

INCREASING SOCIALIZATION IN ADULTS WITH ASPERGER'S SYNDROME

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Difficulties engaging in social activities are considered to be a core symptom of individuals with autism spectrum disorder (ASD). Both the literature and our clinical observations suggest that most individuals with ASD have a desire to engage in social activities, but social skill deficits make social interaction challenging, and in turn can lead to feelings of loneliness and isolation. Currently there are few resources to support adult students with ASD in forming friendships and involvement in the college community. Using a multiple baseline design over a 33-week period, this study evaluated the effectiveness of structured social planning for college students with ASD. Intervention included weekly sessions that included providing step-by-step social planning related to their interests, and feedback regarding their participation in social activities. In addition, training in specific organizational skills was implemented, such as determining activities, using a planner to ensure participation in the activities, inviting peers to activities, arranging for transportation, and so on. Results demonstrated that participants were not attending any social events throughout the baseline period. Following intervention, all participants increased the number of social events attended per week. Further, quality of life and satisfaction questionnaires all reported a higher satisfaction with their college experience and peer interactions following intervention. Finally, improvements were seen in other untargeted areas, including increases in non-structured social interactions, improvements in grade point averages, and employment. Results are discussed in regards to a creating a social support program for college students with ASD. © 2013 Wiley Periodicals, Inc.

The diagnostic criteria for autism spectrum disorder (ASD) include difficulties with socialization (American Psychiatric Association, 2000). Research suggests that even children who progress well with the acquisition of age-appropriate language structures may continue to have difficulties in socially engaging with peers as they grow older (Bauminger & Kasari, 2000; Howlin, 2000; Stewart, Barnard, Pearson, Hasan, & O'Brien, 2006; Strain & Schwartz, 2001). Although there is a large body of scholarly research on interventions for children with ASD, there is a paucity of intervention studies for the adult population.

Adults with disabilities are increasingly attending college, but their social participation and integration in the university is still below the level of students without disabilities (Dillon, 2007). The literature suggests that adults with ASD long for social relationships and often experience loneliness, but their social deficits may interfere with successful social engagement (Howlin, 2000). Likewise, individuals on the autism spectrum desire to contribute to their community, but frequently have difficulty initiating social interactions and engagement (Muller, Schuler, & Yates, 2008). Often, adults with ASD are aware of their social skill deficits and are less likely to feel satisfied with their socialization (Rao, Beidel & Murray, 2008). Furthermore, the symptoms of ASD often lead to nonacademic issues that interfere with overall success at the university level (Glennon, 2001).

Currently, there are few resources to support college students with ASD in forming peer relationships and integrating into the college community. Most universities provide limited accommodations

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for individuals with ASD, aside from the usual student support services guided by the Americans with Disabilities Act (ADA). That is, ADA provides guidelines for postsecondary education and protects any person with a physical or mental impairment from discrimination; however, no funding is provided for the level of services students with ASD need to succeed (Dillon, 2007). Universities usually provide general “one-size-fits-all” services that apply to all types of disabilities, such as alternative examination formats, tutors, note-takers, and so forth. These services often do not address the specific and unique social and behavioral needs that students with ASD require to succeed in higher education (Dillon, 2007). These types of support are particularly important, as there is a positive correlation between depression and social failure for individuals with ASD (Barnhill, 2001), and without parental input, an individualized educational program, social support, and so on, many students with autism find higher education challenging or unattainable.

Although some centers have developed social skills interventions to support young adults with ASD, few organizations have documented their work (Tse, Strulovitch, Tagalakis, Meng, & Fombonne, 2007). Therefore, there are few systematic and replicated programs at the college level. A study by West (1993) showed that 86.4% of college students with disabilities reported encountering barriers to their education because of a lack of understanding and cooperation from university staff. This lack of understanding may be due to the minimal information that has been recorded regarding effective social interventions for college students with ASD.

In regard to specific techniques aimed at improving socialization, there are some strategies, such as structured social activities, facilitated social interactions, and opportunities to observe and model socially appropriate behaviors, that have been shown to be effective with adults with ASD (Muller et al., 2008). College students with ASD, unlike most neurotypical individuals, may have limited experiences with peers and less knowledge of appropriate social skills, which can be particularly challenging in settings that afford many daily hours of free time. College students are also expected to make friends and independently create and engage in social activities. In regard to engaging in social activities, adults on the autism spectrum typically prefer, and are most successful with, activities and events that incorporate their preferred interests for social interaction (Muller et al., 2008). Whereas preferred activities may be available within the community, most adults with ASD engage in their preferred interests alone, as seeking out and joining in community events can be challenging for individuals with social difficulties.

Given the above issues, the purpose of this study was to assess the effectiveness of structured social planning for college students with ASD around their specific interests and to evaluate whether improvements in structured social activities would affect the participants’ overall quality of life. Therefore, additional social validation data were gathered on other social activities, academics, employment, and satisfaction of the socialization experiences following the social intervention.

METHODS

Participants and Setting

Three adults diagnosed with ASD (Asperger’s syndrome) by an outside agency participated in this study. At intake, all exhibited symptoms consistent with the diagnosis in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; American Psychiatric Association, 2000). Individual characteristics are listed in Table 1. Participants were full-time students at a 4-year university, and all reported to be experiencing significant social difficulties at the start of the study. Our Center confirmed that they exhibited social difficulties through: (1) direct observations; (2) peer reports on their social relationships; (3) baseline videotaped interactions of social conversation with peers; and (4) lack of self-reported social activities. Participants were selected from a pool of 12 students receiving services because they were the most severe in regard to a low level of social activity.

Table 1
Participant Characteristics

	Matt	Greg	John
Age	23 years, 11 months	21 years, 6 months	21 years, 7 months
Sex	Male	Male	Male
Level of Education	Junior transfer at 4-year university	Junior transfer at 4-year university	Fourth year at 4-year university
Ethnicity	Caucasian	Caucasian	Hispanic
Diagnosis	Asperger's syndrome	Asperger's syndrome	Asperger's syndrome

Participant 1. Matt was 23 years, 11 months old at the start of the study and of Euro-American origin. He was a transfer student from a community college and a Business Economics major. He lived in a single room in a graduate student apartment and was not involved in any extracurricular or recreational activities.

Participant 2. Greg was 21 years, 6 months old at the start of the study and of Euro-American origin. He withdrew before the end of his first semester at a major university and returned to his home, where he was treated for depression and social anxiety. He began services during his first year at a new university and pursued a math major. He lived with his parents and was not involved in any extracurricular or recreational activities.

Participant 3. John was 21 years, 7 months old at the start of the study and of Latino (Mexican) origin. He was referred to the Center by a campus counselor who felt that his social needs were not being properly addressed; he was in his fourth year of studying Cultural Anthropology with a minor in Fitness Instruction. He lived in an off-campus apartment and stated in a clinical interview that he has always been a "social recluse."

All intervention sessions were implemented on a university campus in a clinic room at the University Autism Center. Social activities took place in each student's natural settings on the university campus (e.g., dining commons, recreation center, dormitory), in the community (e.g., downtown, bowling alley), or off-campus apartments.

Experimental Design and Procedure

The effect of structured social planning was evaluated using a multiple baseline across participants design over a 33-week period. Baseline sessions were systematically staggered for 3, 4, and 5 weeks, respectively, for each participant. Sessions were conducted once per week for 60 minutes.

Baseline. Prior to intervention, a baseline phase was conducted with each student. During baseline, no instructions were provided concerning social activities. Rather, the participants were asked to continue as they normally would in their everyday lives. To control for the fact that an activity log would be employed later in the intervention condition, each student was instructed to keep an activity log of all social activities attended each week. A clinician sent a reminder between sessions through e-mail or contacted the participants by phone to remind them to fill out the daily log. During each session, the activity log would be reviewed for the previous week.

Intervention. Sessions were conducted for 1 hour per week and consisted of: (1) assessment of social activities based on each student's interest; (2) researching community/university events to find an appropriate ongoing club or activity based on the student's interest; (3) organizational skills so that each student could use time-management strategies to remember to attend the event and work

other student responsibilities around the social event; (4) designation of a neurotypically developing peer mentor (when necessary) to attend the social event; (5) engagement in weekly meetings to discuss the social event and ways to interact with others at social events; and (6) systematic fading of support. Intervention procedures included step-by-step social planning, support, and instruction in organizational skills as described below. The daily activity log (see baseline) was also continued throughout the intervention condition.

Assessment of Social Activities. A graduate student clinician or post-doctoral clinician first met with the participants to discuss their interests, likes, dislikes, and other preferences. The clinician probed for information regarding the participants' hobbies, social activities of interest, extracurricular activities in high school, and goals for the future.

Researching Community Events. From the information gathered during the initial meeting, the clinician researched community and university social clubs and activities and created a menu of at least three social activities that fit the interests of the participant. In the second session, the menu of social opportunities for the upcoming week was presented to the participant. The options consisted of school-affiliated clubs, one-time social events on campus or in town, community organizations, leisure classes, events in the dormitories, and dining with peers. The participant was asked to select a minimum of one activity that he would attend during the week. Specifically, Participant 1 had an interest in music and dancing. The clinician presented a number of concerts, dance clubs, music groups, and music classes. He chose a campus Swing and Ballroom dance class to attend. Participant 2 was interested in math, computers, and sports. The clinician presented a number of opportunities, including math clubs, campus sporting events, televised sporting events, and computer clubs. Participant 2 selected the campus math club and the campus juggling club, and also requested to attend weekend sporting events and outings with support. Participant 3 was interested in exercise and fitness. His clinician presented him with a variety of clubs on campus, including group fitness classes, dance classes, outdoor adventure programs, and competitive sports clubs. He joined the salsa dance club, the Swing and Ballroom Dance Club, and the Triathlon Club. Participant 3 also began exercising at the University Recreation Center several times a week. Once a specific activity was decided on, the clinician and participant developed an arranged plan to participate in the activity, that is, transportation, registering for a class, initiating asking a friend, and so forth.

Organizational Skills. Each weekly session, participants were trained how to manage the social activities that they selected. The purpose of the organizational skills was to ensure that participants would attend the club. Prior to intervention, all 3 reported that they did not engage in available activities or events because they were playing on the computer, forgot activities that were available, were studying, or did not feel like attending a social event. Further, we wanted to make sure that academic assignments were scheduled around social activities so that the social activity would not interfere with their academics. Therefore, participants were instructed to bring a daily planner to the weekly intervention sessions, and the clinician would assist them in documenting the time, place, and activity for the week. If the participant also used an online calendar or phone organizer, he was trained how to input the same details for the activity in the additional format. Next, all contact information and directions for the event were located. Contact information was put into the participant's cell phone, and a copy of the directions was provided for him to keep.

Peer Mentors. Participants were given the option to have a similar-age neurotypically developing peer attend the activity with them for additional support. The peers were undergraduate research assistants receiving practicum course units at the university. All were upper-division undergraduate students who had taken an undergraduate course in autism and had previous training in

the symptoms and treatment of ASD. Participant 1 requested that a peer mentor attend the dance class with him. In addition, a peer mentor attended most of the designated parties in the college town. Participant 2 did not request a peer mentor for the math or juggling clubs, but did request a peer mentor for the weekend sporting events and outings. Participant 3 requested that a peer mentor attend the dance clubs with him, but he attended the Triathlon Club and exercised on his own.

Weekly Meetings. During weekly meetings, each participant discussed the social event. Areas discussed included how to meet people by introducing oneself, how to get contact information (phone numbers) from peers, how to invite peers to attend events, topics of conversation to bring up or discuss, how to ask questions of peers about their interests, appropriate ways to say "goodbye" when a club finishes, and so forth. In addition, the previous week was discussed and feedback was given by the clinician in regard to issues that arose during the meetings, such as asking someone on a date, how to ask someone to dance, how to compliment a peer, how to ask for help, and so on.

Fading Plan. Structured social planning was gradually faded. In addition, after the intervention ended, the participants were encouraged to continue to engage in social activities without a peer mentor. The intervention ended when the participant independently came up with three options for social activities through Internet searches and attended social activities at least weekly for four consecutive sessions. Data collection continued to ensure there was not a decline in social engagement and organizational skills, including scheduling events with peers.

Dependent Measures

Data were collected for three dependent measures during baseline and intervention. First, we recorded the number of social activities attended by the participant per week. Second, we collected social validation data through: (a) overall quality of life and (b) self-report on the satisfaction level of socialization. Each data category is defined below.

Social Activities. Data on social activities were collected each week through a systematic activity log and verified through the peer mentor and occasional spot checks by the clinician or undergraduate students (e.g., walking past the club). Each session, data were obtained on the activity, time, place, location, and peers involved for every social activity attended by the participant throughout the previous week. The number of social activities attended per week was calculated by summing the events that were recorded on the social log for each participant. The total number of social activities attended per week was recorded.

Quality of Life. Quality of life was evaluated as a social validity measure to assess the type and quality of social interaction, academic achievement, and employment activity of the participants during each stage of the study. For social activity, we recorded regular and consistent formal activities as well as any other unstructured social activities. Regular and consistent group activities were official extracurricular organizations (e.g., Ballroom Dance Club, Triathlon Club, etc.) that met on a weekly basis. For academics, we recorded grade point average (GPA) and study habits (e.g., whether the participant studied in a group, structured tutoring sessions, or alone). For employment, we recorded job positions obtained by the participants.

Satisfaction of Socialization. Social validity of the treatment was also assessed through the participants' satisfaction of socialization before and after intervention. The satisfaction level was evaluated through a questionnaire that included: (1) satisfaction with college experience; (2) satisfaction with peer interactions; (3) confidence in peer conversations; and (4) satisfaction with number of friends. Participants were directed to rate their satisfaction level in the areas above on a 7-point Likert scale, ranging from 1 (very unsatisfied) to 7 (very satisfied).

Data Recorders and Reliability

Reliability on the number of social events that the student engaged in was accomplished by unobtrusive spot-checking on attendance. A naïve observer confirmed participation of the student for 33% of the social activities.

RESULTS

The results indicate that all 3 participants improved their social activity following the start of the intervention program. Results for each dependent measure are described below.

Social Activities

Figure 1 shows the number of social activities per week for each college student. Data were collected over a period of 33 weeks. During baseline, results were consistent with the reason for referral, with each participant engaging in no social activities. However, at the start of the intervention, there was a rapid increase in the number of social activities attended by each participant. Greg attended an average of 3.8 social activities per week (range, 1–9), Matt averaged 3.3 social activities per week (range, 0–8), and John averaged 6.0 social activities per week (range, 0–15). At follow-up, all 3 participants remained at or above the level of social activities achieved during intervention.

Quality of Life

Table 2 shows results for the changes in overall quality of life for each participant. Baseline results show that Matt did not engage in any regular and consistent group activities, he had a cumulative GPA of 2.37, and he was not employed. By the end of intervention, Matt had hosted a party with his peers, enrolled in a Swing and Ballroom dance class, and was employed as a host for a radio station at the University. He started to attend group tutoring sessions and increased his cumulative GPA to 2.83.

Greg engaged in no social activities at baseline, he entered school with a 3.3 GPA from his previous university, and he was unemployed. After the intervention program, Greg had moved out of his parents' house to an apartment with 10 others and was dating a girl at his university. He graduated with a cumulative 4.0 GPA and became a tutor for the SAT test. Furthermore, he was accepted and enrolled in a doctoral program at a major university, where he was supported by an academic fellowship.

John participated in no social activities during the baseline phase, had a cumulative 2.42 GPA, and was also unemployed. Throughout the 24 weeks of intervention, John became an active member of the Swing and Ballroom Dance Club, became a mentor for the Best Buddies program, and participated in events for the university's Triathlon Team. He began to initiate weekly study sessions with peers and increased his cumulative GPA to 2.51. Following the program, he applied for and received a position working at the university in the mailroom.

Satisfaction With Socialization

Table 3 shows the pre-intervention and post-intervention satisfaction level of socialization for each participant. At baseline, all participants were "unsatisfied" or "very unsatisfied" with their college experience and peer interactions. However, after intervention, all participants increased into the "satisfied" range level with their experience at school and their interactions with others. Furthermore, before intervention, all participants were "insecure" or "very insecure" in their confidence with peer conversations. After intervention, their confidence level improved into the "confident" range in peer conversation. Lastly, the participants' satisfaction in regard to number of friends ranged from

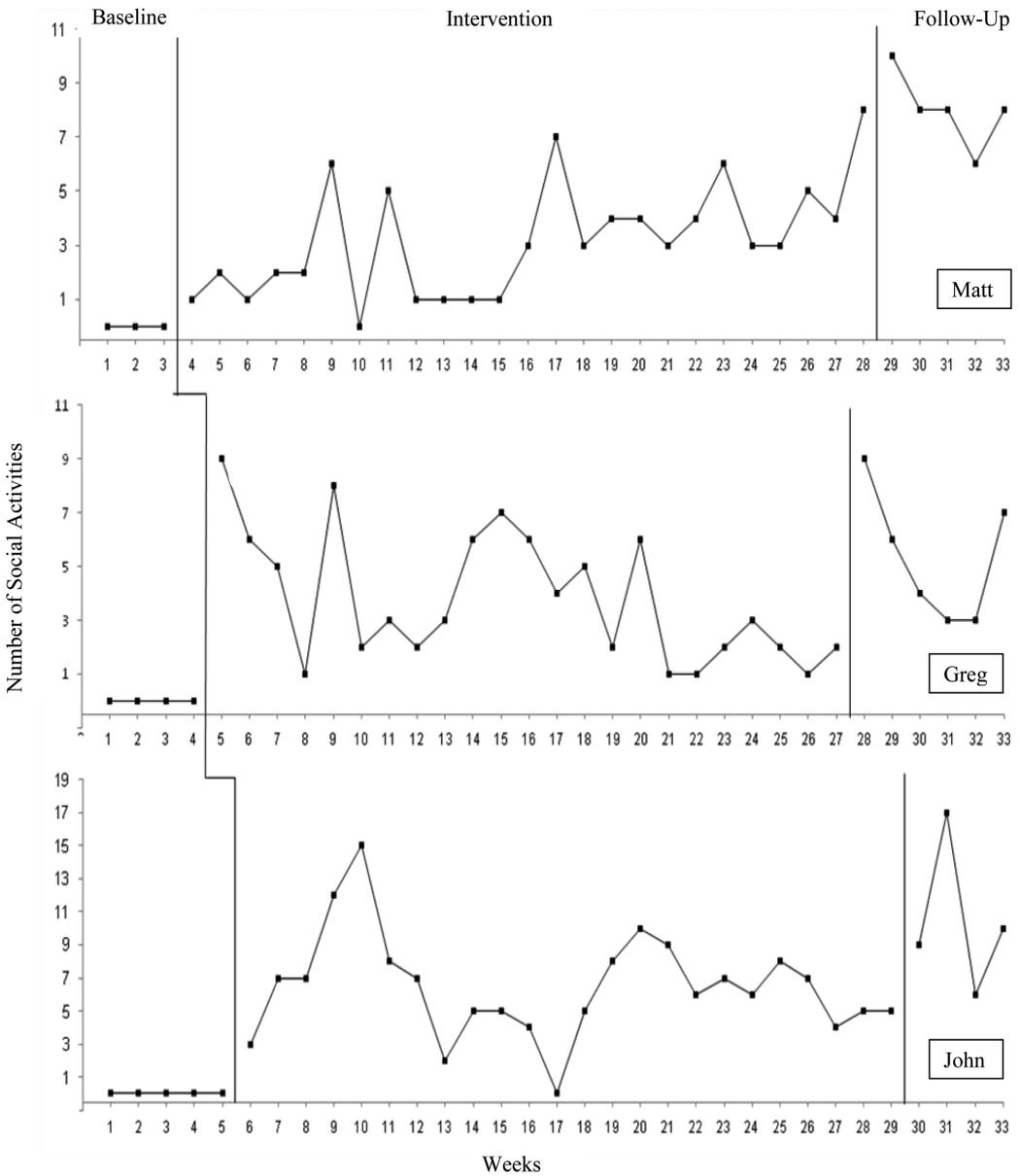


FIGURE 1. The number of social activities each participant engaged in each week.

unsatisfied to neutral at baseline. After intervention, the results showed that every participant increased his level of satisfaction with number of friends.

DISCUSSION

This study demonstrated that the use of structured social planning resulted in an increased level of socialization for college students with ASD. A greater number of social activities per week was

Table 2
Quality of Life

	Baseline			Post-Intervention		
	Social	Academics	Employment	Social	Academics	Employment
Matt	No social activities	Cumulative 2.37 GPA	Unemployed	<ol style="list-style-type: none"> 1. Hosts parties with peers 2. Participant in Swing and Ballroom dance class 3. Visits peers during summer 4. Initiates eating with others in dining commons 	<ol style="list-style-type: none"> 1. Cumulative 2.83 GPA 2. Attends group tutoring 	<ol style="list-style-type: none"> 1. Hosts a radio show at the university
Greg	No social activities	Cumulative 3.3 GPA at previous university	Unemployed	<ol style="list-style-type: none"> 1. Dating and had a girlfriend for more than a year 2. Initiated independent living and moved out of parent's house to apartment off campus 	<ol style="list-style-type: none"> 1. Cumulative 4.0 GPA at undergraduate university 2. Attends doctoral program at a major university 	<ol style="list-style-type: none"> 1. Tutor for SAT test
John	No social activities	Cumulative 2.42 GPA	Unemployed	<ol style="list-style-type: none"> 1. Active member of Swing and Ballroom Dance Club 2. Mentor for Best Buddies Program 3. Member of university Triathlon Team 4. Joined a co-op 	<ol style="list-style-type: none"> 1. Cumulative 2.51 GPA 2. Initiates study groups 	<ol style="list-style-type: none"> 1. Employed at the university

noted for all participants, as was a higher satisfaction with college experience and peer interaction. These findings have both theoretical and applied implications.

First, the literature suggests that adults with ASD, particularly those with fewer support needs, are very likely to develop comorbid disabilities, including depression and anxiety (Sterling, Dawson, Estes, & Greenon, 2008). These psychiatric disorders are very likely to be a direct consequence of the symptoms of ASD, as challenges with socialization may lead to few and poor-quality peer social relationships, which in turn may lead to depression and anxiety in social situations resulting in a vicious circle. This theory is supported by research showing that social and vocational treatment programs can reduce depression and anxiety in adults with ASD (Hillier, Fish, Siegel, & Beersdorf, 2011).

In regard to the success of the program, many individuals with ASD have specialized interests. Research with both children and adolescents suggests that if specialized interests are incorporated into the social activity, there are large increases in both the quantity and quality of peer interactions (Baker, Koegel, & Koegel, 1998; Koegel, Vernon, Koegel, Koegel, & Paullin, 2012; Koegel, Fredeen, Kim, Daniel, Rubinstein, & Koegel, 2012). The present study used a collaborative process to determine appropriate social activities. The activities were both structured and of interest to the student with ASD so that socialization was facilitated and motivating.

Table 3
Satisfaction in Socialization

	Baseline				Post-Intervention			
	Satisfaction With College Experience	Satisfaction With Peer Interactions	Confidence in Peer Conversations	Satisfaction With Number of Friends	Satisfaction With College Experience	Satisfaction With Peer Interactions	Confidence in Peer Conversation	Satisfaction With Number of Friends
Matt	2 Unsatisfied	2 Unsatisfied	2 Insecure	3 Somewhat unsatisfied	6 Satisfied	5 Somewhat satisfied	5 Somewhat confident	5 Somewhat satisfied
Greg	2 Unsatisfied	2 Unsatisfied	2 Insecure	2 Unsatisfied	6 Satisfied	5 Somewhat satisfied	6 Confident	5 Somewhat satisfied
John	1 Very unsatisfied	1 Very unsatisfied	1 Very insecure	4 Neutral	6 Satisfied	6 Satisfied	6 Confident	7 Very satisfied

Due to increasing numbers of students with ASD entering higher education, the importance of social training becomes an issue. Many college students withdraw and engage in few, if any, social activities, as noted in the baseline measures in this article. This may place them at greater risk for depression and social anxiety (Fitzgerald, 2004). In contrast, if college programs provide guidance with structured social opportunities, severe challenges related to social issues and the consequences of a lack of socialization may be reduced or eliminated.

The importance of socialization is evidenced by our social validity data. These students required very little specialized intervention, with only 1 hour of weekly intervention and the option of a support peer who accompanied them to the social events. Our social validation data suggested that this small amount of intervention resulted in widespread positive improvements in academics, employment, the number of friends/peers with whom they socialized, reported satisfaction with their college experience, type and number of peer interactions, and their confidence during peer interactions. Because a large percentage of individuals with Asperger's syndrome experience comorbid disorders, such as depression and anxiety (Hillier et al., 2011), as a consequence of social challenges, procedures that improve their successful peer interactions can be of particularly great importance.

Future research is warranted relating to long-term outcomes of college students with ASD who receive social support. It should be noted that all of the college students who participated in this study also received some individualized intervention for social conversation (asking questions, taking an interest in the conversational partner's interests, responding appropriately to peers, etc.). Many studies have suggested that a combination of programs is critical, as no single intervention program has resulted in a complete amelioration of social challenges in this population (Koegel & LaZebnik, 2009; Koegel & Koegel, 2012).

In summary, the present study resulted in a rapid increase in social activities using existing university resources. The students also reported high satisfaction in regard to the activities and the intervention. Such interventions can be easily and effectively implemented and may have significant and widespread impact. This is especially important in settings such as college, where there is little to no parent involvement and there is often no support for idiosyncratic difficulties that may interfere with appropriate socialization in this population. Further research on programs that assist with peer interaction in adults and the concomitant effects of peer socialization should be particularly fruitful.

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