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## An Occupational Therapy-based Supported Education Program for University Students with Various DSM-5 Diagnoses: Program Description and Academic Outcomes

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# An Occupational Therapy-based Supported Education Program for University Students with Various DSM-5 Diagnoses: Program Description and Academic Outcomes

## **Abstract**

*Background:* This article describes and provides academic outcomes for an occupational therapy-based supported education program developed to assist undergraduate students with various DSM-5 diagnoses with the academic, social, and psychological skills important for college.

*Method:* A detailed program description and illustrative example of the intervention is provided. Quantitative designs were used to report retention, graduation, and GPA and to calculate changes in mean cumulative GPA.

*Results:* Of 83 students who started the program, 80 completed at least one semester (96%). Of these 80, 62 (77.5%) continued at the university for a retention rate of 77.5%, and 43 of the 62 have already graduated. Data on retention and graduation for students registered with the office for students with disabilities for the same time, 2008 to 2017, was used for comparative purposes. Although change in GPA was not statistically significant for the overall group of 80 ( $p \leq .086$ ,  $t = -1.744$ ), it was statistically significant for the 62 students who continued at the university ( $p \leq .028$ ,  $t = -2.225$ ) and for a subgroup of students who had a GPA prior to enrollment in the program ( $n = 31$ ,  $p \leq .014$ ,  $F = 6.194$ ).

*Conclusion:* The program description and outcomes support an OT-based supported education program to assist students with various DSM-5 diagnoses in college.

## **Comments**

The author reports they are a professor at the university in which the work was completed, but it was done within their own course and they conducted the evaluation and wrote the article as part of their scholarly activity.

## **Keywords**

attention-deficit hyperactivity disorder, autism-spectrum, higher education, learning disorder, mental disorders

## **Cover Page Footnote**

The author would like to acknowledge Jan Boney, OTD, OTR, and the MSOT students at Stockton University for their participation in this program.

## **Credentials Display**

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Obtaining a college degree continues to be viewed as a positive and often necessary step to adulthood and independence and to the greater knowledge necessary to succeed in today's work environments (U.S. Department of Education, 2015). This is applicable for all students, including those diagnosed with disorders in the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5) (American Psychiatric Association [APA], 2013). Prevalent DSM-5 diagnoses of college students include attention-deficit/hyperactivity disorders (ADHD), learning disorders (LD), autism-spectrum disorders (ASD), and psychiatric diagnoses, such as depressive, anxiety, and bipolar disorders (APA, 2013; Raue & Lewis, 2011). In addition, many students with an ADHD, LD, or ASD diagnosis have a co-existing psychiatric diagnosis (Raue & Lewis, 2011). Students with DSM-5 diagnoses typically have transition plans in high school, and these plans often include the goal of college enrollment (Howard et al., 2016; Trainor, Morningstar, & Murray, 2016).

The National Center for Education Statistics (NCES, 2016) reports that college enrollment for students with disabilities has reached 11.1% and is expected to continue to increase. LD, ADHD, and mental health diagnoses are listed as the three highest categories of diagnoses for college students with disabilities (Raue & Lewis, 2011). In addition, the number of college students diagnosed with ASD has increased in recent years (Delrieu, n.d.). However, college outcomes for students with various DSM-5 diagnoses continue to fall behind those of students without disabilities. The U.S. Department of Labor, Bureau of Labor Statistics (2015) reports that only 16.4% of people with a disability have completed at least a bachelor's degree. In addition, compared with a 37% withdrawal rate for the general student population, 86% of students with mental illness withdraw from college before completing their degrees (Salzer, 2012), and they have lower graduation rates compared with general student norms (National Alliance on Mental Illness [NAMI], 2012).

The college environment is significantly different from the high school environment and presents challenges to students with DSM-5 diagnoses. Classes meet less frequently, and they may have many more students and may contain exams and assignments that are based on large amounts of content. In addition, there can be a significant amount of downtime between classes, which requires skill to use productively. For many students, the move to a college dorm, apartment, or an off-campus residence is their first time living away from home. These and other characteristics of the college environment require many complex skills for success, such as time management and organization, academic skills (e.g., study skills, writing skills, and presentation skills), social skills, and their underlying cognitive, social, and psychological subskills. For students with DSM-5 diagnoses, these are the same skills and subskills that may be compromised because of the symptoms and characteristics associated with the diagnoses and side effects of medications (Howard et al., 2016; Salzer, 2012; Schindler, Cajjga, Aaronson, & Salas, 2015; Schindler & Kientz, 2013).

A student with deficits in basic cognitive skills, such as attention, concentration, and memory, can have difficulty focusing in a large classroom and studying in a busy residence hall. Deficits in higher-level cognitive skills, such as planning, organization, judgment, problem-solving, and cognitive flexibility, called "executive functioning," are common for individuals with DSM-5 diagnoses. Decreased executive functioning can impact a student's ability on a continuum from planning his or her day to choosing a college major. It can negatively affect the ability to manage time, prioritize assignments, and break large assignments into subcomponents. Limited social skills, common for students with DSM-5 diagnoses, can negatively impact the social interactions necessary for success, such as interacting in a lecture hall, residence hall, or in clubs or organizations (Orentlicher & Olson,

2010; Schindler et al., 2015; Toor, Hanley, & Hebron, 2016). Other skills essential for college success are psychological skills, which include awareness of one's strengths and limitations, goal setting and attainment, capacity for monitoring performance, and self-advocacy (Orentlicher & Olson, 2010). College settings are larger than high school settings, not as conducive to individualized services, and typically do not proactively seek students who need assistance. This can affect a student's ability to navigate the college system and to interact successfully with faculty in and out of the classroom and with college staff in offices such as financial aid, admissions, and registration.

Several public laws mandate inclusion and reasonable accommodations for people with disabilities in educational settings, such as the Americans with Disabilities Act (ADA), 2010; the Individuals with Disabilities Education Act (IDEA), 2006; and The Rehabilitation Act, 2014. Reasonable accommodations are alternative methods to accomplish course requirements to eliminate or reduce disability-related barriers (American Psychological Association, 2018). Common reasonable accommodations are extended test times, distraction-free environments for testing, and notetakers. Although helpful, reasonable accommodations do not provide the students with DSM-5 diagnoses with the additional services or programs to develop the complex skills, such as time management and organization, or the academic and social skills (along with the underlying cognitive, social, and psychological skills) needed for success in the college environment. Supported education was developed to address the need for these additional services (Schindler et al., 2015; Soydan, 2004).

Supported education (SEd) is commonly defined as “the provision of individualized, practical support and instruction to assist people with psychiatric disabilities to achieve their educational goals” (Soydan, 2004, p. 227), and as an approach that provides programs and supports to access and complete postsecondary education (Mueser & Cook, 2012; U.S. Department of Health and Human Services, 2012). SEd programs began in the early 1990s. They were developed at both mental health clinics and in colleges and universities and were initially designed to meet the needs of people with psychiatric diagnoses (Arbesman & Logsdon, 2011; Rogers, Kash-MacDonald, Bruker, & Maru, 2010). SEd has recently expanded beyond the traditional mental health population to students diagnosed with various DSM-5 conditions, including ADHD, LD, and ASD (Quinn, Gleeson, & Nolan, 2014; Toor et al., 2016).

SEd programs are not unique to occupational therapy (OT), but the characteristics of OT support the profession as a primary provider of SEd. In the OT scope of practice, occupational therapists address the student role in higher education, including the development of skills in the areas of time management, organization, academics, and social and self-advocacy. In addition, OT can address indirect aspects of this student role, including sensory processing, assistive technologies, and healthy and effective self-care and sleep routines (American Occupational Therapy Association [AOTA], 2013).

### **Outcomes of SEd Programs**

Although a literature search on SEd for persons diagnosed with mental illness identified more than 100 articles, a review of these articles showed that only about 20% reported program outcomes and that many different outcome measures were used (Schindler & Sauerwald, 2013). Schindler and Sauerwald (2013) documented more than 30 separate outcome measures (e.g., number of classes completed, number of semesters completed, employment following SEd, and coping skills) in the articles addressing the outcomes of SEd programs.

A systematic review of SEd literature from 1989-2009 (Rogers et al., 2010) found only 21 evidence-based articles over these 20 years, with only 13 of those articles representing effectiveness studies (experimental design = 4; quasiexperimental design = 1, pre-posttest design = 4, posttest only

design = 4). Because the majority of these 13 studies were short-term and outcomes were varied or limited to course enrollment, the authors concluded that there was no rigorous evidence to suggest that SEd would lead to a greater number of individuals with DSM-5 diagnoses achieving postsecondary degrees or certificates. Taking this a step further, Mueser and Cook (2012), reflecting on the fact that more than 20 years have passed since the development of the first SEd programs, concluded that although research on different approaches has produced encouraging results regarding school-related activity, there is still an insufficient amount of evidence that SEd programs are effective in helping individuals establish careers leading to personally meaningful work. For the ASD population, there is a limited but growing body of pilot or descriptive evidence tailored to their specific needs. This includes programs that address social skills, time management, and academic retention (Siew, Mazzucchelli, Rooney, & Girdler, 2017; Toor et al., 2016; White et al., 2016).

There has been a small amount of OT-based SEd outcomes described in the literature. Gutman et al. (2007) reported the effectiveness of an OT-based supported education program in New Jersey, and in 2009, Gutman, Kerner, Zombek, Dulek, and Ramsey reported the efficacy of an OT-based SEd program in New York. Stoneman and Lysaght (2010) described a SEd program specific to training individuals in retail that resulted in subsequent employment in retail. Arbesman and Logsdon (2011) published a systematic review of 21 studies that evaluated the effectiveness of OT interventions on participation and performance in occupation related to employment and education for people diagnosed with mental illness. Four of 21 studies evaluated SEd programs at the postsecondary level, and two of the four were programs conducted by occupational therapists. Outcome measures were subsequent enrollment in educational or vocational training with results reporting an increase in enrollment. The authors concluded that the evidence was limited, but that structured, manual-based, skill development programs have better outcomes than traditional interventions. Schindler (2010) reported positive outcomes of a program for adults with mental illness that included higher education goals, provided additional outcomes with Sauerwald in 2013, and described outcomes for college students with Asperger's Syndrome in a SEd program in 2015 (Schindler et al., 2015; Schindler & Sauerwald, 2013).

Overall, a review of the literature on SEd shows there is an increasing but still insufficient amount of systematic evidence on its success or long-term outcomes. In addition, there has been a variety of outcome measures. Although this variety reflects the unique needs of individual learners and the resources at mental health clinics and colleges and universities, it impedes the ability to document the overall effectiveness of SEd. To build on previous research conducted on interventions that were short-term and/or with outcome measures that were varied or limited to course enrollment, this article describes and reports on a longer-term OT-based SEd program with outcome measures that are important measures of college success: retention, degree completion (graduation), and GPA (NCES, 2018).

### **Research Question**

To assist students with various DSM-5 diagnoses in developing the academic, social, and psychological skills to succeed in college, an OT-based SEd program was developed in 2008 and continues yearly. The purpose of this article is to describe this program and provide quantitative academic outcomes. The research question is: What are the quantitative outcomes (retention rate, graduation rate, and change in cumulative Grade Point Average [GPA], based on a 4.0 scale) of students with various DSM-5 diagnoses enrolled in this OT-based SEd program?

## **Method**

### **Participant Selection and Research Design**

The participants were undergraduate students at a northeast suburban university who were enrolled in the program for at least one semester between 2008 and 2017. Enrollment criteria included one or more DSM-5 diagnoses. The students were referred to the program by counselors in the university's office for students with disabilities, who reserved referral to this program for students demonstrating the highest level of need. The students completed a short application, and the director of the program (this author) conducted an orientation and an interview with each student and his or her parents (as applicable) prior to enrollment. The institutional review board at the university in which the program is conducted approved the study, and the participants provided informed consent.

Data was collected on the undergraduate students with various DSM-5 diagnoses who completed the program. This group included: (a) students who continued enrollment at the university and (b) students who withdrew from the university. In addition, there was a subgroup of the overall group consisting of students with a GPA from the university prior to enrollment in the program. The number of participants in this subgroup was less than the number in the overall group because GPA prior to enrollment in the program was only available for those students who attended the university for at least one semester prior to enrollment in the program.

The research aspect incorporated three designs. For all groups, a retrospective design was used to document and determine retention, graduation, and cumulative GPA at chronological points in time (GPA at the end of the student's 1st semester in the program and GPA at the end of the student's enrollment in the program). A 1-group comparison design was used to calculate changes in GPA at these points in time. For the subgroup of students who had a GPA prior to enrollment in the program, a 1-group pre-posttest design was used to determine changes in GPA prior to the start of the program and at the chronological points in time listed above (Portney & Watkins, 2015). Because enrollment in the program could not be denied or postponed for students interested in the program, for ethical reasons, a control group could not be used. However, some comparative data is provided in the Results section. This data was collected on students registered with the university's office of students with disabilities during the same time frame as this program, from 2008 to 2017. However, whereas the program described in this article collected data on overall retention and graduation to accurately and comprehensively reflect a program in which students enrolled at different points in their college careers, the comparative data available is based on the university and national standards for data reporting: first-year retention and 4-year and 6-year graduation rates for first-time, full-time freshman (Stockton University, 2018). No university or national standard for reporting GPA over time was located.

Data were gathered and organized, and descriptive statistics were used to analyze data on demographics, retention, graduation, and cumulative GPA at designated chronological points in time. A paired sample *t*-test was used to compare means between GPAs at two points in time, and a repeated measures ANOVA was used for the subgroup with a prior GPA to compare means between GPAs at three points in time.

### **Procedures: The OT-based SEd Program**

The OT-based SEd program described in this article is a structured, manualized, skill development program; and therefore, it contains the program components suggested by Arbesman and

Logsdon (2011) for better outcomes. It is a one-to-one mentoring program that pairs second-year master's level occupational therapy (MSOT) students (mentors) with undergraduate college students (mentees) with DSM-5 diagnoses. The program is conducted twice weekly for 2-hr sessions during the fall and spring semesters and supervised by OT faculty. The same MSOT student mentors his or her assigned mentee for the mentee's duration in the program. For the undergraduate students, the program is a credit-bearing course in the general studies curriculum. It is the only course at the university for which the enrollment criterion is one or more DSM-5 diagnoses, and it is the only course that addresses skill development in time management and organization, academic skills, and social skills for college success. Graded components of the course contained aspects for skill development and included attendance, professional behaviors, compliance on a weekly to-do list, a presentation on academic resources, and a 4-part written paper on an academic skill.

For the MSOT students, the program is embedded in two credit-bearing research courses and meets the Level I psychosocial fieldwork requirement (Accreditation Council for Occupational Therapy Education [ACOTE], 2011). Prior to participation in this program, the MSOT students complete 1 year of a 2-year entry-level MSOT academic program. During the first year of the academic program, the MSOT students complete mental health courses that include instruction in DSM-5 conditions and in the OT process of assessment, treatment planning, intervention, and reevaluation. They also conduct activity groups with individuals diagnosed with mental illnesses at local mental health outpatient centers. Prior to, and concurrent with, their participation in the SEd program, the MSOT students complete competency-based assignments specifically related to mentoring and fidelity to the manualized process. This includes a treatment plan and progress note documentation. Assignments contain guidelines to ensure continuing uniformity to the approach and fidelity to the principles of the SEd model. The MSOT students participate in small discussion groups to brainstorm activities and methods to assist mentees to achieve goals, discuss positive aspects and challenges of the mentoring process, and problem-solve the challenges. The MSOT students also reflect on their growth in knowledge, skills, and professionalism. Because this program is also embedded in two credit-bearing research courses, the MSOT students also learn the research process and collect, analyze, and present outcomes.

For the undergraduate students, the goal of the program is to facilitate student success in college, and if factors overwhelmingly interfere with this goal, to identify an alternate, suitable plan. Mentoring begins with an occupational profile (AOTA, 2014) and an assessment using the Canadian Occupational Performance Measure [COPM] (Law et al., 2005) to determine occupational performance problems in all aspects of college life. Common problems include areas of time management and organization, study skills, writing skills, presentation skills, and social skills, especially in the areas of residential life and leisure time. Problems are converted into goals. Goals are systematically addressed during the weekly mentoring sessions using individualized interventions in a sequenced, strategic manner. Interventions are client-centered and occupation-based and pertain specifically to the undergraduate student's current academic (e.g., courses) and social aspects (e.g., residential life and extracurricular activities) of college life. Although the interventions used to address the problems and achieve goals may vary for each student, the written procedures to establish and address the goals are uniform. There are written procedures for each of the most common goals: time management and organization, study skills, writing skills, presentation skills, and social skills.

The following example illustrates the intervention process using the goal of developing or improving study skills, which is a goal for most students. The development of effective study skills

typically includes preparing for class, learning content presented in a class, reviewing the content, and choosing effective study methods. Strengths and problem areas in study skills are determined through discussion, observation, and review of the quiz and test grades. Then, strengths are used to address the problems. For example, if computer skills are an area of strength for the mentee, 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 are identified. Next, these study methods are implemented and evaluated for effectiveness. Adjustments or changes are made based on the findings. As an important standard to assess the effectiveness of study skills, the mentee explains the information under study to the mentor every week. This sequenced, strategic method described for study skills is customized for each goal and each mentee. After each session, the mentor notes the mentee's progress, or lack of progress, toward the goals and plans for the next session. This documentation is compiled into a progress report.

A re-evaluation using the COPM is conducted at the end of the semester. In addition, supervision and a format for reflection on goals, challenges, and progress are provided by the OT faculty to the MSOT students throughout the program.

## **Results**

### **Participant Demographics**

The participants were undergraduate students at a northeast suburban university who were enrolled in the program for at least one semester between 2008 and 2017. There were 83 students and 80 completed at least one semester (64% completed more than one semester of the program). Of the 80 students, almost two-thirds were male (60%). The age range was 18-50 years; however, the mean age was 21.2 years, and 37 of the students (46%) were 18 years of age at the time they began the program. The majority (95%) were full-time students and not employed (83%). The ethnicity of most of the students was White (80%), which is representative of the student population at the university. Almost all the students were never married (98%). The primary DSM-5 diagnoses most represented were ASD (26%), followed by ADHD (19%), LD (17%), depressive disorder (13%), and anxiety disorder (12%). Forty-four percent of the students had at least one secondary diagnosis. The secondary diagnoses most represented after no diagnosis (56%) were LD (15%) and anxiety disorder (15%). More than two-thirds (68%) were currently taking medication. All of the students were eligible for reasonable accommodations, as provided by federal law (ADA, 2010; U.S. Department of Education, 2006; U.S. Department of Labor, Office of Federal Contract Compliance Programs, 2014). Common accommodations used at the university are audio books, note takers, and testing accommodations (Stockton University, 2018). No students reported participation in a course or program focused on the development of the skills addressed in this program, namely time management and organization, academic (study, writing, presentation), and social skills.

In comparison to the overall group, there were a few differences in the demographics for the students who continued versus the students who withdrew from the university. Sixty-two of the 80 students (77.5%) remained at the university after completion of the program. Demographics for this group were similar to the overall group except that this group had a higher percentage of students with LD (21%) as a primary diagnosis. Eighteen of the 80 students (22.5%) withdrew from the university after completion of the program. Demographics for this group were similar to the overall group, except that this group had a higher percentage of 18-year-olds (61%), males (72%), ASD as a primary diagnosis (38%), and part-time student status (11%).

Demographics for the subgroup with a GPA prior to enrollment in the program (39% of the overall group) was similar to the overall group, except that this subgroup had a higher percentage of ADHD (23%) and depressive disorder (29%) as primary diagnoses and a higher percentage were currently taking medication (81%) and employed part-time (26%).

Details of the demographics for all groups are in Table 1.

**Table 1**  
*Demographics of Students Enrolled in the Program*

Item	Total n = 80	Total % of total	Withdrew n = 18	Withdrew % of total	Continued n = 62	Continued % of total	GPA Prior n = 31	GPA Prior % of total
Gender								
Males	48	60%	13	72%	35	56%	16	52%
Females	32	40%	5	28%	27	44%	15	48%
Ethnicity								
White	64	80%	11	61%	52	85%	22	71%
African-American	10	12%	3	17%	8	13%	6	20%
Hispanic	3	4%	2	11%	1	1%	1	3%
Asian	3	4%	2	11%	1	1%	2	6%
Marital Status								
Single (Never Married)	78	98%	17	94%	61	98%	29	94%
Married	2	2%	1	6%	1	2%	2	6%
Primary Diagnosis								
Autism Spectrum Disorder	21	26%	7	38%	14	23%	3	10%
ADHD	15	19%	3	16%	12	19%	7	23%
Learning Disorder	14	17%	1	6%	13	21%	3	10%
Depressive Disorder	10	13%	2	11%	8	13%	9	28%
Anxiety Disorder	9	12%	0	0%	9	15%	4	13%
Schizophrenia	5	6%	3	17%	2	3%	4	13%
Bipolar Disorder	3	4%	1	6%	2	3%	0	0%
Brain injury	2	2%	0	0%	2	3%	0	0%
Tourette's Syndrome	1	1%	1	6%	0	0%	1	3%
Secondary Diagnosis								
No diagnosis	44	56%	7	39%	37	60%	13	42%
Anxiety Disorder	12	15%	2	11%	10	16%	7	23%
Learning Disorder	12	15%	5	28%	7	11%	4	13%
ADHD	5	6%	2	11%	3	5%	2	6%
Depressive Disorder	4	5%	2	11%	2	3%	4	13%
Autism Spectrum Disorder*	2	2%	0	0%	2	3%	0	0%
Post-Traumatic Stress Disorder	1	1%	0	0%	1	2%	1	3%
Currently Taking Medicine								
Yes	54	68%	12	67%	42	68%	25	81%
No	26	32%	6	33%	20	32%	6	19%
Student Status								
Full-time	76	95%	16	89%	60	97%	27	87%
Part-time	4	5%	2	11%	2	3%	4	13%
Employee Status								
No employment	66	83%	15	83%	51	82%	23	74%
Part-time	14	17%	3	17%	11	18%	8	26%

Note. % were rounded up at .5.

For the 80 students who completed at least one semester of the program, 18 (22.5%) withdrew from the university, and 62 (77.5%) remained at the university after completion of the program. Forty-three of these 62 students (69%; 54% of the overall group) have already graduated from the university.

Retention rate, as defined by the students who are progressing toward or have graduated from the university, is  $62/80 = 77.5\%$ . Data on retention and graduation for students registered with the office of disabilities for the same time frame, 2008 to 2017, was used for comparative purposes. As written above, the comparative data available is based on the university and national standard for data reporting: first-year retention and 4-year and 6-year graduation rates for first-time, full-time freshman (Stockton University, 2018). Approximately 8% of the student population was registered with the office of disabilities during each semester of the same time frame, 2008 to 2017. Retention for first-time, full-time freshman registered with the office of disabilities varied from 80% to 86% per year with a mean of 83% (845 of 1022 returned for a second year). The 4-year graduation rate for first-time, full-time freshman starting from 2008 to 2013 and registered with the office of disabilities varied from 23% to 69% per year with a mean of 37% (244 of 668 students), and the 6-year graduation rate for first-time, full-time freshman starting from 2008 to 2011 and registered with the office of disabilities varied from 65% to 66% per year with a mean of 65% (290 of 448 students) (Stockton University, 2018).

The number of semesters in the program for the 80 students who completed at least one semester ranged from 1 to 10 semesters, with the mean number of semesters in the program at 2.35. About one-third of the students attended for one semester (36%), followed by two semesters (29%). The remaining (35%) were distributed in decreasing amounts from 3 to 10 semesters with two part-time students attending seven or 10 semesters. The students who withdrew from the university had a lower mean number of semesters in the program ( $n = 18$ ; 1.6), whereas the students who continued at the university had a higher mean number ( $n = 62$ , 2.75), as well as students who had a GPA prior to enrollment ( $n = 31$ , 2.68).

Mean cumulative GPA scores were compared at two chronological points in time for the overall group of 80 students. This included GPA at the end of the student's 1st semester in the program (mean GPA = 2.91) and GPA at the end of the student's enrollment in the program (mean GPA = 2.95). Although GPA increased by .04, the change in GPA was not statistically significant ( $p \leq .086$ ,  $t = -1.744$ ). However, when mean cumulative GPA scores were compared at the same two points in time for the group of students who remained at the university ( $n = 62$ ), statistical significance was achieved (mean GPA at end of 1st semester in the program = 3.12; mean GPA at end of the program = 3.18;  $p \leq .004$ ,  $t = -2.255$ ) (Portney & Watkins, 2015). Mean cumulative GPA scores could not be compared for the 18 students who withdrew from the university because two-thirds of these students attended the program for only one semester (mean GPA = 1.94), which did not allow for a 2nd comparison point (see Table 2).

**Table 2**  
*Outcomes for the Overall Group and for Students Who Continued at or Withdrew from the University*

Student Subgroup	N	Mean # of Semesters the Program	GPA at the End of the 1st Semester of the Program	GPA at the End of the Program	Increase in GPA	P Value GPA at the End of the 1st Semester -End of Program
Continued	62	2.75	3.12	3.18	.06	.028*** $t = -2.255$ ; $df(61)$
Withdrew	18	1.6	1.94	n/a	n/a	n/a

Overall Group	80	2.35	2.91	2.95	.04	.086
						t = -1.744 df (79)

Note. \*\*\* = Statistically significant at  $p \leq .05$ . Withdrew n/a = two-thirds of students completed only 1 semester, resulting in inability to report or compare data.

GPA prior to the start of the program was available only for those students who attended the university for at least one semester prior to enrollment in the program ( $n = 31$ ). Mean GPA scores were recorded at three chronological points in time: (a) GPA prior to enrollment in the program ( $n = 31$ ; mean = 2.46); (b) GPA at the end of the student's 1st semester in the program ( $n = 31$ ; mean = 2.60); and (c) GPA at the end of the student's enrollment in the program ( $n = 31$ ; mean = 2.69). A repeated measures analysis of variance (ANOVA) demonstrated statistical significance for change in GPA over the two consecutive points in time (Mauchly's  $W = .310$ ,  $p \leq .000$ .) (see Table 3).

**Table 3**

*Outcomes: Change in GPA for Students with a GPA Prior to the Program*

N	Mean # of Semesters	GPA Prior to th Start of the Program	GPA at the End of the 1st Semester	GPA at the End of the Program	Increase in GPA	Greenhouse Geisser	Huynh-Feldt
31	2.68	2.46	2.60	2.69	.23	.014*** F = 6.194 df (1.184)	.014*** F = 6.194 df (1.205)

Note. \*\*\* = Statistically significant at  $p < .05$ .

## Discussion

This article describes a structured, manualized OT-based SEd program for undergraduate students with various DSM-5 diagnoses, and the outcomes add to the limited literature on SEd programs. Previous literature, including systematic reviews, found that study limitations, including short-term duration and limited and varied outcome measures, lacked the evidence to suggest that SEd would lead to a higher number of individuals with DSM-5 diagnoses achieving postsecondary degrees or certificates (Arbesman & Logsdon, 2011; Mueser & Cook, 2012; Rogers et al., 2010; Schindler et al., 2015; Toor et al., 2016). This article addressed some of these limitations by describing a manualized, longer-term program and documenting important quantitative measures of academic success: retention, degree completion (graduation), and GPA (NCES, 2018).

The academic outcomes outlining retention, graduation, and change in GPA were positive. The retention rate for the overall group was 77.5%, reflecting retention as students progressed toward graduation. The only comparative data available is that which is the standard for university data reporting: the percentage of first-time, full-time degree-seeking students who enrolled at 4-year degree-granting institutions and returned the following fall. For comparative purposes with the university in which this program occurred, data on students registered with the university's office of students with disabilities during the same time as this program, 2008 to 2017, varied from 80% to 86% per year with a mean of 83% (845 of 1022 returned for a second year). The national retention rate for all first-time, full-time degree-seeking students who enrolled at 4-year degree-granting institutions in 2014 and returned the following fall was 81% (NCES, 2018). Because retention decreases over time as reflected in graduation rates that are lower than first-year retention rates, the retention rate of 77.5% for

successive years of college among this group of students with DSM-5 diagnoses, a group referred to the program by the university's office of disabilities because of a high level of need, is important to note.

Fifty-four percent (43 of 80) of the overall group has graduated. Sixty-nine percent of the students who continued at the university (43 of 62) have graduated, and the remaining 19 are progressing toward graduation. The only comparative data available is that which is the standard for university data reporting: The percentage of first-time, full-time degree-seeking students who enrolled at 4-year degree-granting institutions and graduated in 4 or 6 years of enrollment. For comparative purposes with the university in which this program occurred, data on students registered with the university's office of students with disabilities during the same time as this program, 2008 to 2017, for first-time, full time freshman was a 4-year graduation rate of 37% and a 6-year graduation rate of 65% (Stockton University, 2018). In addition, the 6-year graduation rate for all students entering a 4-year degree program in 2009 (2009-2015) was 59% (NCES, 2018). Given these comparative retention and graduation rates, and that the university's office of disabilities referred the students enrolled in this program because of a high level of need, the number of graduates and those progressing toward graduation for this group of students with DSM-5 diagnoses is important to note.

Although statistical significance was not achieved for change in GPA for the overall group, GPA did increase for this group, and statistical significance was achieved for change in GPA for the 62 students (77.5%) who continued at the university after completion of the program. The overall group included the 18 students who withdrew from the university. These students had a lower GPA (1.94) and a lower mean number of semesters in the program (1.6). The goals of the program are to facilitate student success in college and, if factors interfere with this goal, to identify an alternate, suitable plan. For the most part, these students withdrew because the academic, social, and residential life aspects of university life were not a good fit for them. Many opted to return to live at home and attend community colleges, which was a more suitable plan and a decision supported by everyone involved.

For the 62 students (77.5%) who continued at the university after completion of the program, statistical significance was achieved for change in GPA (mean GPA at end of 1st semester in the program = 3.12; mean GPA at end of the program = 3.18;  $p \leq .028$ ,  $t = -2.225$ ). Success in college often requires further development of time management and organization, cognitive, social, and psychological skills, especially for students with DSM-5 diagnoses. Classes meet less frequently, can have many more students, and students may be living away from home in a college dorm, apartment, or in an off-campus residence. In all these situations, students need to create systems and routines that foster success. If a system is lacking, the grades suffer. Results suggest that this group of students, who improved their GPAs, was able to positively respond to the mentoring and structure of the program and developed systems to support successful completion of exams and assignments (Howard et al., 2016; Schindler et al., 2015; Trainor et al., 2016).

The subgroup with a GPA prior to enrollment in the program showed the most significant gains. These students were previously enrolled in classes prior to starting the program. Upon enrollment in the program, these students reported that their previous courses were a challenge and that they were seeking resources to assist them. GPA increased at each chronological point in time with a .23 increase in GPA from prior to the program to completion of the program. This change in GPA was statistically significant. This group also had a higher mean number of semesters in the program (2.68) compared to the total group (2.35). This suggests that these students knew they could benefit from the assistance and were motivated and willing to learn the skills needed (Schindler et al., 2015).

Authors of a systematic review of the effectiveness of OT interventions (Arbesman & Logsdon, 2011) concluded that structured, manual-based, skill development programs have better outcomes. The program described in this article contains these elements. In addition, the students who continued at the university had a mean of 2.75 semesters in the program. This allowed for a longer duration of time and for repetition, elements that facilitate skill and habit development.

### **Limitations**

The sample for this study was a convenience sample consisting of undergraduate students who enrolled in the course at one university. For ethical reasons a control group was not used, as enrollment in the program could not be denied or postponed for students interested in the program. Although the program described in this article is the only course or program at the university for which the enrollment criterion is one or more DSM-5 diagnoses and that addresses skill development in time management and organization, academic (study, writing, presentation), and social skills, and no students reported participation in a course or program focused on the development of these skills, the lack of a control group to control for any other variables signifies that the findings cannot be generalized.

### **Implications for Occupational Therapy Practice**

This study is based on a structured, manualized, skill development program, as suggested by Arbesman and Logsdon (2011), as program components necessary for better outcomes. This SED program contains hallmark principles of OT. The program is client-centered (addresses skills students identify as important for success in college), occupation-based (addresses students' current occupations with the academic, social, and self-care aspects of the student role), and incorporates activity analysis to break down academic work into manageable subcomponents (AOTA, 2013). Furthermore, for the MSOT students, the program is embedded in two research courses and fulfills the requirement for Level I psychosocial fieldwork (ACOTE, 2011). Research is conducted in-vivo, making it meaningful to the MSOT students. Given that the program occurs on a university campus and the number of students with DSM-5 diagnoses on campuses is increasing (NCES, 2016), it is feasible that OT programs on campuses can develop similar programs while addressing MSOT student requirements. The program provides a service to the university in a few ways. It provides a mentoring program for the students with various DSM-5 diagnoses and fulfills a Level I psychosocial fieldwork requirement for the MSOT students while requiring no funding because it is embedded in credit-bearing courses for the undergraduate and the MSOT students. Given the undergraduate students are in majors representing all divisions in the university, it educates and advocates for OT. Finally, for the MSOT program, it provides a consistent Level I psychosocial fieldwork setting. Key aspects for OT practice include:

- Provide the program in an undergraduate credit-bearing course with graded components and assignments that encourage attendance and accountability and development of positive habits and skills.
- Provide the program in graduate credit-bearing courses and fieldwork requirements to meet OT education standards (ACOTE, 2011).
- Incorporate and facilitate a mentor and mentee relationship. 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.
- Provide manualized instructions for the program. The manual for this program includes items such as rules and format for mentoring, a detailed time and activity schedule for the mentoring

sessions, sample goals, and interventions for various skill development, weekly “to-do” items for mentees, professional behaviors, and more.

- Require OT academic assignments, including assessments, a formal plan for mentoring (e.g., treatment plan), and documentation of progress.
- Provide supervision and a format for reflection on goals, challenges, and progress.

## Conclusion

Obtaining a college degree continues to be viewed as a positive and often necessary step to adulthood and independence and to the greater knowledge necessary to succeed in today’s work environments (U.S. Department of Education, 2015). This is applicable for all students, including those diagnosed with disorders in the DSM-5 (APA, 2013). However, because of the symptoms and characteristics of DSM-5 diagnoses, students with these diagnoses have additional challenges to success in college, including cognitive, social, and psychological challenges. An OT-based SEd mentoring program was developed to assist students with various DSM-5 diagnoses to address these challenges successfully, and the purpose of this article was to describe this program and report outcome measures that are important measures of college success: retention, graduation, and GPA. The outcomes for retention, graduation, and change in GPA were positive. The retention rate for the overall group of 80 was 77.5%, and 54% of the group has already graduated. Although statistical significance was not achieved for change in GPA for the overall group of 80 students, GPA did increase for this group, and statistical significance was achieved for change in GPA for the 62 students (77.5%) who continued at the university after completion of the program. This article describes a structured, manualized OT-based SEd program for undergraduate students with various DSM-5 diagnoses, and the positive outcomes add to the limited literature on SEd programs. Readers may contact the author at the email address provided for more information about the manual or the program.

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