# UNIVERSITY *of* INDIANAPOLIS®

## School of Occupational Therapy

Developing Social and Life Skills of College Students with Autism Spectrum Disorder
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A research project submitted in partial fulfillment for the requirements of the Doctor of
Occupational Therapy degree from the University of Indianapolis, School of Occupational
Therapy.

Under the direction of the research advisor:

Jennifer Fogo, PhD, OTR

# A Doctoral Capstone Experience Project Entitled

Developing Social and Life Skills of College Students with Autism Spectrum Disorder

Submitted to the School of Occupational Therapy at University of Indianapolis in partial fulfillment for the requirements of the Doctor of Occupational Therapy degree.

By

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Developing Social and Life Skills of College Students with Autism Spectrum Disorder

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**Abstract**

College students with Autism Spectrum Disorder (ASD) experience unique challenges and difficulties within the academic and social realms they interact in. Fifteen college students with ASD enrolled in the BUILD program at the University of Indianapolis participated in programming for 13 weeks. Baseline data from the Autism Social Skills Profile-2 and survey results gathered from students were the foundation for the program and curriculum design to ensure relevance to students. Following 13 weeks of a multi-setting intervention program, students more consistently demonstrated the use of appropriate social skills in a variety of settings. Students also self-reported improved confidence with their ability to utilize social and life skills in real world scenarios. With their improved confidence and clear ability to engage more appropriately with others, students are more capable of succeeding in academic, social, independent living, and work-related settings.

**Developing Social and Life Skills of College Students with Autism Spectrum Disorder**

Currently, the Centers for Disease Control and Prevention (CDC) (2020) reports that about 1 in 54 children have an Autism Spectrum Disorder (ASD) diagnosis. Among the most common symptoms experienced by children diagnosed with ASD are deficits in social interaction skills and executive functioning skills (CDC, 2019). These symptoms are present across the lifespan and can impact daily life. In young adulthood, they can have profound impacts on academic performance, independent living, and employment (Newman, et al., 2011; Van Hees, et al., 2015; White, et al., 2016). Universities across the nation struggle to develop and provide services for students with ASD that fully support students' educational and social needs (Van Hees, et al., 2015). The University of Indianapolis (UIndy) offers a special disability services program with provisions above and beyond those normally provided to college students with disabilities. At UIndy this is called the BUILD (Baccalaureate for University of Indianapolis Learning Disabled) program and is where I developed and implemented the following program. Staff in BUILD offer special disability services and provide support for academic and social success at the college level. The services offered by BUILD staff include social skills training and individualized intervention opportunities to improve students' daily lives and educational outcomes.

Before I implemented the program, students with ASD enrolled in BUILD identified their areas of difficulty related to social and life skills. Additionally, BUILD staff and parents identified the perceived needs and struggles of this student population. Students, staff, and parents indicated that participants would benefit from training to help students initiate social interaction, understand the give and take of conversations and why it matters, communicate concerns to professors and university staff, and feel confident in their abilities to seek out and

obtain employment. Staff and parents also expressed that students needed assistance with how to open a bank account to get a paycheck directly deposited, address and mail an envelope for paying bills and returning mailed forms, find job postings, complete job applications, budget money, and cook meals. I developed programming relevant to the social and life skills needed for independent living, meaningful employment, education, and engagement with others.

## Review of Literature

In a review of relevant literature, I found that the difficulties associated with an ASD diagnosis can impact college students with ASD both inside and outside the classroom environment. I used the person-environment-occupation (PEO) model to examine the relationship between the personal characteristics of an individual with ASD, the environmental barriers presented in various everyday scenarios, and the occupational engagements of college students with ASD.

Additionally, I used Levinson's theory to guide the process of creating programming relevant to college students with ASD. I used this theory to create programming directly relevant to the young adult transition described by Levinson in this theory. According to Levinson, college students are in the early adulthood transition (Levinson, 1986). This transition consists of a movement to "forming and pursuing youthful aspirations, establishing a niche in society" (Levinson, 1986, p. 5). I used Levinson's theory as the basis for understanding college students' transitional experiences and developing programming specific to their stage of life.

In combination with he following review of literature and needs assessment data, the PEO model and Levinson's provided the framework for programming to target social and life skills for college students with ASD at UIndy. The following review of the literature shows the current findings regarding challenges faced by young adults with ASD. Also included is a review

of evidence-based interventions used to improve the social and life skills of individuals with ASD.

Trends indicate that more young adults with ASD are going to college. However, the graduation rate for these students is 40% compared to 60% for their neurotypical peers (Newman, et al., 2011). Research shows that college students with ASD have difficulties functioning socially in a classroom environment, engaging in group projects and discussions, developing student-faculty relationships, obtaining internships, and forming relationships to feel like they belong with other students (Cai, & Richdale, 2016; McLeod, et al., 2019). Students encounter a variety of specific social situations at the college level, including dorm or student events, clubs, sporting events, and dining (Ashbaugh, et al., 2017). Additionally, researchers indicate that college students with ASD often have difficulty working independently, interviewing for a job, responding to feedback, being aware of their own or others' emotions, living independently, managing time, scheduling time to eat and sleep, and navigating transportation (Cullen, 2015; Gal, et al., 2015; Gilson, & Carter, 2016; Grob, et al., 2019; McKnight-Lizotte, 2018; White, et al., 2016). Researchers indicate that intervening to provide practice and information on the skills required for navigating these situations can improve student satisfaction and participation in these activities (Ashbaugh, et al., 2017).

Researchers have found that college students regularly engage in three main categories of occupation: "education, student life and daily (independent) living" (Van Hees, et al., 2015, p. 1677). Research also shows that college students with ASD experience a consistent set of challenges across all three categories (Van Hees, et al., 2015). Specifically students with ASD have difficulty in novel situations or with change. They experience exhaustion from expected social contact, have trouble with time management and information processing, have difficulty

disclosing their ASD, and struggle with poor mental health (Van Hees, et al., 2015). Additional

difficulties include poor emotional regulation, living independently, social engagement, and

preparing for careers (White, et al., 2016).

Researchers found that most college students with ASD felt like the programming and

assistance provided at the college level met their educational needs (Cai, & Richdale, 2016).

However, very few students felt that programming or assistance met their social needs related to

student life and independent living (Anderson, & Butt, 2017; Cai, & Richdale, 2016; Cullen,

2015). As a result, research shows that students with ASD have lower GPAs and class pass rates,

decreased engagement in field experiences and internships, no sense of belonging, fewer close or

romantic relationships, and more mental health issues than their neurotypical peers (McLeod, et

al., 2019).

The academic, social, and health-related outcomes of students with ASD are, on average,

poorer than the outcomes of their neurotypical peers. However, research indicates that peer

mentorship, with a neurotypical peer, can improve these outcomes (Ashbaugh, et al., 2017;

Cullen, 2015). Additionally, empowering students to choose activities improved their motivation

to engage (Ashbaugh, et al., 2017). Peer modeling, video modeling, and discussion-practice-

feedback models can be beneficial strategies for helping college students with ASD develop

appropriate social skills (Ashbaugh, et al., 2017; Cullen, 2015; Mason, et al., 2012; Kuder, &

Accardo, 2018; Wenzel, & Rowley, 2010). When students with ASD practice skills repeatedly in

a variety of situations (i.e. a controlled environment and then a natural environment), they are

better able to generalize new skills (Mann, & Karsten, 2020).

Researchers frequently state that individual, targeted intervention is beneficial. However,

in a review of relevant literature, authors rarely mentioned the benefits of group interventions for

this population. Therefore, I developed programming for students with ASD that targeted skills at individual and group levels. Using this combination, I provided in-depth feedback and conversation about skills at a personal level and a safe space to practice skills and engage with peers as a group. I employed a variety of intervention methods including a discussion-practice-feedback model, video modeling, and peer modeling to improve the generalization of skills across a variety of settings and scenarios. I developed a program curriculum to target skills related to population-specific needs and those described in the literature.

## Methods

### Participants

Participants included in the programing a) were enrolled in the BUILD program at UIndy b) had a diagnosis of ASD and c) self-indicated a lack of skills related to employment, independent living, or social engagement. Participants were between the ages of 18 and 24. Sixteen college students students took part in this program. Many students had other diagnoses in addition to ASD. One student had a secondary diagnosis of cerebral palsy and another had a secondary diagnosis of anxiety, obsessive-compulsive disorder, and attention deficit hyperactivity disorder. Three participants identified as female and the remaining 13 identified as male.

### Intervention

Participants took part in group and individual skills training sessions over 13 weeks. Participants attended one, hour-long skills training group per week for 12 weeks, one 30-to-45-minute one-on-one individualized session with an occupational therapy student per week for 13 weeks, and one 30-to-60-minute session with a volunteer in a natural setting per week for six to eight weeks. I hosted group sessions using a discussion-practice-feedback model and covered the

topics of social initiation, perspective-taking, social reciprocity, social problem solving, cooking, and financial management. I discussed the importance of nonverbal communication consistently across multiple group sessions with participants.

During the one-on-one sessions, I addressed social and life skill deficits related to each participant as identified by baseline and benchmark data collection. I hosted one-on-one sessions at the University of Indianapolis in a quiet location with few distractions. I suggested that each participant complete specific activities between sessions to practice applying the concepts discussed during one-on-one sessions. My intention by offering activities for practice was to help participants better generalize new skills to various settings. In addition to the one-on-one sessions, participants also engaged with a volunteer in a more natural environment (i.e. coffee shop, cafeteria, common spaces on campus, campus walking trails). Through a more natural interaction, participants had an opportunity to practice their skills in real-world scenarios. I coordinated these sessions to further aid participants in generalizing newly learned skills to real-world settings.

According to Bellini (2016), the most effective way to develop programming for students with ASD is to allow assessment and data to guide decisions made about curriculum and activities. Therefore, I utilized baseline data results to design programming for students. This ensured that topics covered were both relevant and engaging for students to help increase positive outcome progress.

**Outcome Measures**

I used multiple outcome measures to track student progress during this program. Due to the complex nature of social skills and the variety of environments college students encounter, I used several outcome measures. By having objective and subjective outcome measures, I could

gather data from participants and staff and from myself to create a holistic picture of participant progress over time. I utilized two quantitative measures: a standardized assessment tool and a self-reported measure completed by participants.

I used the Autism Social Skills Profile-2 (ASSP-2), developed by Scott Bellini (2016), to collect baseline, midpoint, and outcome data for participants. The ASSP-2 is a tool for evaluating the social skills of students with ASD. Though the tool is only validated for students up to 17 years old, the items are relevant to the early adulthood transition of college students in the current program. The subsections of this assessment tool are social emotional reciprocity, structured play activity, and detrimental social behaviors. Typical scoring of this assessment includes a raw score and a percentile score. I used the raw scores for data analysis because the percentiles were validated for students younger than the participants. The site mentor and I cooperatively completed the ASSP-2 for baseline, midpoint, and outcome measurements.

The site mentor and I discussed additional skills to expand on the results of the ASSP-2 including social and life skills related to independent living, employment, and education-specific aspects of college life via unstructured interview. Following this interview, students and I developed individualized goals related to social skills that impact their academic success and independence. Utilizing these goals, I created a social skills demonstration tracking sheet for each student. BUILD staff members completed these tracking sheets following each meeting with a student. Staff members wrote qualitative summaries of each student's use of skills related to their goals.

To measure self-perceived progress with social and life skill abilities, the participants completed two self-reported confidence surveys. Participants completed surveys one time before and after intervention implementation. I created a 15-scenario survey to measure confidence with

life skill scenarios. I also developed a 16-scenario survey to measure confidence with social skill scenarios. Participants ranked their confidence for each scenario on a 100-point Likert scale.

**Data Analysis**

I analyzed data from the ASSP-2 three times: before, during, and after the intervention. I initiated data analysis by averaging raw scores for each subsection and the total raw score at baseline. I then compared the averages to the midpoint and final average raw scores. This analysis indicated average progress made by participants overall. I also utilized raw scores to track students' progress in groups by grade levels and by gender. As a result of the analysis, I developed recommendations for future programming at BUILD that would be students' gender and grade levels.

I completed data analysis of self-reported confidence surveys before and after the intervention. I analyzed this data by calculating an average confidence rating for participants for each social skill and life skill scenario. I then compared the average at baseline to the average at the end of programming by question. These comparisons indicated average progress with confidence levels in specific social and life skill scenarios based on participant self-report.

I analyzed data from the social skill demonstration tracking sheets by reviewing staff notes and comments weekly to track patterns over time. I made a visual comparison of staff notes throughout the semester to determine participant progress on goals. I analyzed subjective descriptions of skill demonstration to determine whether students met their goals after implementing the program. I also identified specific patterns or circumstances that caused changes in participants' progress toward goals.

## Results

### Autism Social Skills Profile-2 (ASSP-2)

The average scores on the ASSP-2 at baseline indicated that students scored 115/196 for overall social functioning. The average increased to 128/196 at midpoint and 144/196 after implementation of all programming. I have outlined the results of the ASSP-2 in Tables 1.1 (baseline), 1.2 (midpoint), and 1.3 (final) below.

| Student Characteristics | N | Average Social Emotional Reciprocity | Average Structured Play Activity | Average Detrimental Social Behaviors | Average Overall Social Functioning |
|---|---|---|---|---|---|
| Male | 13 | 36/80 | 21/44 | 27/44 | 110/196 |
| Female | 3 | 51/80 | 31/44 | 35/44 | 136/196 |
| Freshman | 5 | 37/80 | 24/44 | 28/44 | 104/196 |
| Sophomore | 4 | 53/80 | 31/44 | 29/44 | 132/196 |
| Junior | 5 | 43/80 | 23/44 | 30/44 | 113/196 |
| Senior | 2 | 46/80 | 27/44 | 35/44 | 125/196 |
| All | 16 | 41/80 | 26/44 | 30/44 | 115/196 |

**Table 1.1** Baseline ASSP-2 Data Summary

| Student Characteristics | N | Average Social Emotional Reciprocity (change from baseline) | Average Structured Play Activity (change from baseline) | Average Detrimental Social Behaviors (change from baseline) | Average Overall Social Functioning (change from baseline) |
|---|---|---|---|---|---|
| Male | 13 | 47/80 (+11) | 30/44 (+9) | 31/44 (+4) | 123/196 (+13) |
| Female | 3 | 58/80 (+7) | 34/44 (+3) | 36/44 (+1) | 149/196 (+13) |
| Freshman | 5 | 39/80 (-2) | 25/44 (+1) | 29/44 (-1) | 111/196 (+7) |
| Sophomore | 4 | 55/80 (+2) | 32/44 (+1) | 32/44 (+3) | 137/196 (+5) |
| Junior | 5 | 52/80 (+9) | 28/44 (+5) | 33/44 (-3) | 134/196 (+21) |
| Senior | 2 | 53/80 (+7) | 31/44 (+4) | 35/44 (0) | 140/196 (+15) |
| All | 16 | 49/80 (+8) | 29/44 (+3) | 32/44 (+2) | 128/196 (+13) |

**Table 1.2** Midpoint ASSP-2 Data Summary

| Student Characteristics | N | Average Social Emotional Reciprocity (change from baseline) | Average Structured Play Activity (change from baseline) | Average Detrimental Social Behaviors (change from baseline) | Average Overall Social Functioning (change from baseline) |
|---|---|---|---|---|---|
| Male | 13 | 55/80 (+19) | 28/44 (+7) | 34/44 (+7) | 140/196 (+30) |
| Female | 3 | 63/80 (+12) | 38/44 (+7) | 38/44 (+3) | 168/196 (+32) |
| Freshman | 5 | 50/80 (+13) | 26/44 (+2) | 33/44 (+5) | 130/196 (+26) |
| Sophomore | 4 | 61/80 (+8) | 30/44 (-1) | 33/44 (+4) | 149/196 (+17) |
| Junior | 5 | 58/80 (+15) | 30/44 (+7) | 37/44 (+7) | 149/196 (+36) |
| Senior | 2 | 57/80 (+11) | 36/44 (+9) | 38/44 (+3) | 156/196 (+31) |
| All | 16 | 56/80 (+15) | 30/44 (+4) | 35/44 (+5) | 144/196 (+29) |

**Table 1.3** Final ASSP-2 Data Summary

**Social Skill Demonstration Tracking**

Common goals for multiple students were related to volume, greetings, starting a conversation, and maintaining a conversation. Initially, staff members commonly reported that students required numerous verbal cues to demonstrate skills. However, at the end of the semester, staff members noted that students required fewer verbal cues to initiate conversation and sometimes they demonstrated skills indepdendently After programming, some students still required occasional verbal or visual cues as reminders to start an appropriate conversation, reciprocate questions, or maintain a conversation. Multiple students who had goals for voice volume continue to require multiple verbal cues to change their voice volume as indicated by staff notes.

Qualitatively, the staff reported observed progress with several students. For example, one staff member noted that a student responded at the end of a session with a comment to "Have a nice day!". This was a considerable improvement in reciprocating conversation with staff as previous reports of this student's social interactions included walking away without saying anything. Other staff members reported that students who used to need prompting for initiating a greeting now spontaneously greet them even outside of scheduled sessions with comments like

"Hi, how are you?". Multiple staff members also noted that students began to greet them by name at the start of a session and that some even started to "end the session with an appropriate farewell".

However, there were some staff reports that some students continue to have difficulty initiating conversation, adjusting voice volume, and coping with anxiety and stress. For example, three students still require consistent verbal prompts to initiate communication with staff and to speak more quietly when others are nearby working. Additionally, staff reports indicated that students' social skill abilities commonly regressed when students were experiencing times of high stress (like midterm and finals weeks). Since multiple students also had goals related to utilizing coping skills, staff members were able to follow guidelines to help students initiate appropriate coping strategies. Staff often noted that they would require students to participate in coping skills for stress and anxiety, like deep breathing or a short walk outside during sessions. Most of the time, after participating in a coping skill, staff reported that participants were better able to demonstrate appropriate social skills.

**Self-Reported Confidence Surveys**

Overall, self-perceived confidence increased after the implementation of programming in all areas of social and life skills assessed with these surveys. Participants' overall average confidence level regarding life skills increased from 74/100 at baseline to 84/100 after programming. The overall average confidence for social skills increased from 69/100 at baseline to 81/100 after programming. Tables 1.4 and 1.5 (below) show the comparison of the pre and post confidence surveys.

| Question | N | *Average Life Skill Confidence Before | *Average Life Skill Confidence After (change from baseline) |
|---|---|---|---|
| Mail an envelope | 16 | 85 | 90 (+5) |
| Vote in an election | 15 | 68 | 87 (+19) |
| Open a bank account | 16 | 66 | 76 (+10) |
| Withdraw money from bank | 16 | 79 | 84 (+5) |
| Know what to do in car accident | 16 | 56 | 70 (+14) |
| Write a check | 16 | 68 | 81 (+13) |
| Deposit a check | 16 | 79 | 94 (+15) |
| Sort, wash, dry, and fold laundry | 16 | 91 | 92 (+1) |
| Grocery shop for specific items | 16 | 91 | 93 (+2) |
| Cook a meal from a recipe | 16 | 82 | 88 (+6) |
| Develop and stick to a budget | 16 | 69 | 75 (+6) |
| Take medication every day | 16 | 85 | 83 (-2) |
| Clean dorm/house | 16 | 76 | 83 (+7) |
| Pay my bills | 16 | 53 | 73 (+20) |
| Leave an appropriate tip | 16 | 67 | 85 (+18) |

**Table 1.4** Life Skill Confidence Survey Summary
*All items ranked on 0-100 point Likert scale

| Question | N | *Average Social Skill Confidence Before | *Average Social Skill Confidence After (change from baseline) |
|---|---|---|---|
| Initiate communication with professors about academics | 16 | 81 | 89 (+8) |
| Ask a question about an assignment until I've received a satisfactory response | 16 | 77 | 89 (+12) |
| Discuss conflict with a friend | 16 | 69 | 78 (+9) |
| Discuss conflict with a roommate | 16 | 64 | 70 (+6) |
| Invite others to do something with me | 16 | 66 | 78 (+12) |
| Participate in a group project for a class | 16 | 60 | 83 (+23) |
| Understand what I can and cannot do when living with a roommate | 16 | 81 | 83 (+2) |
| Start a conversation with a peer | 15 | 76 | 90 (+14) |
| End a conversation with a peer | 16 | 74 | 84 (+10) |
| Find events happening on/around campus | 16 | 61 | 79 (+18) |
| Participate in a job interview | 16 | 71 | 83 (+12) |
| Develop a resume for a job | 16 | 64 | 81 (+17) |
| Express my needs and concerns to program staff | 16 | 82 | 87 (+5) |
| Start a conversation with someone I do not know well | 16 | 52 | 74 (+22) |

| Question | N | *Average Social Skill Confidence Before | *Average Social Skill Confidence After (change from baseline) |
|---|---|---|---|
| Verbalize my emotions appropriately | 16 | 64 | 72 (+8) |
| Complete an application for a job | 16 | 67 | 76 (+11) |

**Table 1.5** Social Skill Confidence Survey Summary
*All items ranked on 0-100 point Likert scale

## Discussion

The purpose of this project was to create a curriculum and provide intervention to students with ASD to  improve students' abilities to navigate and succeed inside and outside of the classroom.  I developed curriculum and interventions based on the needs of 16 students with ASD as reported in interviews with staff and parents, on self-reported surveys from participants, interest surveys, objective assessments, and my review of the literature. Overall, participants demonstrated positive social interaction skills more regularly following the intervention according to the ASSP-2 and skill demonstration tracking sheets. Additionally, participants indicated overall that they felt more confident with participating in social and life skill scenarios. Participants were able to generalize skills to multiple settings including tutoring sessions, site staff interactions, meals, social engagement events, and gatherings with neurotypical peers on campus.

The collaborative efforts of myself, site staff, and outside volunteers allowed participants to practice skills in various settings to help with the generalization of learned skills as indicated by Mann and Karsten (2020). Outside volunteers engaged in peer mentoring activities with participants like the ones discussed by Ashbaugh et al. (2017) and Cullen (2015). Through the utilization of a discussion-practice-feedback based model, video modeling, and peer modeling as discussed in previous research, participants demonstrated more consistent use of appropriate

social skills based on setting (Ashbaugh, et al., 2017; Cullen, 2015; Mason, et al., 2012; Kuder, & Accardo, 2018; Wenzel, & Rowley, 2010).

Similar to research by Ashbaugh et al. (2017), the intervention provided to students to target work skills, academic-related social interaction skills, and peer engagement skills improved participants' abilities to appropriately engage with peers and academic staff. However, following the intervention, participants were no more likely to seek out social opportunities independently and still required a lot of verbal prompting and encouragement to attend social events, which differed from the results of Ashbaugh et al. (2017). Overall, participants demonstrated appropriate social skills more frequently and consistently as reported by site staff and outside volunteers. Participants also indicated improvements in their confidence with performing social and life skill related tasks following the intervention.

The combination of individual, targeted intervention and group-based intervention provided a setting and environment that fostered improved social and life skills of students with ASD. Some environmentally specific skills, like the ability to modify voice appropriately, did not improve consistently over the course of the program. Therefore, additional targeted intervention related to this skill may be beneficial for students who still have difficulty. Finally, utilization of tools like the ASSP-2 and student self-interest and self-reported confidence surveys were beneficial for developing relevant and engaging programming for the students.

For the future, it may be beneficial to implement group-based interventions with smaller groups of students. Students should be placed in small groups based on skill levels according to baseline assessments. Grouping students based on skill level will allow staff to implement a more tailored curriculum to students at various levels. Additionally, staff should continue to use the ASSP-2, or another objective assessment tool, before scheduling session topics for individual

and group programming. Participants in this program were more engaged when lessons were relevant to their skill levels. Some students did benefit from watching students with strengths in a skill model the expected behavior. However, other students were bored and uninterested if they thought they already knew the skill being taught, even when they were asked to model the skill for the group. Therefore, it is important that the staff at BUILD continue to develop and change curriculum activities to match student needs in order to see improvements in students' skills.

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