaborative teamwork amongst the child's parents, teachers, school administrators, and others for the child's education.[20] However, once a child becomes a legal adult, these students' rights become covered by the Americans with Disabilities Act, if they are otherwise qualified.[22]

The ADA prohibits discrimination on the basis of disability, although the college or university has no responsibility to identify its students with disabilities.[21] To determine services, individuals must self-identify their disabilities and request the proper accommodations.[21] As these are no longer guided by an IEP,[20] autistic students tend to fall through the accommodation process as they struggle with self-advocacy[4] as discussed below (pgs 12,13). Nevertheless, universities still have the responsibility of providing equal access to postsecondary education for students with disabilities and subsequently, consider and integrate the unique needs of autistic individuals.

Although mainstreaming is a protected right of special needs students, physically integrated children with autism spectrum conditions (ASC) have lower perceived participation in school than their classmates with an overall perception of being less liked and less involved.[23] Within the postsecondary setting, disabled students including autistic individuals felt either

excused because of a "hidden" disability or treated as deficient[24]; these students were not properly integrated nor supported within their education.[24]

1.3 Behavioral Therapies

Within the past forty years, behavioral therapies have originated and been developed for the purpose of improving the quality of life for autistic individuals beyond the abilities of mainstreaming.[25] Similar to the formatting of these therapies, highly structured and specialized educational programs have shown to produce positive respondent rates within ASD individuals as these programs provide for these students' neurodivergent needs.[26] To better understand the methods and aspects that could possibly be incorporated to universities and its subsequent programs, a brief overview of several behavioral therapies was conducted.

1.3.1 Applied Behavior Analysis

Applied Behavior Analytic interventions (ABA) is perhaps the most researched and studied behavioral therapy as it has been in creation for the past 40 years.[25] The behavioral therapy focuses on decreasing severe challenging behaviors and establishing behaviors and communicative language through early intervention. ABA has certain emphases including positive reinforcement, experimental psychology, interventions and consequences, intensive behavioral treatment, and functional behavior analysis and assessments.[27]. ABA is the precursor for other behavior therapies including Pivotal Response Treatment and Discrete Trial Training.[27] A main component of ABA is the functional assessment, the process of the formation of a hypothesis statement regarding relationships between events and the occurrence of challenging behaviors.[28] The assessment is then used to develop a management plan.[29]

1.3.1.1 Applied Behavior Analysis Derivatives

Pivotal Response Treatment (PRT) is a naturalistic intervention model derived from ABA approaches.[30] PRT focuses on child's development, motivation, cue responsivity, self-management, and social initiations.[30] PRT has clinical trials that have shown significant improvements of a 12-week PRT group of child language skills and early cognitive abilities.[31] Pivotal Response Treatment (PRT) is a naturalistic intervention model Derived from ABA approaches. Another ABA strategy is Discrete Trial Training, which is focused on skill acquisition by manipulating the sequence of antecedents and consequences.[32] The defining characteristic is a higher emphasis on reward than the punishment within ABA.[32]

1.3.2 Greenspan's Floortime and Early and Intensive Behavioral Intervention

Greenspan's Floortime has a focus on following a child's lead to respect their interests and then through a trusting relationship, help to cultivate empathy, creativity, and reflections.[33] Floortime includes six core capacities: attending, relating, purposeful communication, problem-solving interactions, using ideas creatively, and using ideas logically.[33] Floortime is also used within Early and Intensive Behavioral intervention (EIBI).[34] EIBI uses a culmination of several therapies to accentuate their best aspects.[34]. This strategy uses the interpersonal teaching method of DTT, a public school setting from mainstreaming, and Floortime aspects.[34] Through EIBI's integration of these strategies, transference has been shown to improve amongst children and adults[35] and is expanded upon in the next section.

1.4 Unique Difficulties Amongst Autistic Students

The transition from a fully directed education, to one where self-advocacy is at the pinnacle of success, can be especially challenging for autistic students.[4] As deficiency within

social skills is one of the main diagnostic features of autism[5], a successful transition to higher education may be dependent upon not only advocating for one's academic accommodations but also transference and emotional support.

1.4.1 Transference and Self-Advocacy

Transference is the capability to transfer a skill learned in one setting to another place or time.[36] The use of effective teaching methods, support from within the family and community, and access to information and services can contribute to successful transference.[37] While transference isn't a diagnostic feature of ASD, it is a major contributing factor to the educational difficulties faced by a majority of ASD individuals.[24] Based on these previous studies, this study will consider proper accommodations for autistic students as well as community creation as it has been shown to increase transference.[24, 37] Additionally, systematic social and emotional support from the initial introduction to the college experience is needed within the specific training of faculty, staff, and peers.[38] These various factors suggest that universities may need to look into not only community building but also specialized training of faculty to properly accommodate this large portion of the student population.

Additionally, universities may need to consider autistic students' ability to self advocate to properly accommodate them. Self-advocacy is characterized by a conceptual framework involving four general components, "knowledge of self, knowledge of rights, communication, and leadership."[39] These aspects of self-advocacy are important for autistic individuals as they are required in navigating social interactions and communication with others.[40] However, autistic students experienced poor advocacy skills which barred them from properly accessing accommodations.[4]

1.4.2 Social Struggles, Masking, and Stimming

Autistic individuals experience a strong correlation between autism phenotype and loneliness and lower occurrence rates of long-lasting friendships.[41] These social issues contribute to the integration of ASD undergraduates as they struggle to not only create the communities needed for transferal success[36] but also to maintain them through interpersonal relations.[42] When these social issues are not addressed by the university, students have to create these communities without support and may further affect how autistic students present themselves by hiding their disorder to fit in.[43]

Masking to hide their disorder results in added stress upon the student as they try to assimilate both socially and professionally.[44] Autistic students specifically will hide their ASD conditions and create personas and characters to perform during social situations.[43] One study found the common reasons for masking, or camouflaging, were to increase interpersonal relations with others, however the consequences of masking include fatigue and compensation; compensation for this study was defined as strategy development to address to social and communicative deficits.[43] This could include maintaining eye contact, facial expressions, and other nonverbal and verbal communicators.[2]

The other common symptom, fatigue, can be a result of having to self-regulate emotions while masking. A lack of self-regulation can result in anxiety, depression, impulsivity, and irritability.[45] Although stimming may decrease the sensory overload, masking directly suppresses these repetitive and stereotyped movements to avoid social outcast from the general population.[16] While considering the above research on these noted symptoms of social struggles, it shows that universities must be acutely aware of community creation for the mental health of their autistic students. A previous study involving young autistic students identified emotion regulation, stress

management, and socialization as crucial services needed from prospective undergraduate universities.[42]

1.4.3 Marginalization and Stigmatization

Marginalization of autistic individuals creates a hostile environment for learning and the inability to create proper support systems which are necessary for educational success.[24] Studies on the marginalization of disabled students including autistic individuals indicate feelings of inappropriate accommodations, treated as deficient, excused because of 'hidden' disabilities, and a tendency to make it on their own without proper accommodations in response to a lack of acceptance by universities and its communities.[24] Furthermore, when once students are identified as being 'different', stigmatization by the general population may involve inferences of these students having inferior intellectual capacities.[46] As such, autistic students may be prevented from disclosing their diagnosis in order to avoid stigmatization either due to assumptions or discriminatory campus practices.[47]

1.4.3.1 Hierarchy of Functioning

The idea of 'high-functioning' seems to have become synonymous with autistic individuals without an intellectual disability.[48] However, studies show that this is an inaccurate assumption and should not be used to discuss levels of support for ASD individuals.[48] University students are especially vulnerable to this inherent bias as there may be an expectation for them to perform simply because of their acceptance into university, as seen with doubts regarding the legitimacy of their disabilities.[24]

1.5 Higher Education Community and Culture

Students, especially disabled students, seem to be disproportionately affected by the structure of the academic community. This community often excludes disabled students, students of color, and other marginalized groups, albeit perhaps unknowingly.[49, 50] The entryway to education has been improved upon through the Americans with Disabilities Act which prohibits discrimination on the basis of admission due to a disability.[21] However, these students still undergo difficulties because while the system must accommodate them; it was not built with them in mind. Specifically, for autistic students, this is seen within the pedagogy of academia.

1.5.1 Pedagogy

For this study, pedagogy will be defined as the practice of teaching in regards to an academic subject,[51] specifically involving professors and classroom learning. Many aspects of autism affect learning as self-reported concerns regarding "information processing, time management, group work, presentations, motivation to study, following lectures, and asking questions"[47] which are heavily involved in self-paced classroom learning. An average classroom setting often involves harsh lighting, noises, fellow peers, and overall overstimulation. All of these can affect autistic students, and self-reports state that students believe these processing issues make learning increasingly difficult.[52] Additionally, fellow peers add onto a common comorbidity of anxiety[11] and the clinical diagnostic feature of social issues.[5]

1.6 Research Questions

When considering how autistic students can be supported, we must observe not only their clinical features but also their typical struggles. Additionally, the usage of behavioral therapies has been used for several years and shown to improve the quality of life within autistic

individuals.[25] By consolidating the knowledge of these two aspects, a comparison can be made between those who may have previously received behavioral therapy and those who have not. Furthermore, the sensory processing issues that create unique difficulties to accommodate learning for autistic individuals[15]; the present study seeks to address these struggles within university life and coursework and question how institutions can better accommodate their students.

i. Do specific learning styles / behavioral therapies give students with ASD a comparative advantage when seeking higher education?
ii. What have undergraduates with ASD been struggling with university life and coursework?
iii. Can institutions better accommodate students with ASD through programs with behavioral therapeutic techniques?

2. METHODS

For this study, the inclusion criteria for the study participation requires that participants must be students of the southern university of study currently enrolled and attending at least part time (6 hours). Additionally, these students must be of eighteen years of age or older and either be diagnosed with ASD or self-identify as such. The inclusion criteria isolates current students at the university who are currently enrolled to give a more unified study pool. Because many factors can exclude an ASD diagnosis including anxiety, finance, gender, social stigma, mistrust of medical professionals, and the complexities of the healthcare system[53], students who self-identify with ASC will be included within the study.

Although the southern university has a general population of over 50,000 undergraduate students, the autistic community is a unique population that is often hidden due to social stigma. Through the use of the southern university's bulk email system, a recruitment email was sent to the undergraduate Listserv. This email was also sent to specific student organizations, including organization 1, an on-campus organization for community amongst autistic undergraduates and interested undergraduates, and organization 2, an organization which also allows for autistic community opportunities. The aim was to collect survey and interview data in order to offer more depth and insight to this population. Participants who completed the survey were given an option to opt into an interview with the student researcher to further discuss their experiences. These interviews were administered via Zoom. The survey was created through the Qualtrics

software, and the interviews were conducted and record via Zoom. The recordings were then transcribed and cleaned of identifiers to preserve participant confidentiality. Thematic analysis and descriptive data were used in order to answer the research questions, this is further explained below (pg 23).

Survey questions allowed for a compilation of raw percentage illuminate a general understanding of participants such as learning styles that may have been used as a child, whether they used mainstreaming or not, and then to discuss what styles they use now. These surveys will include a question on whether they would like to participate further in the research with an interview, and the respective survey data was used to supplement the interview questions. The interviews will focus more heavily on struggles they may have had and how the undergraduate community have helped them. These interviews are necessary as the qualitative data provides depth to the understudied area Autism Spectrum Disorders to further expand upon the expository research.

2.1 Population Statistics

Within the studied southern university, the general enrollment was above 50,000 undergraduate students. The gender diversity was fairly equal within this university, with a slight majority of males. The racial diversity of the university was relatively representative of the general southern population, with underrepresentation of black students. As 2% of the undergraduate student cohort can be estimated to be autistic, over 1,000 undergraduate students are statistically likely to have an autism spectrum disorder.

2.2 Recruitment

A campus-wide email was sent out using a bulk email system which was distributed to the undergraduate cohort. The bulk email received the highest response of all the recruitment methods. This email included information on the overall purpose of the study, eligibility, and study procedures. The email was also forwarded specifically to leaders of two organizations, an organization involving autistic undergraduates and an organization for students living on campus; however, this attempt was unfruitful.

2.3 Data Collection

The study performed mixed methodology in the form of survey collection and interviews. Through the use of a Qualtrics survey, questions were asked regarding diagnoses, behavioral therapies, support groups, and tutoring (See Appendix B: Qualtrics Survey). The survey takes no more than 15-20 minutes. The survey also included an option for an interview via entering their email address. If entered, another email from the researcher would be sent to the participant containing interview scheduling details. The interview was separate and not required for completion of the survey.

If the participant wished to continue to an interview, a scheduling email was sent. The interview focused on open-ended questions involving personal struggles with university learning, staff, peers, and what could be improved at the university level (See Appendix A: Structured Interview Guide). The interview took no longer than an hour and fifteen minutes. The day of the

meeting the participant logged in via the scheduled zoom link. The participant was reminded that it was their decision to join the study and that there was no penalty if they decided not to join. Once the interview ends, the visual recordings (if any) were destroyed, and the audio files were destroyed after transcription was finalized.

2.3.1 Development and Purpose of Survey

The survey's questions (Appendix B: Qualtrics Survey) were each reviewed for language usage, understandability, and effectiveness. The student researcher has a background within the autistic community with both familial ties and personal experience. As the student researcher conducted the interviews, it was crucial that the researcher understood both the community and the implications of autistic-centered language within it.

Regarding the language used, identity-first language was used purposely throughout this paper and its surveys and interviews. The academic community tends to prefer person-first language, however within recent years, self-advocates with autism have stated a preference for identity-first language. [54] Additionally, the use of ASD levels was incorporated into the survey to not implicate a hierarchy of functioning such as high-functioning and low-functioning.[48] These terms are indicated as harmful to clinical studies and their participants, thus were not used.

The survey served to collect participant descriptive data, including gender, diagnosed or self-identified disorder, experienced DSM-5 qualifications, and self-reported ASD level. Furthermore, the survey included questions regarding previous behavioral therapies, registration with on-campus or off-campus resources, and involvement with an on-campus organization involved with autistic undergraduates. The survey also served to recruit individuals interested in a personal interview as well as serve as a precursor to interview questions.

Aside from the opt in email identifier, the survey was fully anonymous. The emails were deleted from the Qualtrics data after the information to email participants was retrieved. Additionally, due to a low overall response, the survey data was inappropriate to analyze; as a result, survey data was used for basic percentages and frequencies along with any prevalence of any particular behavioral therapy amongst participants.

2.3.2 Development and Purpose of Interview

Similarly, to the design of the survey, the interview was structured based on subsequent research regarding identity-first language and ASD levels.[54] The interviews provided qualitative data to have a more in depth understanding of previous behavioral therapeutic usage, student struggles, and possible areas of university improvement. Through the use of thematic analysis discussed further in the next section, the interviews sought to identify the struggles autistic students have experienced and how the university assists them. The interview involved discussion of ASD diagnosis, their thoughts on the hierarchy of functioning, mainstreaming, accommodations, and other open-ended questions. Due to this construction, the interviews helped to answer the research questions stated within the introduction.

2.4 Applied Thematic Analysis

Applied thematic analysis (ATA) uses a systematic analysis process with a specific analysis objective; this analysis combines elements from "grounded theory, positivism, interpretivism, and phenomenology, synthesized into one methodological framework."[55] Before analyzing, an analysis plan must be drafted with analytic objectives to guide the analysis.[55] Next, to begin analyzing the interviews, the transcriptions were coded in Atlas Ti software in order to organize the data code groups (referred to here as categories) to find patterns amongst them[56]

which will be referred to as themes (See Appendix C: Quantitative Codebook and Tables). The set procedures of ATA allow for these themes to be identified and examined in a credible manner through the presentation of individualistic profiles.[55, 56] Themes that were repetitive and mentioned within other passages were specifically looked towards[56]. After these aforementioned steps, the themes were reviewed in the context of answering the study's research questions (See Appendix D:Atlas T.i Code and Quotation Excerpt Tables).

3. RESULTS

3.1 Quantitative Survey Results

The following data was collected from the Qualtrics survey which was sent out through the university's bulk email (See Appendix C Quantitative Codebook and Tables). A total of 9(n) undergraduate participants on the autism spectrum answered the survey to completion. The demographic of those surveyed included 22.22% sophomores, 33.33% juniors, and 44.44% seniors. The survey achieved a fairly equal gender distribution with 44.44% male participants, 44.44% female participants, and 11.11% non-binary individuals. The survey included a question involving the autistic specification they identified with including Pervasive Developmental Disorder (PDD-NOS), Asperger's Syndrome, classical autism, Childhood Disintegrative Disorder, and Rett's Syndrome. The survey showed the following percentages of identified specifications: 11.11% PDD-NOS, 55.56% Asperger's Syndrome, 22.22% classical autism, and one identified as the general autistic severity level of ASD Level 1. Of note, the majority of participants were on what some would consider the autistic specifications which need less support[57], such as PDD-NOS and Asperger's syndrome.

In the survey section on how the participants viewed themselves outside of their autistic specification, two major questions were asked which diagnostic features did they identify with and how did they associate with each ASD level. To clarify, to get an official diagnosis of an autism spectrum disorder, typically, an individual needs to present all five diagnostic criteria;[5] however, there are unique circumstances that could lead to otherwise. The diagnostic criteria are persistent deficits in social communication and social interaction; repetitive, restrictive

behaviors, interests, or activities; presentation of symptoms within the early developmental period; clinically significant impairment in social, occupational, or other important areas of current functioning; and disturbances must not be better explained by an intellectual disability (intellectual developmental disorder) or global developmental delay.[5] The diagnostic criteria percentages were summed according to the total amount each participant experienced or identified with, as each diagnostic criterion was viewed as of equal importance. Of the participants, 11.11% experienced no symptoms, 11.11% experienced 1 diagnostic criteria, and 22.22% experienced 2 diagnostic criteria. Additionally, 22.22% of the participants experienced 3 diagnostic criteria, and 33.33% of participants experienced 4 diagnostic criteria; none of the participants reported experiencing or identifying with all 5 diagnostic criteria.

When participants were asked about how they associated themselves with each ASD Level 1-3 on a range from very likely to very unlikely to see how they perceived their own support needs. When asked about if they perceived themselves as ASD Level 1 (Table 1, pg 26), 44.44% of participants selected very likely, 22.22% selected likely, and 33.33% selected unlikely. Secondly, for ASD Level 2 (Table 2, pg 26), 11.11% of participants selected likely, 22.22% selected unsure, and 11.11% selected unlikely. At a majority of 55.56%, participants answered very unlikely for ASD Level 2. Finally, for identification for ASD Level 3 (Table 3, pg 27), 22.22% of participants selected unlikely and 77.78% of participants selected very unlikely. In sum, most participants identified with ASD Level 1, the lowest amount of support needed of the three severity levels; although a minority of participants also slightly identified with ASD Level 2. No participants identified with ASD Level 3, the highest level of support of the three severity levels.

Table C.1. *ASD Level 1 Likelihood Frequency Among Participants.*

ASD Level 1	**Freq.**	**Percent**	**Cum.**
Very likely	4	44.44	44.44
Likely	2	22.22	66.67
Unlikely	3	33.33	100
Total	9	100	

Table C.2. *ASD Level 2 Likelihood Frequency Among Participants.*

ASD Level 2	**Freq.**	**Percent**	**Cum.**
Likely	1	11.11	11.11
Unsure	2	22.22	33.33
Unlikely	1	11.11	44.44
Very Unlikely	5	55.56	100
Total	9	100	

Table C.3. *ASD Level 3 Likelihood Frequency Among Participants.*

ASD Level 3	**Freq.**	**Percent**	**Cum.**
Unlikely	2	22.22	22.22
Very Unlikely	7	77.78	100
Total	9	100	

Both mainstreaming and behavioral therapy involvement were also surveyed to attempt to identify any comparative advantage between those who had underwent behavioral therapy or received accommodations and those who did not. Regarding mainstreaming, an option was placed named mainstreaming without accommodations, this was for individuals who went into public school, private school, charter school, and similar institutions without accommodations for various reasons, including but not limited to late diagnosis. Of the participants, 66.67% were mainstreamed without accommodations (Table 4, pg 28), and 44.44% were mainstreamed with accommodations (Table 5, pg 28); these statistics include an overlap of 11.11% of participants stating they were both mainstreamed with and without accommodations which could be explained by a diagnosis occurring within late adolescence, however this was not clarified with this participant as they did not partake in an interview. Additionally, 22.22% of participants were also enrolled in special education, but there may have been confusion between the explicit difference between mainstreaming with accommodations and special education as these participants selected both options. To further clarify, mainstreaming involves placing students within the general education classroom, whereas special education involves an inclusion classroom for students who receive special education.[58] Again, these options were not clarified during the interview process, and the possible discrepancy is simply speculation, to be discussed in future considerations. Finally, 11.11% of participants also participated in some form of in-school social skills lessons, and another 11.11% underwent in-patient care.

Table C.4. *Participant Frequency of Mainstreaming without Accommodations*

Mainstreaming without Accommodations	**Freq.**	**Percent**	**Cum.**
No	3	33.33	33.33
Yes	6	66.67	100
Total	9	100	

Table C.5. *Participant Frequency of Mainstreaming with Accommodations*

Mainstreaming with Accommodations	**Freq.**	**Percent**	**Cum.**
No	5	55.56	55.56
Yes	4	44.44	100
Total	9	100	

In concurrence to these forms of education, participants were asked which behavioral therapies they were involved in. Behavioral therapies that were listed in the survey included participation percentages as follows: Cognitive Behavioral Therapy (22.22%) (Table 6, pg 29), Early and Intensive Behavioral Intervention (11.11%) (Table 7, pg 29), Applied Behavioral Analysis (0.00%), Pivotal Response Treatment (0.00%), Discrete Trial Training (0.00%), and Greenspan's Floortime (0.00%). As such, 33.33% of participants underwent some form of behavioral therapy.

Table C.6. *Participant Frequency of Cognitive Behavioral Therapy*

Cognitive Behavioral Therapy	**Freq.**	**Percent**	**Cum.**
No	7	77.78	77.78
Yes	2	22.22	100
Total	9	100	

Table C.7. *Participant Frequency of Early and Intensive Behavioral Intervention*

Early and Intensive Behavioral Intervention	**Freq.**	**Percent**	**Cum.**
No	8	88.89	88.89
Yes	1	11.11	100
Total	9	100	

The final questions on the survey were regarding resources and involvement with organizations on campus and to see if students were seeking out the resources available to them, as autistic undergraduates, to accommodate them. Resources included on-campus resources, off-campus resources, and organization 1, an on campus organization which is a community for autistic students. For on-campus resources (Table 8, pg 30), there were 4 options, including the ADA resource office, counseling, and university resource 1 and 2 which are centered around academic success and assistive services. The participants were asked to select each resource that they have used before, and the total of choices selected were summed to show how many resources were being used by each participant. Of this data, 22.22% of participants did not use

any resources, and 44.44% used 1 resource. Additionally, 22.22% of participants used 2 resources, and 11.11% used 3 resources total. None of the participants selected that they had used all four resources.

Table C.8. *Participant Usage Sum of On-Campus Resources*

On-Campus Resources	**Freq.**	**Percent**	**Cum.**
No Resource Usage	2	22.22	22.22
1 Resource	4	44.44	66.67
2 Resources	2	22.22	88.89
3 Resources	1	11.11	100
Total	9	100	

Off-campus resources included group tutoring and personal tutoring. Similarly, these resources were summed according to the selection by participants. Of these two options, 50% of participants used no resources, and 50% of participants only used 1 tutoring method. None of the students used both personal and group tutoring. Finally, the participants were asked whether or not they had heard of or joined organization 1. For this question, 55.56% of participants had not heard of organization 1, and 33.33% had heard of the organization. Only 11.11% of participants had both heard of and joined organization 1.

Table C.9. *Participant Usage Sum of Off-Campus Resources*

Off-Campus Resources	**Freq.**	**Percent**	**Cum.**
No Resource Usage	4	50	50
1 Resource	4	50	100
Total	8	100	

3.2 Qualitative Interview Results

A total of 6(n) undergraduate participants on the autism spectrum opted into the interviews. After coding the transcriptions and creating code groups (categories) in Atlas T.I, three main themes emerged within the six participant interviews, including (1) social pressure and its compounding effects, (2) stigmatization of autistic individuals, and (3) behavioral therapy and the needs of the undergraduates. The following themes are presented along with their corresponding categories (code groups) and codes.

3.2.1 Theme: Social Pressure and its Effects

Throughout the interviews, every participant mentioned that social pressure was behind the need to mask their autistic traits. As defined by the American Psychological Association, social pressure is "the exertion of influence on a person or group... including rational argument and persuasion, calls for conformity, and direct forms of influence… and promises of rewards or social approval."[59] Significantly, within this conceptualization in relation to how it affects autistic individuals, there must be a focus upon the calls to conformity and the promises of social approval. This social pressure lead to participants conforming through "act[ing] within certain boundaries" and "attempting to blend with the crowd to as best as I could [sic]." Additionally,

participants would attempt to gain social approval through their conformity, exemplified through attempting to "look normal so people would like me." The *social pressure and its effects* theme and the following one, stigmatization of autistic individuals, seemed to have been jointly present within most negative participant experiences, however they were discussed separately to discuss their impact more accurately. The main category that arose within *social pressure and its effects* was the process and consequences of masking, which will be discussed in further detail in the following paragraph. Other codes subsequent to masking were fatigue, stigma, and social pressure.

Table D.1. *Codes for Theme: Social Pressures and its Effects*

Quotation	**Code**
"I would say, for the most part... the one social pressure I had was that I just didn't want other people to mess with me too much, so I just blended with the crowd to as best as I could."	masking, social pressure
"It [masking] took a lot of effort, and it was really exhausting to put on that facade or, you know, that personality every day. I'd be exhausted at the end of the day because of that. Because it was a lot of work just to be completely normal. People would have no idea, like making eye contact is definitely uncomfortable, but I've learned to do it."	Fatigue, masking
"Because of this fear of being different, especially in the United States, there seems to be a stigma behind it [autism] as well. So, you try to, especially at a young age, and try to hide it, or be like everybody else in that regard."	Masking, stigma, social pressure

3.2.1.1 Category: Masking

The category of masking was created through the grouping of codes such as, ASD deficits, self-regulatory behaviors, and fatigue. ASD deficits specifically involved instances of communicative and social deficits that hindered the participants interactions within their daily lives. These became grouped with the category of masking as masking is the act of socially camouflaging autistic traits to appear neurotypical.[43] Similarly, self-regulatory behaviors were also coded in instances where participants felt they either could not exhibit these behaviors in some part due to a social pressure, which will be discussed in further detail in the next paragraph. Finally, fatigue was coded as it is a common consequence of masking[43] and was therefore grouped into the masking category as it was perceived within the participants interviews.

When asked specifically if they believed they masked due to a social pressure, all of the interviewed participants said that it was either entirely or at least in part due to the social pressure. Although every participant explained how social deficits and to a lesser mentioned extent, communicative deficits, impacted their lives, the participants still suppressed these deficits through the process of masking. Additionally, there was a suppression of self-regulatory behaviors within one participant, stating that they "did not stim in public." Instances of the participants experiencing fatigue due to either ASD deficits or masking were coded as fatigue. Many participants stated that not only was dealing with these deficits as exhausting and frustrating, but also the act of masking itself being uncomfortable and tiring in and of itself. The code of masking frequently appeared with codes associated with the next theme, stigmatization of autistic individuals.

3.2.2 Theme: Stigmatization of Autistic Individuals

Stigmatization is defined as "the process whereby a mark or attribute-culturally understood as devalued and discrediting-is recognized in, or applied to, an individual… by a another more powerful group of individuals."[60] Additionally, stigmatization works to differentiate between 'them' and 'us' by marking others as lesser.[60] Each participant displayed aspects of stigmatization, participant data was categorized into three main ideas: self-perception of diagnostic criteria, stereotypes, and self-advocacy. Within the category, self-perception of autistic diagnostic criteria revealed participants may have been stigmatizing themselves, which is rather prevalent within the autistic population.[61] On the other hand, stereotypes typically involved the stigmatization from the perspective of the public media and neurotypicals, individuals who do not show autistic traits. Instances of the media and of peer neurotypicals stereotyping autistic individuals are well researched,[62, 63] and therefore this was further demonstrated in experiences of stereotyping emerging within the interviews. The main consequence of these aspects of stigmatization appears to be a lack of self-advocacy. Participants largely showed hesitancy to advocate for their needs in terms of ASD for fear of justifying the stigmas. These three categories will now be discussed further.

Table D.2. *Codes for Theme: Stigmatization of Autistic Individuals*

Quotation	**Code**
"I had lots of therapy in the past and basically "fix" or not really fix but to make my life easier; so that I have very minor things so I mean ASD 1 it's more correct than anything else but I would say that even that's kind of an exaggeration if that sort of makes sense."	DiaCrit
"They push the character off to the side, or they would only make that character a stereotype, not have their own personality like, oh you know this person as the guy who has Down syndrome. That's all he's known for, not the fact that, you know, he is a student, what, no, no, he just has Down syndrome. That's all we know as the audience."	Harmful media, dehumanization
"You have people who treat you like you're a child, or you're an infant, and you can't do certain things. And then, they would call you buddy, friend. I still hate that 'buddy.'"	Infantilization, offensive language
"The idea of, 'Well, they've got in [to university].' and I've got in, and that means that I need to kind of push myself, in order to like prove my self worth, because, you know, sure, I'm high functioning autistic, but I don't want people to think of differently of me, so I still don't want to be a hinderance by reaching out to resources even though, yes, I could get them I don't want to be seen as a burden"	social pressure, masking, self advocacy, self-doubt, academic stress, stigma

3.2.2.1 Category: Self-Perception of Diagnostic Criteria

This category involves how participants perceived their experiences with all five autistic diagnostic criteria, however most participants focused on the following three criteria: (1) persistent deficits in social communication and social interaction, (2) repetitive, restrictive behaviors, interests, or activities, and (3) clinically significant impairment in social, occupational, or other important areas of current functioning.[5] The first criteria once again involved the coding of social and communicative deficits, as discussions of these deficits revealed the participants perceptions of them. Similarly, conversations of repetitive, restrictive behaviors were coded as restrictive, repetitive behaviors and more specifically, self-regulatory behaviors. As behaviors manifest in a physical manner, participants experienced several instances where they felt they could not self-regulate nor partake in these generalized behaviors. Impairments within social, occupational, and other areas tended to overlap with the first two criteria but was included for clarity.

As the surveys were used to guide the interviews, participants were asked why they identified their likelihood for certain ASD levels as they did. Despite various levels of support needs, there did not seem to be a consistent framework of how these participants viewed their own ASD level and diagnostic criteria fulfillment. Although the majority of participants identified as ASD Level 1, these participants identified with various degrees of ASD. This can be seen through the frequency and severity of their communicative and social deficits, coded within each interview. However, when participants viewed autistic traits as negative, they tended to identify and view selected diagnostic criteria as routine struggles and perceived their ASD level higher than others. One participant stated how the benefits of behavioral therapy “fixed” their symptoms, however the participant later revised their statement into how behavioral therapy had

made their life easier. However, the language of fixing ASD symptoms plays a role in how they perceived their struggles as not impairing their daily life. Instead of viewing autistic traits as simply requiring more support, some participants took this negative social pressure and stigmatized themselves, viewing themselves as less than. This idea plays into the next categories of stereotypes and self-advocacy.

3.2.2.2 Category: Stereotypes

The stigmatization of autism is largely within the form of stereotypes and bias. To begin, stereotype is defined by the American Psychological Association as "a set of cognitive generalizations about the qualities and characteristics of the members of a group or social category… often exaggerated, negative rather than positive… and resistant to revision."[64] The category involved several themes including poor media, bias, infantilization, dehumanization, restrictive language, and even offensive language. The media plays a large part in the public's perception of autism and overall warped views of disability.[62] Additionally, many participants experienced instances where their intelligence and capabilities were questioned due to the generalizations of the public; this resulted in interactions where participants were infantilized and treated as children, and also dehumanized, sometimes treated as if they were an animal. Ultimately within the context of these participant autistic undergraduates, the stereotypes manifested as generalizations regarding intellect as a result of public media and the general population.

Media was stated as one of the main perpetuators of these stereotypes by the participants. Media for the context of the interview primarily involved the news and the entertainment industry, however negative instances were marked and coded as 'harmful media'. To begin, a

2014 study came to the conclusion that over two-thirds of news coverage of autism perpetuates stigmatic cues.[62] Participants noted that that there was a duality within this coverage, with both overtly 'positive' and 'negative' stereotypes of autism, as noted within the general disabled community as well.[65] The "positive" ones portray autistic individuals as savants, miracles, and individuals of inspiration. However, one particular participant found these stereotypes negative as it dehumanizes them instead of viewing them as every day individuals; "I just see things a little bit different… I am not a miracle. I am just me." Additionally, a participant mentioned the use of autistic individuals within "inspiration porn". Coined by disability rights activist Stella Young,[66] inspiration porn has since been redefined as "the representation of disability as a desirable but undesired characteristic, usually by showing impairment."[67] Typically, inspiration porn involves individuals with visible, physical deficits,[67] however several participants alluded to this idea when it came to the media's presentation of autistic individuals, using them as props for a news story. In relation to the news inherently "negative" portrayals of disability, one participant noted how during acts of violence coverage put mental illness or a mental disability at the forefront of the conversation. Although perhaps unintentional, participants stated that the news had perpetuated the connection between violence and non-neurotypicality.

When discussing the media's impact through entertainment, the main concepts are how the media portrays autistic individuals physically and characteristically. Participants stated how canonically autistic characters consistently stereotyped autistic individuals. Mentioned within the interviews, autistic savants, specifically Sheldon from *The Big Bang Theory*[68] and Shaun from *The Good Doctor*[69], and individuals on a higher ASD level, such as the nonverbal girl, named Music, from the film named, *Music*[70], only allow for seemingly extreme ends of the spectrum. Although the portrayal of autistic savant stereotype[71] may seem positive, one participant

explained how the character dehumanized autistic individuals by disallowing them to exist on a spectrum. To further explain, autistic individuals were only seen as valued when they were on ASD Level 1, instead of allowing the reality of daily struggles. Furthermore, participants expressed how nonverbal characters were shown as burdens, exhibited stereotyped behaviors, and were portrayed oddly by neurotypicals. Additionally, several participants stated the how autistic personages were consistently poorly characterized. Participants described these characters as "rude", "unusual", and "demeaning". Participants also mentioned how these characters were only known of their condition instead of having fulfilling storylines outside of their struggles with disability. Finally, despite using autism within their plots, participants noted how the entertainment industry does not take into account autistic individuals watching their shows by including triggers for sensory overload, a common difficulty within the autistic community.

As the general population consumes the public media, many participants indicated that the general population associated autism with negative connotations over their intellect, capability, and appearance due to these stereotypes. One particular interviewee was not only discriminated against by those in their Special Education, being told that the best they could do was bagging groceries, but also by medical professionals through the use of offensive, outdated language to describe autism. Participants stated that at times they felt they did not fit within the physical stereotype, in one instance stating they were told, "you do not look like you have it [autism]." Although not mentioned explicitly in the interview, the media tends to present autism as a young, white male despite autism's prevalence throughout various groups.[72]

Along with the stereotype of the typical appearance of an autistic person, there is also an infantilized, stereotyped experience, "a tragic childhood condition that devastates families and

burdens communities and, therefore, requires urgent intervention."[72] Participants discussed how this concept is very prevalent within the autistic experience; one participant stated how organizations advocating for autistic individuals tend to stigmatize them by stereotyping them instead of supporting them. Additionally, this concept further emerges as the participants themselves wanting to present as capable individuals and taking special care to not be seen as a burden. This harmful stereotype of being the burden child manifests in the participants' experiences with self-advocacy.

3.2.2.3 Category: Self-Advocacy

Many participants stated their struggles with self-advocacy prevailed due not only to their social and communicative deficits but also to avoid perpetuating the autistic stereotype,[71] a burden child, as many studies focus on the caregiver's burden of caring for autistic individuals.[73] To avoid seeming incapable, participants would avoid interacting with professors, requesting accommodations, or even involvement with resources. Additionally, when participants felt that even when they were successful without accommodations, they would doubt whether or not they even needed the accommodations in the first place. As such, the codes used within this category include poor professor interactions, academic stress, hyper-focus, stress management and scheduling, self-doubt, and resources.

Several participants stated that poor interactions with their professors perpetuated these ideas further. One participant mentioned the concept of the inconsistency of the autistic experience and asked themselves, from the point of the professor, "if you didn't need support earlier, why do you need it now?" This particular participant stated that there were periods in their life where they struggled less than other times, and that the idea of a consistent experience

was unrealistic. The participant further retold how peers had brought this to the attention of their professors, but that the professors had reacted callously. When participants were asked whether or not they felt university faculty were adequately trained for autistic student interactions, the participants' opinions were rather divided with some stating that professors handled the interactions decently whereas others had not.

Many participants felt that if they requested accommodations that it would give them an unfair advantage or that they would rather fail an assignment than ask for help. When refusing help, one participant stated how they should be able to work on time, otherwise it was simply their fault. Instead of recognizing that accommodations can create greater equity in education, most participants viewed them as a crutch, and if they did not refuse them, they would be perpetuating the perception of incapability of an autistic individual further in spite of difference in academic stressors, time management, and hyper-focusing. A similar concept appears within seeking resources as participants felt that these resources labelled them further as "the autistic person". As such, these resources were avoided whether it be the ADA resource office, counselling resources, or general university resources because of a lack of discreteness.

These categories indicate instances in which the stigmatization of autism spectrum disorders disallowed students from advocating for themselves in interpersonal interactions and seeking institutional resources. By trying to avoid perpetuating harmful stereotypes, the students are hindered from the help that is available.

3.2.3 Theme: Needs of Autistic Undergraduates

Through an open dialogue of what autistic undergraduates may need, three general themes of behavioral therapy, community formation, and overall needs of students emerged.

Participants discussed in length their experiences with or opinions on behavioral therapy and how it has or would have benefitted them within their postsecondary education, their opinions on various resources, and how they could be better supported by the university. The main codes throughout the following categories include positive behavioral therapy interactions, feelings of support, resource benefits, resource negatives, and a need for more resources.

Table D.3. *Codes for Theme: Needs for Autistic Undergraduates*

Quotation	**Code**
"[Cognitive Behavioral Therapy] Helps going through that and probably kind of, like, how to like, first of all how to communicate with professors and also kind of like how to, like, communicate, I guess kind of communicate your wants and your needs."	+ behavioral therapy
"Cognitive behavioral therapy is so important with autism, it's like, it's understanding, at your core."	+ behavioral therapy
"It [community] is definitely beneficial if you're, you know, an autistic person coming on (to campus) for the first time you feel out of place and, if you need like an extra help, or just want to be in a group that like fully understand where you're coming from."	Positive community formation benefit
"They're supposed to be student advocates. That is the wrong definition for that word. And I feel very very strongly about it, because it was rude, and I've seen on online people say "the University doesn't care about us," and in that sense. I really got that vibe, and I did not expect that, because I know how to carry myself throughout my years of having to advocate for myself as someone autism and accommodation and service dog. You know, you have to have a voice."	Unsupported, resource negative, self-advocacy

3.2.3.1 Category: Behavioral Therapy

Generally, participants had positive experiences with behavioral therapy or believed they would benefit from behavioral therapy. Of the participants who underwent behavioral therapy, they mentioned how it had helped them to communicate more effectively, develop social skills, and understand themselves better. Additionally, one participant stated that they felt they were able to more effectively self-advocate and communicate with professors due to behavioral therapy. Participants stated that although behavioral therapy did not give themselves an inherent comparative advantage to other autistic students, they did believe that it produced equity with their neurotypical peers. Both participants who had and had not undergone behavioral therapy were asked if they would benefit from a resource formatted over behavioral therapeutic techniques, participants unanimously agreed that this would not only benefit them but also other autistic undergraduates. Also, when the concept of an online video format for this resource was mentioned, participants stated that the format would allow for less stressful usage as it was accessible online without the need for social interaction.

3.2.3.2 Community Formation

In many circumstances unprompted during the interviews, participants would mention how having a supportive community benefited their postsecondary experiences; communities mentioned included families, peers, mentors, and organizations for autistic individuals. Participants explained how a community often times felt like a resource as having this community allowed them to better understand their identities and be advised by those more experienced. As such, participants mentioned that this was a social benefit that had a positive impact on their post secondary education. When asked about how they could be better supported

within the southern university, several participants stated that they would create more support groups for autistic individuals and possibly an improved mentorship program with fellow autistic undergraduates.

3.2.3.3 Resource Opinions

Generally, participants had a negative view of most resources other than ADA resources. One participant stated, “the university doesn’t care about us.” Participants shared experiences where they felt like their concerns were not taken seriously, whether it was a lack of tutors, poor quality of mentors within a university resource for autistic individuals, or simply the long wait for counselling services. Participants stated that they felt because they could not communicate effectively, the faculty and advocates did not help them. However, when discussing the ADA resource, the participants who were registered with them felt that the accommodations given had helped their academic success and mental health to a great extent. Of note, the participants who had undergone behavioral therapy were registered with the ADA resource and generally had more supportive opinions of this resource.

4. DISCUSSION

This study investigated the effect of specific behavioral therapies on postsecondary education, what students were struggling within their postsecondary education, and how the university could better accommodation autistic undergraduates.

This study found that although specific behavioral therapies do not give a comparative advantage when seeking higher education, behavioral therapies generally help to teach undergraduates to better communicate, socialize, and self-advocate. As such, autistic undergraduates who had undergone behavioral therapy seemed to be better equipped to request, receive, and accept appropriate accommodations; this led to these particular participants to feelings of more support and less academic stress; they also felt capable and less hindered academically by their autism spectrum disorder. The study also found that within university life and coursework students generally struggled the most with social pressure, stereotypes, and self-advocacy as these aspects hindered their academic success. These struggles seem to be regardless of previous therapy access. Finally, the study found that autistic undergraduates encourage the creation of resources revolving around behavioral therapeutic techniques but would additionally emphasize the importance of communities within their postsecondary education. The importance of these findings is that it identified specific university struggles of autistic individuals and how the benefits of behavioral therapeutic techniques could address these issues through resource creation for autistic undergraduates. Given these findings, the study's research questions have been answered.

Surveys and interviews were necessary to assess these research questions on both the quantitative and qualitative level. By administering an anonymous Qualtrics interview, participants were able to answer questions regarding specific questions of their diagnoses, behavioral therapies, and resources without worrying about social interaction or possible social repercussions. Additionally, the surveys collected data that supplemented the interviews which produced high quality interviews; the interviews allowed for participants to share their personal experiences as an autistic individual on campus without worrying about revealing their identity or receiving academic backlash.

The present study differs from previous studies by focusing on the usage of behavioral therapeutic techniques as the basis for a focused resource for autistic undergraduates. Some limitations of the current study are the comparatively small sample size due to a lack of participants. In summary, the study has investigated the struggles of autistic undergraduates and that behavioral therapy-based resources could benefit students in social skills, communicative skills, and application of self-advocacy. What needs to be investigated further is how to transform general behavioral therapy into easily understandable and accessible videos for autistic undergraduates to benefit from as a resource.

5. CONCLUSION

By recruiting autistic undergraduate participants through bulk email, surveys and interviews were administered to collect data on their diagnoses, experiences with behavioral therapies, and opinions on the university's resources. Through the usage of Applied Thematic Analysis, the data was compiled into themes, categories, and codes which allowed for further dissection into the research. Autistic undergraduates undergo significant barriers in their university experience due primarily to social pressures, stereotypes, and difficulties with self-advocacy. To fight against the social pressures and stereotypes, autistic undergraduates appear to avoid advocating for themselves in order to prove their capabilities. However, in doing this, autistic students in this study actively mask their autistic traits to appear neurotypical and as a result, many do not receive accommodations which led to excess fatigue, self-doubt, and academic stress.

From this study, it is believed that by advocating on behalf of autistic undergraduates for behavioral therapeutic techniques to be incorporated into virtual resources universities can better accommodate ASD students. Also, for community formation to be at the forefront of acclimating autistic undergraduates into the general university population to allow for positive, facilitated social interactions.

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APPENDIX A: STRUCTURED INTERVIEW GUIDE[1]

Interview Questions

Note: These interview questions are not all encompassing. Our purpose is through a relaxed and open environment to create an organic flow of conversation where the research participants cover these topics in in-depth nuanced ways. Thus, these questions are used to guide the conversation, yet the participants may put focus in other areas if they organically arrive there.

Diagnosis Journey [Formatted around responses to survey questions]

1. When did you begin identifying yourself as an individual with ASD?

2. Why did you describe yourself as [likeliness] for ASD Level [#]?

    a. What are your thoughts on the terms for "high-functioning" and "low-functioning"

        i. Do you have a preference for referral of this concept?

3. Do you "mask" [to hide aspects of yourself to be like someone else or "pass" as neurotypical]?

    a. Did you feel a social pressure to do this?

        i. Did it increase in your postsecondary education?

    b. Did it affect how / when you received / recognized your diagnosis?

Behavioral Therapy / Education [Formatted around responses to survey questions]

4. How did your involvement in [educational system / behavioral therapy] impact your views on education?

5. How has [educational system / behavioral therapy] benefited you within your postsecondary education?

    a. How have you adapted what you learned in [educational system / behavioral therapy] to your postsecondary life and coursework?

[1] All university identifiers were removed for confidentiality of participants.

Supportive Programs / General University [Formatted around responses to survey questions]

6. What are your thoughts on the University's accommodations / resources?
    a. What are your favorite resources?
        i. How have they helped you specifically?
    b. How would you improve upon these programs?
    c. What are the pitfalls of these programs?
7. [If participant mentioned use of outside resources,] why did you use [outside resource]?
    a. Would you have preferred if the University had a similar supportive program for individuals with ASD or in general?
8. What are your thoughts on the diversity of universities?
    a. Do you feel comfortable on campus?
    b. Do you feel the need to "mask"?
9. Postsecondary students with ASD represent approximately 1% of the postsecondary cohort; Do you find this information surprising?
    a. Would you benefit from campus-initiated community formation?
        i. Have you found or built your own community?
        ii. How do you think this could be accomplished?
    b. Do you believe there is a hidden bias leading to a lack of support, embedded into academia against neurodiverse individuals with high IQs?
10. Do you think that faculty have been adequately trained to accommodate for individuals with ASD?

APPENDIX B: QUALTRICS SURVEY[2]

The consent information sheet was viewed as multiple pdf images within the survey. After participants reviewed the consent information, the following question was asked:

If you want a copy of this consent for your records, you can print it from the screen. If you wish to participate, please click the "I Agree" button and you will be taken to the survey. If you do not wish to participate in this study, please select "I Disagree" or select X in the corner of your browser.

- ○ I Agree
- ○ I Disagree

Are you an undergraduate student enrolled at the university of study either part-time (6 credit hours) or more?

- ○ Yes
- ○ No

Do you identify as a person with an autism spectrum disorder?

- ○ Yes
- ○ No

[2] All university identifiers were removed for confidentiality of participants.

Classification

- ○ Freshman (0-29 hours)
- ○ Sophomore (30-59 hours)
- ○ Junior (60-94 hours)
- ○ Senior (95+ hours)

Gender

- ○ Male
- ○ Female
- ○ Non-binary
- ○ Prefer not to say
- ○ Other _____

Which of the following disorders within the autism spectrum do you identify with?

- ○ Autistic Disorder (Classic Autism)
- ○ Rett's Disorder (Rett Syndrome)
- ○ Childhood Disintegrative Disorder
- ○ Asperger's Disorder (Asperger Syndrome)
- ○ Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS)
- ○ None of the Above _____

Of these DSM-5 qualifications for ASD, which do you experience?
[Select all that apply]

- ☐ Qualitative impairment in social communication and interaction
- ☐ Restricted, repetitive patterns of behavior, interests, and activities
- ☐ Symptoms present in the early developmental period
- ☐ Symptoms cause clinically significant impairment in social, occupational, and other areas of functioning
- ☐ Symptoms are not better explained by intellectual disability

Answer the following questions according to level of severity for ASD (quoted from the DSM-5 qualifications).

	Very Likely	Likely	Unsure	Unlikely	Very Unlikely
ASD Level 1: "I require support; I have problems with inflexibility, poor organization, planning, switching between activities, which impair independence. Poor social skills, difficulty in initiating interactions, attempts to make friends are odd and unsuccessful."	○	○	○	○	○
ASD Level 2: "I require substantial support; I have marked difficulties in verbal and nonverbal social communication skills. Markedly odd, restricted repetitive behaviors, noticeable difficulties changing activities or focus."	○	○	○	○	○
ASD Level 3: "I require very substantial support; I have severe difficulties in verbal and nonverbal communication. Very limited speech, odd, repetitive behavior; I express my basic needs only."	○	○	○	○	○

Did you experience (in the past or recently) any of the following behavioral therapies or education? [Select all that apply]

- [ ] Mainstreaming (Public/Private/Charter schooling without accommodations)
- [ ] Mainstreaming (Public/Private/Charter schooling with accommodations)
- [ ] Applied Behavioral Analysis (ABA)
- [ ] Greenspan's Floortime (DIR Therapy)
- [ ] Pivotal Response Treatment (PRT)
- [ ] Discrete Trial Training (DTT)
- [ ] Early and Intensive Behavioral Intervention (EIBI)
- [ ] Special Education
- [ ] Cognitive Behavioral Therapy
- [ ] Other _____

Have you used or are registered with any of the following on-campus resources? [Select all that apply]

- [ ] ADA Resource Office
- [ ] University Resource 1
- [ ] University Resource 2
- [ ] Counseling

Have you used any of the following off-campus resources?
[Select all that apply]

- ☐ Group tutoring
- ☐ Personal tutoring

Have you heard of or joined University Organization 1?

- ○ I joined University Organization 1
- ○ I have heard of University Organization 1
- ○ I have not heard of University Organization 1

Would you be interested in participating in a 1-on-1 interview with a student researcher to further discuss your experiences as an undergraduate with ASD?

- ○ Yes
- ○ No

Please leave your email if you'd like information on a follow-up interview.

_____

APPENDIX C: QUANTITATIVE CODEBOOK AND TABLES

Quantitative Codebook

IdentASD

Does participant identify as an individual with ASD

0=No (not able to participate)

1=Yes (participated)

ugclass

1=freshman

2=sophmore

3=junior

4=senior

gender

0=man

1=woman

.=does not fall into category

nonbinary

0=no

1=nonbinary

Disorder

Which of the following disorders within the autism spectrum do you identify with? - Selected Choice

PDD-NOS=1

Asperger's = 2

Classical Autism = 3

Other: ASD Level 1 = 4

Diacrit (Diagnostic Criteria)

Of these DSM-5 qualifications for ASD, which do you experience? [Select all that apply]

Social Deficit = 1

Communicative Deficit = 1

Restricted Repetitve Behaviors = 1

Early Developmental = 1

Not better explained by Intellectual Disability = 1

check box all that apply

[Code is the sum of diagnostic criteria identified being either= 0,1,2,3,4,5,]

ASDLevel1

Answer the following questions according to level of severity for ASD (quoted from the DSM-5 qualifications). - ASD Level 1: "I require support; I have problems with inflexibility, poor organization, planning, switching between activities, which impair independence. Poor social skills, difficulty in initiating interactions, attempts to make friends are odd and unsuccessful."

Very likely = 1

Likely = 2

Unsure = 3

Unlikely 4

Very Unlikely = 5

ASDLevel2

Answer the following questions according to level of severity for ASD (quoted from the DSM-5 qualifications). - ASD Level 2: "I require substantial support; I have marked difficulties in verbal and nonverbal social communication skills. Markedly odd, restricted repetitive behaviors, noticeable difficulties changing activities or focus."

Very likely = 1

Likely = 2

Unsure = 3

Unlikely 4

Very Unlikely = 5

ASDLevel3

Answer the following questions according to level of severity for ASD (quoted from the DSM-5 qualifications). - ASD Level 3: "I require very substantial support; I have severe difficulties in verbal and nonverbal communication. Very limited speech, odd, repetitive behavior; I express my basic needs only."

Very likely = 1

Likely = 2

Unsure = 3

Unlikely 4

Very Unlikely = 5

The next 11 variables are built from the following question:

Did you experience (in the past or recently) any of the following behavioral therapies or education?[Select all that apply] - Selected Choice

mwoaccom

Mainstreaming (Public/Private/Charter schooling without accomodations)

1= yes

0=no

maccom

Mainstreaming (Public/Private/Charter schooling with accomodations)

1 = yes

0 = no

se

Special Education

1 = yes

0 = no

CBT

Cognitive Behavioral Therapy

1 = yes

0 = no

ABA

Applied Behavioral Analaysis (ABA)

1 = yes

0 = no

Flo

Greenspan's Floortime (DIR Therapy)

1 = yes

0 = no

PRT

Pivotal Response Treatment (PRT)

1 = yes

0 = no

DTT

Discrete Trial Training (DTT)

1 = yes

0 = no

EIBI

Early and Intensive Behavioral Intervention (EIBI)

1 = yes

0 = no

ipcare

In-Patient Care

1 = yes

0 = no

SS

Social Skills lessons

1 = yes

0 = no

-----End question 11 variables built from.

Oncresc

On-campus resources

Have you used or are registered with any of the following on-campus resources? [Select all that apply]

this variable is the sum of options chosen

none = 0

ADA resource office = 1

University resource 1 = 1

University resource 2 = 1

Counseling resource = 1

sum of chosen equals code (0,1,2,3,4)

offcresc

Off-campus resources

Have you used any of the following off-campus resources? [Select all that apply]

none = 0

group tutoring = 1

personal tutoring = 1

sum of chosen equals code (0,1,2)

Org1

Community/Organizational resource

Have you heard of or joined Org1?

0 = no

1 = yes

2 = joined

Int

Would you be interested in participating in a 1-on-1 interview with a student researcher to further discuss your experiences as an undergraduate with ASD?

1 = yes

0 = no

Quantitative Tables

Table C.1. *ASD Level 1 Likelihood Frequency Among Participants.*

ASD Level 1	Freq.	Percent	Cum.
Very likely	4	44.44	44.44
Likely	2	22.22	66.67
Unlikely	3	33.33	100
Total	9	100	

Table C.2. *ASD Level 2 Likelihood Frequency Among Participants.*

ASD Level 2	Freq.	Percent	Cum.
Likely	1	11.11	11.11
Unsure	2	22.22	33.33
Unlikely	1	11.11	44.44
Very Unlikely	5	55.56	100
Total	9	100	

Table C.3. *ASD Level 3 Likelihood Frequency Among Participants.*

ASD Level 3	Freq.	Percent	Cum.
Unlikely	2	22.22	22.22
Very Unlikely	7	77.78	100
Total	9	100	

Table C.4. *Participant Frequency of Mainstreaming without Accommodations*

Mainstreaming without Accommodations	**Freq.**	**Percent**	**Cum.**
No	3	33.33	33.33
Yes	6	66.67	100
Total	9	100	

Table C.5. *Participant Frequency of Mainstreaming with Accommodations*

Mainstreaming with Accommodations	**Freq.**	**Percent**	**Cum.**
No	5	55.56	55.56
Yes	4	44.44	100
Total	9	100	

Table C.6. *Participant Frequency of Cognitive Behavioral Therapy*

Cognitive Behavioral Therapy	**Freq.**	**Percent**	**Cum.**
No	7	77.78	77.78
Yes	2	22.22	100
Total	9	100	

Table C.7. *Participant Frequency of Early and Intensive Behavioral Intervention*

Early and Intensive Behavioral Intervention	**Freq.**	**Percent**	**Cum.**
No	8	88.89	88.89
Yes	1	11.11	100
Total	9	100	

Table C.8. *Participant Usage Sum of On-Campus Resources*

On-Campus Resources	**Freq.**	**Percent**	**Cum.**
No Resource Usage	2	22.22	22.22
1 Resource	4	44.44	66.67
2 Resources	2	22.22	88.89
3 Resources	1	11.11	100
Total	9	100	

Table C.9. *Participant Usage Sum of Off-Campus Resources*

Off-Campus Resources	**Freq.**	**Percent**	**Cum.**
No Resource Usage	4	50	50
1 Resource	4	50	100
Total	8	100	

APPENDIX D: ATLAS T.I CODE AND QUOTATION EXCERPT TABLES

Table D.1. *Codes for Theme: Social Pressures and its Effects*

Quotation	**Code**
"I would say, for the most part... the one social pressure I had was that I just didn't want other people to mess with me too much, so I just blended with the crowd to as best as I could."	masking, social pressure
"It [masking] took a lot of effort, and it was really exhausting to put on that facade or, you know, that personality every day. I'd be exhausted at the end of the day because of that. Because it was a lot of work just to be completely normal. People would have no idea, like making eye contact is definitely uncomfortable, but I've learned to do it."	Fatigue, masking
"Because of this fear of being different, especially in the United States, there seems to be a stigma behind it [autism] as well. So, you try to, especially at a young age, and try to hide it, or be like everybody else in that regard."	Masking, stigma, social pressure

Table D.2. *Codes for Theme: Stigmatization of Autistic Individuals*

Quotation	**Code**
“I had lots of therapy in the past and basically “fix” or not really fix but to make my life easier; so that I have very minor things so I mean ASD 1 it's more correct than anything else but I would say that even that's kind of an exaggeration if that sort of makes sense.”	DiaCrit
“They push the character off to the side, or they would only make that character a stereotype, not have their own personality like, oh you know this person as the guy who has Down syndrome. That's all he's known for, not the fact that, you know, he is a student, what, no, no, he just has Down syndrome. That's all we know as the audience.”	Harmful media, dehumanization
“You have people who treat you like you're a child, or you're an infant, and you can't do certain things. And then, they would call you buddy, friend. I still hate that ‘buddy.’”	Infantilization, offensive language
“The idea of, ‘Well, they've got in [to university].’ and I've got in, and that means that I need to kind of push myself, in order to like prove my self worth, because, you know, sure, I'm high functioning autistic, but I don’t want people to think of differently of me, so I still don't want to be a hinderance by reaching out to resources even though, yes, I could get them I don't want to be seen as a burden”	social pressure, masking, self advocacy, self-doubt, academic stress, stigma

Table D.3. *Codes for Theme: Needs for Autistic Undergraduates*

Quotation	**Code**
"[Cognitive Behavioral Therapy] Helps going through that and probably kind of, like, how to like, first of all how to communicate with professors and also kind of like how to, like, communicate, I guess kind of communicate your wants and your needs."	+ behavioral therapy
"Cognitive behavioral therapy is so important with autism, it's like, it's understanding, at your core."	+ behavioral therapy
"It [community] is definitely beneficial if you're, you know, an autistic person coming on (to campus) for the first time you feel out of place and, if you need like an extra help, or just want to be in a group that like fully understand where you're coming from."	Positive community formation benefit
"They're supposed to be student advocates. That is the wrong definition for that word. And I feel very very strongly about it, because it was rude, and I've seen on online people say "the University doesn't care about us," and in that sense. I really got that vibe, and I did not expect that, because I know how to carry myself throughout my years of having to advocate for myself as someone autism and accommodation and service dog. You know, you have to have a voice."	Unsupported, resource negative, self-advocacy