



1-1-2015

## The Experience of Transition to College for Students Diagnosed with Asperger's Disorder

Victoria Schindler

*Richard Stockton College of NJ, victoria.schindler@stockton.edu*

Abigail Cajiga

*Mary Cariola Children's Center, abigail.cajiga@gmail.com*

Rae Aaronson

*The Hand Surgery and Rehabilitation Center of New Jersey, rae.p.aaronson@gmail.com*

Lorena Salas

*Kessler Institute for Rehabilitation, lcsalas5@yahoo.com*

Follow this and additional works at: <https://scholarworks.wmich.edu/ojot>



Part of the [Occupational Therapy Commons](#)

### Recommended Citation

Schindler, V., Cajiga, A., Aaronson, R., & Salas, L. (2015). The Experience of Transition to College for Students Diagnosed with Asperger's Disorder. *The Open Journal of Occupational Therapy*, 3(1). <https://doi.org/10.15453/2168-6408.1129>

This document has been accepted for inclusion in The Open Journal of Occupational Therapy by the editors. Free, open access is provided by ScholarWorks at WMU. For more information, please contact [wmu-scholarworks@wmich.edu](mailto:wmu-scholarworks@wmich.edu).

---

# The Experience of Transition to College for Students Diagnosed with Asperger's Disorder

## **Abstract**

**Background:** Obtaining a college degree is a positive and often necessary step to adulthood, independence, and knowledge. Students diagnosed with Asperger's Disorder (AD) typically experience difficulty in college, especially in the transition to college. To assist students with AD in the transition to college, an occupational therapy mentoring program was developed in a college setting. This article describes this program, provides quantitative and qualitative outcomes of the program, and uses the outcomes to determine factors to facilitate a successful transition.

**Method:** A mixed methods design with quantitative and qualitative components was used. The quantitative measures included the Canadian Occupational Performance Measure (COPM) and data on college retention, and the qualitative measure consisted of in-depth progress note documentation throughout the program.

**Results:** Eleven participants met criteria for the study. There was a statistically significant difference between COPM pretest and posttest scores on performance ( $p = .000$ ) and satisfaction ( $p = .000$ ). Nine of the 11 students confirmed college retention. Three themes regarding college transition included (a) maladaptive patterns linked to the characteristics of AD, (b) adaptive patterns linked to the characteristics of AD, and (c) parental influences. Implications for positive transition are proposed based on the findings.

**Conclusion:** Students with AD can succeed in college, especially with a combination of internal characteristics and external supports.

## **Keywords**

Asperger's Disorder; college transition; supported education

## **Credentials Display**

Victoria Schindler, Ph.D.

Abigail Cajiga, MS, OTR

Rae Aaronson, MS, OTR

Lorena Salas, MS, OTR

Copyright transfer agreements are not obtained by The Open Journal of Occupational Therapy (OJOT). Reprint permission for this Applied Research should be obtained from the corresponding author(s). Click [here](#) to view our open access statement regarding user rights and distribution of this Applied Research.  
DOI: 10.15453/2168-6408.1129

## Background and Literature Review

Obtaining a college degree continues to be viewed as a positive and often necessary step toward adulthood, independence, greater knowledge and success in today's work environments (Kohler & Field, 2003; "What is College For?" 2013). Individuals diagnosed with Asperger's Disorder (AD) have had more limited success in both the academic and social aspects of college than young adults without AD (Camarena & Sarigiani, 2009; Eaves & Ho, 2008), and the first year of college has been seen as the most critical year to determine success for this population (Kohler & Field, 2003). A positive transition to college is challenging and sometimes even impossible for persons with AD due to social, cognitive, and sensory responsiveness factors, which are characteristic of the disorder (Dente & Coles, 2012; Geller & Greenberg, 2009; Orentlicher & Olson, 2010; Zager & Alpern, 2010). However, individuals with AD have strengths, including superior intelligence in particular areas, and these strengths coupled with the appropriate supports have made participation in higher education possible and successful (Dente & Coles, 2012; Zager & Alpern, 2010). Occupational therapy focuses on identifying individual strengths to address challenges and facilitate success in varying areas of occupation, including the transition to higher education.

The symptoms of AD can interfere with postsecondary aspirations and transition to college. Although AD is not listed as a specific diagnostic code or disorder in the fifth edition of the Diagnostic and Statistical Manual of Mental

Disorders (DSM-5) (American Psychiatric Association, 2013), it is noted within the diagnostic category of autism spectrum disorder (p. 51). In DSM-5, the diagnostic criteria for autism spectrum disorder include deficits in social communication and repetitive patterns of behavior, interests, or activities. Although language skills and vocabulary remain intact in individuals with AD, social challenges involved in communication in college settings are common, such as understanding and effectively using verbal and non-verbal social skills, timing and intensity in conversations, humor, sarcasm, subliminal messages, assertiveness, expressions of intimacy and sexuality, and more (Dente & Coles, 2012; Geller & Greenberg, 2009; Orentlicher & Olson, 2010; Zager & Alpern, 2010).

Repetitive patterns of behavior, interests, or activities are other challenges for individuals diagnosed with AD. The desire for repetition is often a product of underlying sensory processing deficits (Dente & Coles, 2012) and can manifest as anxiety (Orentlicher & Olson, 2010). Difficulty with sensory processing may be exacerbated by the distracting and stimulating atmosphere of campus housing and college classes resulting in difficulty studying in a messy or loud residence hall and difficulty focusing in a large, over stimulating classroom (Orentlicher & Olson, 2010). Students with AD who find comfort in repetition may experience anxiety, as the transition to college requires a significant change in routine from the structured environment of high school (VanBergejik, Klin, & Volkmar, 2008).

Deficits in higher-level cognitive skills, such as planning, organization, judgment, problem solving, and cognitive flexibility—called “executive functioning”—are common for individuals with AD (Adreon & Durocher, 2007; Camarena & Sarigiani, 2009; Orentlicher & Olson, 2010). Tasks or situations that are novel, unpredictable, or unfamiliar, such as those in a new college environment, have higher executive function demands than routine tasks. Decreased executive functioning can affect a student’s functioning, from planning his or her day to choosing a college major. It can negatively affect the ability to manage time and create routines that are necessary to be successful in homework and exams (Geller & Greenberg, 2009).

Students with AD may also have decreased self-determination skills, which include awareness of one’s strengths and limitations, goal setting and attainment, capacity for monitoring performance, and self-advocacy (Orentlicher & Olson, 2010). In contrast to high school settings, colleges are not as conducive to individualized services and typically do not proactively seek students who need assistance (Geller & Greenberg, 2009). Decreased self-determination skills can affect a student’s ability to navigate the college system and to interact successfully with faculty and with college staff in financial aid, admissions, and registration offices.

Although deficits in the areas of social communication, repetitive behaviors, sensory processing, executive functioning, and self-determination have been described above separately, these areas often overlap in academic

work, resident life, and extracurricular activities and can be overwhelming for a student with AD, resulting in anxiety and isolation (Dente & Coles, 2012). However, individuals with AD have many strengths, such as average or higher-than-average IQ and exceptional talent in one or more areas, and these strengths coupled with the appropriate supports have made participation in college possible and successful (Dente & Coles, 2012; Zager & Alpern, 2010).

Parents of students with AD and the students themselves are knowledgeable of the needs of students with AD and are concerned about the ability of colleges to meet their needs (Dente & Coles, 2012; Zager & Alpern, 2010). In Camarena and Sarigiani’s (2009) survey of high-functioning adolescents with autism spectrum disorders, students and their parents identified academic (e.g., accommodations) and nonacademic (e.g., transition planning, mentoring) supports as necessary for a successful college transition. Twenty of 21 sets of parents agreed that a “special program” to enhance success would make a difference in choosing a college.

Although there are consumer books and guides that address the transition needs of students with AD (e.g., Adreon & Durocher, 2007; Dillon, 2007; Kohler & Field, 2003; Samuels, 2009; Smith, 2007), there is a limited number of publications documenting services tailored to the specific transition needs of students with AD (VanBergejik et al., 2008). Smith (2007) surveyed colleges and universities and found that services and accommodations for students diagnosed with AD

were no different from services provided to students with other diagnoses and disabilities. Two articles described specialized programs for students with developmental and/or learning disabilities, but they did not specifically target the needs of the AD population (Calefati, 2009; Minaya, 2007). Two other publications addressed the needs of high school students with autism who were planning to attend college, but did not include follow-up once college began (Gardner, Mulry, & Chalik, 2012; Vogel, 2010).

To assist students with AD in developing the skills required for a successful transition to college, an occupational therapy-based supported education program was developed. The purpose of this article is to describe this program, provide quantitative and qualitative outcomes for students with AD enrolled in this program as they transitioned to college (i.e., their first year of college), and to use the outcomes to identify strategies that may facilitate a successful transition. The research questions for this study are: What are the quantitative and qualitative findings of students with AD enrolled in a program to support their transition from high school to the first year of college? How can these findings be used to plan and support the transition from high school to college for students with AD?

## **Method**

### **Setting and Participants**

The setting for the program is a liberal arts college. The program is a supported education program (Soydan, 2004) developed and conducted by a master's level occupational therapy program to

assist participants in developing skills to succeed in higher education. For this study, the participants are students with AD enrolled in the program during their first year of college; however, students with learning disabilities and mental health diagnoses and students diagnosed with AD who are beyond the freshman year in their college matriculation are also enrolled.

### **Procedures**

The program was developed in 2005 and has continued yearly. Students are referred to the program through the college's website and office for students with disabilities. The program is conducted during the fall and spring semesters and students elect to attend once or twice per week for two-hour sessions. The program consists of one-to-one mentoring, which pair master's level occupational therapy students with students with AD under the supervision of occupational therapy faculty. The director of the program (and first author) completes an interview with the student and his or her parents prior to enrollment and maintains communication as allowed by FERPA throughout enrollment in the program.

All occupational therapy students (approximately 20 each year) provide mentoring in the program during their second year of the two-year occupational therapy curriculum and complete various types of instruction to develop competency as mentors prior to and concurrent with program implementation. Preparation includes instruction about AD, evaluation and intervention for individuals with AD, and the mentoring process specific to this program (clinical assessment, goal

development, and intervention toward goals) and is detailed elsewhere (Schindler, 2010, 2011).

Weekly, the occupational therapy students participate in supervision with the first author to brainstorm activities and methods to achieve goals, reflect on the strengths and difficulties encountered in the mentoring process, and problem solve regarding these difficulties (Schindler, 2011).

The goals of the program are to facilitate the participant's positive transition into post-secondary education, or if factors overwhelmingly interfere with this, then to identify an alternate, desirable plan. This is addressed through the mentoring process. Mentoring is defined as the collaborative effort of the occupational therapy student and participant to develop goals and implement interventions to achieve these goals.

Mentoring begins with an assessment (Canadian Occupational Performance Measure [COPM], Law et al., 2005, described below), which is used to identify problems in all aspects of college life, such as time management, organization of assignments, and socialization with peers.

Problems are converted into long-term (semester) and short-term (monthly) goals. Common problem areas include time management/organization, study skills, writing skills, social skills, healthy living, residential life, and leisure time. Although the activities to address the problems and achieve goals may vary for each participant, the written procedures to establish and address goals are uniform. The goals are systematically addressed each week through interventions implemented in a sequenced, strategic manner. For example,

development of the goal of effective study skills begins by addressing the importance of (a) learning content presented in a class, (b) understanding the importance of quizzes and tests in relation to class grades, and (c) studying as it pertains to classes in the current semester. Next, current strengths and problem areas in study skills are determined through discussion, observation, and review of previous quiz and test grades. Then, strengths are used to address the problems. If computer skills are an area of strength for the participant, computer-based study tools are explored as a method to develop study skills. Exploration of various study methods using trial and error continues until a sufficient quantity and quality of study methods for the participant are found. Next, these study methods are implemented and evaluated for effectiveness. Adjustments or changes are made based on the findings. To assess the effectiveness of study skills, the participant explains the information studied to the mentor on a weekly basis. This sequenced, strategic method described for study skills is customized for each goal and each participant. After each session, the occupational therapy student notes the participant's progress or lack of progress toward the goals and creates a plan for the next session. This documentation is compiled into an in-depth progress report. At the end of each semester, the COPM is used as a re-evaluation.

### **Instruments**

Quantitative and qualitative measures were included. The quantitative measures included the COPM and student retention. The qualitative

measures consisted of in-depth progress note documentation throughout the length of the program.

The COPM is a client-centered standardized outcome measure that uses a semi-structured interview to identify and rate performance and satisfaction in self-identified problem areas on a 1-10 Likert scale (Law et al., 2005). A systematic review by Parker and Sykes (2006) reported that the COPM is responsive to change over time, shows positive effects with client-related factors, allows clients to name their own problems and generate client-centered goals, and allows therapists and clients to feel as if they are partners. Test-retest reliability of the COPM has been determined to be at .80 and above. Content, criterion, and construct validity were examined in eight studies that supported the validity of the COPM as a measure of occupational performance (Law et al., 2005). Internal consistency for the COPM is 0.56 for performance and 0.71 for satisfaction scores (McColl, Paterson, Davies, Doubt, & Law, 2000).

The qualitative information was gathered from progress note documentation completed by the mentor (initial, bi-weekly, and final progress notes on each participant for each semester). The initial progress note consisted of documentation of the results of the COPM, goals collaboratively developed by the mentor and the participant, and a plan to address the goals during the weeks following goal setting. Bi-weekly progress notes consisted of restatement of the goals with status updates and/or revisions, progress toward specific goals, and a plan to address the goals in the coming

weeks. Bi-weekly notes were at least three single-spaced typed pages and included details about the interventions used, participant reaction, and progress. The final progress note consisted of the final status of the goals for each participant (achieved, partially achieved, or not achieved), a summary of progress toward each goal, and a plan for the next semester.

### **Research Design and Data Analysis**

This study used a mixed methods design with quantitative and qualitative components (Creswell, 2009). The quantitative component was a retrospective, uncontrolled, one group pretest-posttest design. The qualitative component used a phenomenological design to further understand the participants' transition to college (Carpenter & Suto, 2008; Denzin & Lincoln, 2008) and identify factors that facilitate a positive transition to college. All of the participants in the program provided written informed consent, and the Institutional Review Board has approved the program on a yearly basis.

Quantitative and qualitative data collection and analyses were conducted. Quantitative data analyses were conducted on data collected through a demographic form and the COPM (Law et al., 2005). Descriptive demographic data analyses were conducted on gender, age, ethnicity, marital status, primary and secondary diagnoses, mental health hospitalization and treatment, financial support, work status, place of residence during the study, geographic location of primary residence, stage of academic career (e.g., freshman), college major, and attendance in the program. Descriptive data

analyses were conducted on the COPM for performance, satisfaction, and change in scores on items identified by the participants as goals, pre and post intervention. Because the COPM collects ordinal-level data, the non-parametric Wilcoxon Signed-Ranks Test for related samples was conducted for the total number of COPM assessments completed (DePoy & Gitlin, 2011). Descriptive data analyses were also conducted posttest on college matriculation status.

Qualitative data analyses were completed on the in-depth progress note documentation completed by the mentor (initial, bi-weekly, and final progress notes for each participant). A phenomenological approach to data analysis with an iterative approach to data coding and deconstruction of text was used (Carpenter & Suto, 2008; Denzin & Lincoln, 2008). First, all notes were read and re-read. Then, information relevant to potential participant and program profiles was highlighted. This method of data reduction resulted in meaningful data “chunks” which were developed into categories and based on the highlighted information (e.g., participant characteristics and barriers, college environment). Next, a coding/indexing step was completed. Initial, bi-weekly, and final notes were read again, and any information related to the categories was color-coded and tabbed. Based on the coding, a table was created with the categories as column headings; information tabbed within the documentation was then entered into each category accordingly and referenced by participant name and document name. Then, each item of information was double-checked

against the documentation for accuracy, and documentation was re-checked for any missed information.

Upon completion of the table, the categories were clustered to form themes. The data under each theme was then streamlined. The table was checked for repetitive information and information was cross-referenced within the table as applicable. Each step and decision in this iterative process was documented in the table to create an audit trail and a peer debriefing was also conducted for validity purposes (Carpenter & Suto, 2008; Denzin & Lincoln, 2008).

## **Results**

### **Participant Demographics**

Inclusion criteria for this study consisted of participants with a primary diagnosis of AD who were transitioning from high school and enrolled in the program for their first year of college. A diagnosis of AD was confirmed by the participant, their parents, and high school records. Eleven participants met the criteria for the study. Five of these participants had secondary diagnoses that primarily included anxiety, depression, and Attention Deficit Disorder (ADD). Seven of the participants were male and four were female. Ten of the participants were first-time freshman and one participant had two college courses completed prior to enrolling as a freshman. The 10 freshman participants were 18 years of age and the transfer freshman participant was 20 years of age. Nine of the participants were Caucasian, one African-American, and one Hispanic. All of the participants were single and had never been married. Eight of

the participants lived in campus dormitories that were one to three hours distance from their homes; none of these participants had vehicles on campus. Three of the participants lived at home. All of the participants were financially supported by their parents, and one participant had a part-time job. Six of the participants had chosen majors in math or science (e.g., marine biology, global information systems), one participant chose to major in communications, and four participants were undecided on a major. Seven of the participants attended the program for the full academic year. Four of the participants attended only the fall semester. One participant withdrew from the college due to a medical condition, two of the participants transferred to other colleges after one semester, and one participant excelled in the program and college courses and graduated from the program based on a collaborative decision.

## Quantitative Results

**Results of the Canadian Occupational Performance Measure (COPM).** Results of the COPM were based on self-report pretest and posttest ratings of performance and satisfaction in college-related problem areas (e.g., time management and organization of assignments, socializing with peers). The authors of the COPM state that a two-point change in scores from pretest to posttest is indicative of clinical significance (Law et al., 2005). Because the COPM was administered to each participant as a pretest and posttest each semester and 11 participants completed the fall semester and seven participants completed the spring semester, there were a total of 18 pretest and posttest measures completed. Total scores are detailed in Table 1 and specific scores for the fall and spring semesters are detailed in Table 2. A Related-Samples Wilcoxon Signed-Ranks Test determined a statistically significant difference between the participants' pretest and posttest scores on both performance ( $p = .000$ ) and satisfaction ( $p = .000$ ).

**Table 1**

*COPM: Descriptive Statistics – Combined Fall and Spring Semesters*

Score	Minimum	Maximum	Mean	Std. Deviation
Student rating of performance in problems related to transition to college - Pretest	2.20	5.00	3.78	.93
Student rating of performance in problems related to transition to college - Posttest	2.40	8.80	5.90	1.79
Change in performance score	0.20	5.66	2.36	1.55
Student rating of satisfaction in problems related to transition to college - Pretest	1.40	5.40	3.31	1.05
Student rating of satisfaction in problems related to transition to college - Posttest	1.40	8.60	6.06	2.28
Change in satisfaction score	0.00	6.20	2.74	1.86

**Table 2***COPM: Descriptive Statistics – Fall and Spring Semesters*

Score	Minimum	Maximum	Mean	Std. Deviation
Student rating of performance in problems related to transition to college – Pretest (Fall)	2.20	4.75	3.49	1.03
Student rating of performance in problems related to transition to college – Posttest (Fall)	2.40	7.66	5.83	1.69
Change in performance score – Fall	0.20	4.99	2.34	1.42
Student rating of performance in problems related to transition to college – Pretest (Spring)	3.00	5.00	3.73	0.83
Student rating of performance in problems related to transition to college – Posttest (Spring)	3.60	8.80	6.17	1.78
Change in performance score – Spring	.60	5.60	2.31	1.67
Student rating of satisfaction in problems related to transition to college – Pretest (Fall)	1.40	5.40	3.25	1.29
Student rating of satisfaction in problems related to transition to college – Posttest (Fall)	1.40	8.00	5.95	2.46
Change in satisfaction score – Fall	.00	5.99	2.70	1.81
Student rating of satisfaction in problems related to transition to college – Pretest (Spring)	3.45	4.00	3.45	0.88
Student rating of satisfaction in problems related to transition to college – Posttest (Spring)	3.00	8.60	5.91	2.06
Change in satisfaction score – Spring	.20	6.20	2.46	1.92

Nine of the 11 participants (82%) confirmed college retention. Six participants (55%) continued matriculation at the college where the study occurred. Of the remaining five participants (45%), two confirmed a transfer to a community college, one enrolled in a full-time program for students with disabilities at an undergraduate college, one withdrew from college due to a medical condition, and one returned home with no specific plans.

### Qualitative Results

Three primary themes affecting successful transition to college emerged from the data analyses: (a) maladaptive patterns linked to the

characteristics of AD, (b) adaptive patterns linked to the characteristics of AD, and (c) parental influences linked to the characteristics of AD.

**Maladaptive patterns linked to the characteristics of AD.** Deficits in the areas of social communication, repetitive behaviors, sensory processing, executive functioning, and self-determination are common in individuals diagnosed with AD. This theme describes the impact that these characteristics had on the participants' transition to college.

Progress notes identified deficits in social communication in all 11 participants. Many of the

participants reported a history of social problems, such as being bullied or isolated. The majority of the participants reported uncomfortable social interactions in the college classroom and at clubs and events. Descriptions of deficits in social communication included the inability to initiate, conduct, and properly end a conversation, impulsive verbal and non-verbal behavior, and decreased ability to understand and use appropriate eye contact, body language, humor, and sarcasm. For example, documentation of a videotaped social interaction with a mentor noted that one participant had a loud tone of voice, was physically too close to the mentor, and repeatedly touched objects nearby. Upon review of the video, and with cueing, the participant was able to identify these behaviors and their negative impact on a conversation, but stated she was unaware of them at the time of the interaction. In another example, a participant interpreted sarcastic statements literally, and became so offended that he withdrew from participation in a club and also changed his seat in his classes.

Analysis of progress notes identified challenges in sensory modulation for a majority of the participants. The physical environments of college life presented challenges. Although some college classrooms resemble high school classrooms in terms of size and setup, students may also attend classes that occur in large lecture halls. Several of the participants reported feeling uncomfortable and over-stimulated in large classrooms due to unfamiliarity and discomfort with

the larger space, the larger class sizes, and the less structured flow of these classes.

Progress notes also documented the effect of the campus-housing environment. Nine of the 11 participants reported being visually and auditorily distracted by the unpredictable social activity and noise of college dorms. The temptation of TV, DVD, gaming systems, and computer use—especially social media in dormitories—distracted the participants from necessary tasks to ones that satisfied sensory needs. Finally, for nine of the 11 participants the college environment and overall demands led to sensory overload resulting in increased anxiety.

Executive functioning was another area of deficit for the majority of the participants. Progress notes documented that 10 participants displayed decreased attention or distractibility and forgetfulness. This was repeatedly mentioned as it pertained to paying attention in class, completing homework, and studying. For example, several of the participants stated they forgot to do homework assignments because they forgot to look at their planner despite visual and electronic reminders. Eight participants reported that they had difficulty solving problems when strategies used previously were no longer successful. This characteristic was reflected in the participants' decreased ability to use overt (trial and error) and covert problem solving and cognitive flexibility. For example, about half of the participants were resistant to changing their methods of completing homework even when the current methods were not producing successful results. In this situation and others, cognitive

inflexibility appeared linked to repetitive behaviors and difficulty breaking maladaptive patterns.

Self-determination was another area of challenge for the participants, including awareness of one's strengths and limitations, and the ability to identify potential challenges and strategies to overcome them. For example, one participant had difficulty identifying goals because he could not define any specific problems, while in the same session he discussed his lack of friendships and struggles with schoolwork.

Although the symptoms of AD manifest in individual characteristics, these characteristics often overlap in areas such as time management and organization, academic skills, and social life. All of the participants demonstrated decreased time management and organization skills. Typically, high school classes meet five days per week and include highly structured assignments, but college classes meet two or three times per week and assignments are less structured. For example, despite scheduling time to complete specific homework assignments, one student missed assignment due dates because she was confused about the assignments and could not problem solve nor did she feel comfortable communicating with her professor about this problem. When some of the participants did not follow through with their established plan for the week or did not seek clarification about assignment guidelines, they submitted assignments that did not meet requirements (e.g., page requirement) or without review from a campus resource as planned (e.g., writing center).

Academic skills were another area with deficits. Various levels of social communication, executive function, sensory processing, repetitive patterns, and self-determination are required for successful college reading, writing, studying, public speaking, and other skills. For writing skills, impaired awareness of strengths and limitations, inability to break down a large written assignment into manageable pieces, and/or decreased comfort in interacting with others to use college resources resulted in ineffective writing skills. Progress note documentation repeatedly cited challenges in the entire writing process from brainstorming, to writing drafts, to using feedback in order to improve written assignments.

Social life was another important area requiring successful use of multiple skills. College life has many social demands including interacting with students in class, residence halls, clubs and events, and interacting with professors and staff. Progress note documentation revealed that several of the participants reported that they had no friends, spent a majority of time alone, and had a fear of rejection associated with forming friendships.

**Adaptive patterns linked to the characteristics of AD.** This theme describes adaptive patterns the participants developed in their transition to college. One adaptive pattern was the ability to develop routine and structure. Progress notes documented that the majority of the participants were able to develop some level of routine and structure through a repetitive sequence of activities completed during the mentoring sessions. Individuals diagnosed with AD can cling

to repetitive behaviors. If these repetitive patterns can be applied to productive behaviors, positive habits for success in college can develop. For example, one participant reported in his initial assessment that he did not know how to study for exams without a study guide because he was always given study guides in high school. Developing study skills became one of his goals, and throughout the semester he worked with his mentor on basic study methods, creating a study plan, and scheduling times and dates in his planner to study. This participant not only learned how to create his own study strategies independently, he also improved his test scores by a full letter grade by the end of the semester.

Progress notes documented a variety of interventions used to develop routine and structure. Approximately 15 minutes at the start and end of every session were devoted to reviewing the plan for the previous week and determining a realistic written plan for the following week with reminders built into the plan. A sample of documented interventions aimed toward establishing routines and structure included (a) breaking down tasks or assignments into subcomponents and addressing the subcomponents slowly and systematically, (b) reviewing guidelines for assignments and asking clarifying questions, (c) searching and regularly using online and campus resources, and (d) explaining the content of readings, lectures, and assignments to one's mentor to determine strengths and gauge understanding.

Another adaptive pattern was the ability to tap into student strengths, such as successful high

school academic record, typical language development, and an ability to respond to linear, cause-and-effect concepts, such as those in math and science (Dente & Coles, 2012). Within this sample alone, six of the 11 participants reported majors in math and science. A sample of documented interventions aimed toward using the participants' strengths to achieve academic success included (a) analyzing achievements to discover and repeat positive strategies, (b) selecting study strategies such as note cards, Quizlet, etc., that reflected the participants' strengths and interests, and (c) visiting, analyzing, and selecting study environments that corresponded with one's strengths.

A final adaptive pattern was internal motivation. The participants who were internally motivated actively engaged in setting goals and implementing interventions, which led to goal achievement during the course of the academic year. Overall, those who stated a desire to attend the program and to succeed in college showed greater progress over the course of the year based on the development of friendships, academic success, and achievement of other client-centered goals. Additionally, development of a personal self-reward system upon completion of difficult tasks was very important. Some examples of rewards included watching TV and using Twitter. A sample of documented interventions to develop motivation to achieve success included (a) selecting and using a self-reward system, (b) celebrating achievements, and (c) using stress management techniques to prevent, monitor, and address stress.

**Parental influences linked to the characteristics of AD.** The third theme was parental influences linked to the characteristics of AD. Parental involvement emerged as supportive or overbearing depending on the participant and the amount of involvement. Several of the participants reported that their parents became overbearing. Progress notes documented that when parents provided extra help with homework and made decisions on the participants' behalf, this negatively affected progress toward goals related to developing academic, self-advocacy, and communication skills. Also, the participants who reported attending the program because their parents had enrolled them had lower attendance, completion of assignments, and/or achievement of goals.

### **Discussion**

The purpose of this article was to describe a college-based mentoring program to assist students to develop skills to succeed in higher education, provide quantitative and qualitative outcomes of students with AD enrolled in this program as they transitioned to college (i.e., their first year of college), and to use the outcomes to determine factors that can facilitate a successful transition. Analysis of the quantitative and qualitative data suggests students with AD can have a positive transition to college with a combination of internal characteristics and external supports. The qualitative data highlighted the challenges with the transition. Implications of the results on practice are addressed following the discussion.

The statistically significant results of the COPM reflected the participants' perceptions of

their ability to positively address problems in the transition to college by developing goals and systematically working toward those goals. Additionally, nine of the 11 participants had positive objective results. For those participants who transferred to another college, the mentoring process was helpful to identify challenges in the college setting and then select a setting more suited to their needs.

Results of the qualitative data highlighted the challenges that students with AD may face with the transition process, but also highlighted the supports that can facilitate a positive transition. Maladaptive patterns were identified in areas such as social communication, executive functioning, time management and organizational skills. These challenges, paired with the overwhelming demands of a new environment, make the transition from high school to college more difficult for students with AD. Assessments and interventions designed to identify and address the unique impact of these challenges on the participants showed the promise of turning challenges into positive behaviors and routines that support success. Adaptive patterns identified in the qualitative themes, such as development of routine and structure, tapping into students' strengths, and internal motivation, demonstrated that students with AD are able to utilize unique characteristics, such as repetitive behaviors, to build adaptive patterns. This supports earlier literature that stated strengths associated with AD, including average or above-average intelligence in particular areas, coupled with the appropriate supports can make college possible and

successful (Dente & Coles, 2012; Zager & Alpern, 2010).

For the participants in this study, the difference between becoming overwhelmed with the maladaptive patterns versus using one's strengths and abilities to form adaptive patterns seemed to reflect a combination of internal characteristics and external supports. Important internal characteristics included internal motivation to attend college and to enroll in the program as well as openness to feedback. Important external supports were the program and the mentor/mentee relationship within the program. Mentoring and additional accommodations such as social coaches are beneficial to students with AD (Kohler & Field; 2003; Nevill & White, 2011). Eaves and Ho (2008) reported that when families recalled what was helpful, it was the people even more than programs that were important to the success of the student.

Another external support is parental engagement (Orentlicher & Olson, 2010) as long as it is at a level that is beneficial to all involved. As seen in this study, over-involvement of parents can be detrimental to the student success.

### **Implications for Occupational Therapy Practitioners, Parents, and Students**

The achievement of success in college is multi-faceted. The greatest chance for success lies not only in adjustment during the first year, but also in comprehensive evaluation of and preparation for postsecondary choices starting in secondary school (Dente & Coles, 2012; Kohler & Field, 2003). A comprehensive assessment includes an evaluation of the student's strengths and limitations in the

characteristics associated with AD (social competence, repetitive behaviors, sensory modulation, executive functioning, and self-awareness) as well as internal characteristics such as self-determination, which includes motivation and openness to feedback.

Evaluation of external supports available at colleges is also important. However, external supports are only helpful to the extent they are "owned" and used by the student (Toglia, Olson, & Colangelo, 2008). External supports should be tailored to the needs of each student and built on the supports that were helpful during secondary school. If it is determined that a specialized program, such as the one described in this study, would be helpful to promote success, knowledge of the details of the program are important. Program characteristics, such as structure, routine, and accountability provided in the program in this study are important for success for students with AD (Orentlicher & Olson, 2010). In addition, due to difficulties in executive functioning and cognitive inflexibility, scaffolding within the learning of new approaches, habits, and behaviors are important. This can occur through activity analysis and synthesis (e.g., breaking down written papers into steps such as reading information, summarizing, writing an outline, writing a draft, writing a final paper). External reinforcement leading to internal reinforcement should be incorporated at every step. Finally, a positive, age-appropriate mentor/mentee relationship is also beneficial. Mentors in this study were graduate students who were typically only a few years older than the participants and were very

familiar with the time, academic, and social demands of the student role.

The level of parental involvement also needs to be evaluated so that it is at a level that will be satisfactory for all those involved (student, parent, faculty, and staff at the college). The importance of families cannot be underestimated in this process as the parents may be the only consistent people that support the student through secondary school and the transition process (Dente & Coles, 2012; Kohler & Field, 2003; Orentlicher & Olson, 2010). Parents who have advocated for their child for his or her whole life may need to be educated about the changes in life at college and about their changing role (Dente & Coles, 2012).

Finally, for optimum benefit of internal characteristics and external supports, the approach must be client-centered, customized, and able to change (Orentlicher & Olson, 2010).

### **Limitations**

The sample used for data analysis was small and could only include 11 students based on selection criteria. Additionally, so that all students requesting the program could attend, no control group was used. Therefore, the findings cannot be

generalized. The quantitative measure is based on self-report, although quantitative information about retention supplemented the self-report measure.

The qualitative data collection was limited to thematic content analysis of progress reports, but the reports were in-depth.

### **Conclusions**

College students diagnosed with AD often have difficulty in college, especially in the transition to the first year of college. The college-based supported education mentoring program described in this article was developed to assist students diagnosed with AD to facilitate a positive transition. Quantitative and qualitative outcomes documented the positive aspects and challenges of the transition to the first year of college for 11 participants providing support to the literature indicating that transition must begin in secondary school. Implications for school professionals, parents/caregivers, and students were provided. Information in this study can benefit students with AD, parents and caregivers, high school and college faculty, counselors, and support staff seeking practical advice to improve the college transition for students with AD.

## References

- Adreon, D., & Durocher, J. S. (2007). Evaluating the college transition needs of individuals with high-functioning autism spectrum disorders. *Intervention in School and Clinic, 42*(5), 271-279. <http://dx.doi.org/10.1177/10534512070420050201>
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, D.C.: Author.
- Calefati, J. (2009, Feb 24). Students with learning disabilities get help with college. *USNEWS.com*. Retrieved from <http://www.usnews.com>.
- Camarena, P. M., & Sarigiani, P. A. (2009). Postsecondary educational aspirations of high-functioning adolescents with autism spectrum disorders and their parents. *Focus on Autism & Other Developmental Disabilities, 24*(2), 115-128. <http://dx.doi.org/10.1177/1088357609332675>
- Carpenter, C., & Suto, M. (2008). *Qualitative research for occupational and physical therapists: A practical guide*. Oxford, UK: Blackwell Publishing.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed). Thousand Oaks, CA: Sage.
- Dente, C. L., & Coles, K. (2012). Ecological approaches to transition planning for students with autism and Asperger's syndrome. *Children & Schools, 34*(1), 27-36. <http://dx.doi.org/10.1093/cs/cdr002>
- Denzin, N. K., & Lincoln, Y. S. (2008). Introduction: The discipline and practice of qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Strategies of qualitative inquiry* (3rd ed, pp. 1-32). Thousand Oaks, CA: Sage.
- DePoy, E., & Gitlin, L. (2011). *Introduction to research: Understanding and applying multiple strategies* (4th ed). St. Louis: Elsevier Mosby.
- Dillon, M. R. (2007). Creating supports for college students with Asperger's syndrome through collaboration. *College Student Journal, 41*, 499-504.
- Eaves, L. C., & Ho, H. H. (2008). Young adult outcome of autism spectrum disorders. *Journal of Autism & Developmental Disorders, 38*, 739-747. <http://dx.doi.org/10.1007/s10803-007-0441-x>
- Gardner, J., Mulry, C. M., & Chalik, S. (2012). Considering college?: Adolescents with autism and learning disorders participate in an on-campus service-learning program.

*Occupational Therapy in Health Care*, 26(4), 257-269.

<http://dx.doi.org/10.3109/07380577.2012.720052>

- Geller, L. L., & Greenberg, M. (2009). Managing the transition process from high school to college and beyond: Challenges for individuals, families, and society. *Social Work in Mental Health*, 8(1), 92-116. <http://dx.doi.org/10.1080/15332980902932466>
- Kohler, P. D., & Field, S. S. (2003). Transition-focused education: Foundation for the future. *Journal of Special Education*, 37(3), 174-183. <http://dx.doi.org/10.1177/00224669030370030701>
- Law, M., Baptiste, S., Carswell, A., McColl, M., Polatajko, H., & Pollock, N. (2005). *The Canadian Occupational Performance Measure (COPM)* (4th ed.). Ottawa: CAOT Publications, ACE.
- McColl, M. A., Paterson, M., Davies, D., Doubt, L., & Law, M. (2000). Validity and community utility of the Canadian Occupational Performance Measure. *Canadian Journal of Occupational Therapy*, 67(1), 22-30. <http://dx.doi.org/10.1177/000841740006700105>
- Minaya, M. (2007). Providing the structure the autistic need for college life. *The Washington Post*. Retrieved from <http://www.washingtonpost.com>.
- Nevill, R., & White, S. (2011). College students' openness toward autism spectrum disorders: Improving peer acceptance. *Journal of Autism & Developmental Disorders*, 41(12), 1619-1628. <http://dx.doi.org/10.1007/s10803-011-1189-x>
- Orentlicher, M., & Olson, L. (2010). Transition from school to adult life for students with an autism spectrum disorder. In H. Miller-Kuhaneck & R. Watling (Eds.), *Autism: A comprehensive occupational therapy approach* (3rd ed., pp. 665-700). Bethesda, MD: American Occupational Therapy Association.
- Parker, D. M., & Sykes, C. H. (2006). A systematic review of the Canadian Occupational Performance Measure: A clinical practice perspective. *British Journal of Occupational Therapy*, 69, 150-158.
- Samuels, C. A. (2009, March 13). Charting a course after high school. *Education Week*, 28, 18-21.
- Schindler, V. P. (2010). A client-centered, occupation-based occupational therapy programme for adults with psychiatric diagnoses. *Occupational Therapy International*, 17(3), 105-112. <http://dx.doi.org/10.1002/oti.291>

- Schindler, V. P. (2011). Using service-learning to teach mental health and research skills. *Occupational Therapy in Health Care, 25*(1), 54-64.  
<http://dx.doi.org/10.3109/07380577.2010.519430>
- Smith, C. P. (2007). Support services for students with Asperger's Syndrome in higher education. *College Student Journal, 41*, 515-531.
- Soydan, A. (2004). Supported education: A portrait of a psychiatric rehabilitation intervention. *American Journal of Psychiatric Rehabilitation, 7*(3), 227-248.  
<http://dx.doi.org/10.1080/15487760490884531>
- Toglia, J. P., Olson, L. J., & Colangelo, C. (2008). Executive functioning: The missing piece. Incorporating cognitive strategies into pediatric practice. Pre-conference Institute presented at the American Occupational Therapy Association Annual Conference & Expo. Long Beach, CA.
- VanBergejik, E., Klin, A., & Volkmar, F. (2008). Supporting more able students on the autism spectrum: College and beyond. *Journal of Autism and Developmental Disorders, 38*(7), 1359-1370. <http://dx.doi.org/10.1007/s10803-007-0524-8>
- Vogel, D. (2010). Teens with mild autism get early help to deal with stresses of college. *Pittsburgh Post-Gazette*. Retrieved from <http://www.post-gazette.com>.
- What is College For? *The Chronicle of Higher Education*. (2013, April 13). Retrieved July 17, 2013, from <http://chronicle.com/article/What-Is-College-For-/138683/>.
- Zager, D., & Alpern, C. S. (2010). College-based inclusion programming for transition-age students with autism. *Focus on Autism and Other Developmental Disabilities, 25*(3), 151-157. <http://dx.doi.org/10.1177/1088357610371331>