THE EFFECTS OF STAFF PROXIMITY ON DISRUPTIVE AND ON-TASK BEHAVIORS

IN AUTISTIC ADOLESCENTS

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ABSTRACT OF THE THESIS

The Effects of Staff Proximity on Disruptive and On-Task Behaviors in Autistic Adolescents

by Kathryn Prozzo

Thesis Chair:
Robert LaRue

Autism is a lifelong condition, yet many supports for autistic individuals end abruptly upon graduation. As such, it is crucial for educators and practitioners to teach students with ASD to perform skills with minimal assistance and supervision. Staff proximity may impact on-task and disruptive behaviors amongst learners with ASD in school settings. Various interventions may be able to increase on-task behavior when staff are out of the learner’s sight. The current investigation consisted of two parts. Part one evaluated the impact of staff standing at various distances on the disruptive and on-task behaviors of three adolescent males with ASD. Part two examined the efficacy of a visual cue, and the visual cue plus differential reinforcement on increasing the participants’ on-task behaviors when staff were out of sight. For two participants, on-task behavior was lower when staff were out of sight. These findings suggest staff being out of sight may negatively impact on-task behavior, but this effect does not apply to all individuals. The visual cue plus differential reinforcement was effective for one participant, suggesting effective interventions may vary.
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The Effects of Staff Proximity on Disruptive and On-Task Behaviors in Autistic Adolescents

A major goal of educating individuals with Autism Spectrum Disorder (ASD) is to prepare them for the transition to adulthood by teaching skills that are required to live and work independently. For all learners, the purpose of the general education process is the same—to teach people the skills that they will need throughout their lives. These skills ultimately aid in pursuing gainful employment, being involved in communities, remaining healthy, and meeting individual aspirations. Ultimately, the education process should create functional adults who can live and work independently. However, for autistic adults this end-goal is rarely met.

A large body of research describes the poor outcomes of adults with ASD, including unemployment or underemployment, a lack of community involvement, and increased incidence of diseases and mental health conditions (Roux et al., 2017; Blackorby et al., 2007; Taylor & Seltzer, 2011; Shattuck et al., 2012; Fuchs et al., 2018; Anderson et al., 2014; Chamak & Bonniau, 2016). According to Roux et al. (2017), only 14% of adults with ASD reported having community-based employment. Similarly, Taylor and Seltzer (2011) reported only 18% of their sample of adolescents with ASD maintained employment, 6% without supports and 12% with supports. Those who were employed worked unskilled jobs and were not employed full-time. Shattuck and colleagues (2012) examined a large national sample and concluded that young adults with ASD had the highest risk of not being involved in any post-secondary education or employment when compared to young adults with other disabilities. The results of these studies make clear that autistic adults are tremendously unemployed or underemployed.

The National Autism Indicators Report shows that 27% of adults with ASD reported having no work or community-based activities in (Roux et al., 2017). While nearly three out of
four respondents stated they had participated in some type of work or day activity in the prior two weeks, only 44% reported that their activities were community-based (Roux et al., 2017). These findings suggest that most autistic adults have no community involvement. The Special Education Elementary Longitudinal Study (Blackorby et al., 2007) showed that individuals with disabilities who were rated by their parents as having higher functional cognitive skills were more likely to be involved in school or community groups than those rated by their parents as having medium functional cognitive skills. Level of functional cognitive skill was determined by parents rating how well their child independently performed four daily living skills on a 4-point scale. A summary score between zero and 16 was calculated by totaling the scores from the four activities. In this study, having high-rated social skills and taking more than 80% of classes in general education settings were correlated with belonging to school or community groups. These findings suggest autistic individuals who cannot independently perform the daily living skills included in the functional cognitive skill rating are at an increased risk of not being involved in community or school-based groups. Overall, these studies demonstrate that autistic individuals are widely lacking community involvement.

One of the most striking outcomes in autistic adults is poor physical health and higher incidence of co-occurring mental conditions. The National Autism Indicators Report (Roux et al., 2017) states that half of adults with ASD have at least one comorbid physical health condition, the most common being high blood pressure and high cholesterol. More than half of adults with ASD had a Body Mass Index (BMI) categorizing them as overweight or obese. In the same sample, over half of respondents reported having at least one mental health condition including anxiety, mood disorders, and other mental health diagnoses. Eaves and Ho (2008) reported a higher figure, finding that 77% of autistic young adults had a comorbid mental health
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diagnosis. Research has also demonstrated that anxiety disorders are more prevalent in autistic individuals than in the general population (Gillott & Standen, 2007).

While these negative outcomes are not optimal for the individual, they also pose major concerns for families of autistic people. Chamak and Bonniau (2016) describe parent experiences caring for adults with autism. The parents in this study expressed concerns over a lack of services, a high level of dependence, and anxiety about the future. Easter Seals (2008) surveyed more than 2500 parents and reported that parents of children with ASD had significant concerns about their child’s quality of life, who would care for their child after they died, and how their family would navigate these issues financially. Parental concerns regarding who would care for their children after their death were not unfounded. Anderson et al. (2014) compared young adults with ASD to young adults with other disabilities and concluded that those with ASD were least likely to live independently and more likely to live with a parent or guardian. A survey conducted by Gerhardt and Lanier (2011) found that out of 200 adults with autism, 85% still lived with their parents or a family member. When family members are no longer able to care for their autistic relative, restrictive residential placements become necessary.

To add to these concerns, caring for an autistic person through their lifespan is expensive. One estimate of the lifetime cost of an ASD diagnosis for an individual in the United States is 3.2 million dollars (Lokhandwala et al., 2012). Hurley-Hanson, Giannantonio and Griffiths (2020) detail the many costs of autism that comprise this figure. These expenses include social, psychological and behavioral programs, applied behavior analysis, speech, occupational therapy, day programs, support services, transportation, respite care, employment support, special foods, modifications to the home, service dogs, and other therapies, supplies, and accommodations.
Support services are often funded by state Developmental Disability (DD) agencies, with 89% of autistic adults reporting that they receive at least three services funded by their state or county and 49% reporting receiving six or more DD-funded services (Roux et al., 2017). The services most used by adults with ASD are health care, dental care, and transportation with smaller subgroups utilizing services related to benefits or insurance, social relationships, education or training, respite, family support, residence, and employment (Roux et al., 2017). Importantly, one in four participants also reported that they were not receiving all the services that they needed. The cost to provide these necessary services is immense and would be even greater if the service needs of all adults with ASD were being fully met. A study by Buescher, Cidav, Knapp and Mandell (2014) found that between 175 and 196 billion dollars are spent on services for adults with autism annually, approximately three times the estimated amount spent on autism services for children. Furthermore, as individuals with ASD age, their primary caregivers may no longer be able to care for them. If these adults have not been taught the skills needed to live independently, they will then require a high level of support from these services for the remainder of their lives. DD agencies are primarily funded through Medicaid Home and Community Based Services (HCBS) waivers, which are jointly funded through both federal and state taxes (Financial Management, n.d.). Ultimately, after families are no longer able to care for autistic adults the taxpayers who fund community programs are left with an immense expense. One way to reduce this expense is by increasing autistic individuals’ level of independence, thereby reducing their reliance on both their families and on publicly funded services.

The Importance of Independence
The aforesaid negative outcomes suggest autistic individuals may not be learning this skills they need to become independent adults. In order to improve outcomes for adults with ASD, and thereby reduce strain on families and associated costs of dependence, individuals must be taught the requisite skills for independent life. These necessary competencies include a wide array of daily living skills and vocational skills. Moreover, to achieve true independence autistic adults must be able to display these skills alone, without a staff member or guardian standing nearby to assist them.

Often teachers and practitioners mistakenly assume responding is independent when a student can complete a skill without prompting whilst the teacher is in close proximity. However, close staff proximity may mask failures in independent responding. As such, it is crucial to incorporate proximity fading in instruction. The current body of literature fails to emphasize the importance of fading staff proximity to allow for independent responding. In fact, there is a stark paucity of research involving the performance of skills with distant staff proximity as a targeted outcome. This lack of proximity fading could contribute to the failure of many autistic adults to achieve desirable outcomes.

Despite the importance of increasing independence and fading staff intervention, it is common practice in special education to utilize intensive staffing, such as one-to-one aides and individually assigned paraprofessionals (Giangreco, Edelman, Broer & Doyle, 2001). According to the Bureau of Labor Statistics (2020), nearly 1.4 million paraprofessionals were employed in the United States in 2019. While the roles of paraprofessionals vary among settings, the US Department of Education defines paraprofessionals as “employees who provide instructional support under the direct supervision of a teacher” (2016). This misuse of paraprofessionals has been reported to result in numerous negative effects on learners including dependence on adults,
interference with instruction, lack of interaction with peers, and increased inappropriate vocalizations (Giangreco, Edelman, Luiselli & MacFarland, 1997; Young, Simpson, Myles, & Kamps, 1997).

**Positive Effects of Close Staff Proximity**

Werts, Zigmond, and Leeper (2001) examined the relationship between on-task behavior and paraprofessional proximity. Werts and colleagues (2001) conducted this study across three primary-school aged participants with disabilities and their assigned paraprofessionals. Participants attended three different schools and were in kindergarten, first grade, and second grade. All participants were diagnosed with disabilities covered in the funding categories of the Individuals with Disabilities Education Act, but specific diagnoses were not reported. Close and distant proximity conditions were alternated in a multielement design, with the paraprofessional being within 2 feet of the student in the close proximity condition and more than 5 feet away in the distant condition. Data were collected on paraprofessional proximity, interactions between students and paraprofessionals, and student academic engagement using 6-s partial interval data collection. Results showed that academic engagement was higher and non-engagement was lower for all participants when paraprofessionals were close to the students.

Conroy, Asmus, Ladwig, Sellers, and Valcante (2004) conducted a study across six classrooms in six different elementary schools within a school district. Six children participated in this study, and all had diagnoses of ASD and ranged in age from 5 to 7 years. Each participant was observed in their classroom for approximately 15 to 20 min per session during natural classroom activities. Challenging behavior was defined individually for each participant and included behaviors such as inappropriate vocalizations, disruptions, off-task behavior, and stereotypy. Engagement was also recorded. Independent variables included adult proximity,
defined as an adult being within arm’s length of the child for at least 3 s, and no adult proximity. Results suggested that the effects of staff proximity on challenging behaviors varied across participants. For five out of six participants, engagement increased when adults were in close proximity. For four out of six participants, engagement more often followed an adult directive if the adult was in proximity than when they were not. Overall, these results indicate adult proximity increases academic engagement.

Russel, Allday, and Duhon (2015) sought to maintain task engagement in a 4-year-old male while decreasing proximity of a paraprofessional in an inclusive pre-kindergarten classroom. The participant’s specific disability was not reported; however, it was stated that he required high levels of assistance from the paraprofessional. The physical distance between the student and the paraprofessional was measured, as well as the student’s task-engagement. A withdrawal design with a nested changing criterion design was used to evaluate the effects of manipulating the paraprofessional’s proximity, and the number of intervals in which she was less than .9 m from the student. Results showed that abruptly withdrawing paraprofessional proximity produced a significant decrease in task engagement. However, the systematic fading of paraprofessional proximity resulted in the participant’s task engagement remaining comparable to his peers.

**Negative Effects of Close Staff Proximity**

In a qualitative study by Giangreco, Edelman, Luiselli, and MacFarland (1997), general education classrooms containing students with disabilities were observed. A team of five researchers conducted a total of 110 classroom observations and took qualitative notes. Semi-structured interviews were also conducted with the classroom staff members, related service providers, parents, and administrators. Both the observational and interview data were then
analyzed using categorical coding. Based on this data analysis, the authors reported that paraprofessionals were in close proximity to the disabled learners for the majority of the day. Negative effects of this prolonged proximity including an increased dependence on adults, interference with instruction by the teacher, reduced interactions with peers, and loss of personal control were reported. Ultimately, the authors suggested developing service delivery procedures that still provide necessary support but avoid any potential negative impacts of prolonged adult proximity.

Wilczynski, Fusilier, Dubard, and Elliott (2005) experimentally evaluated the effects of staff proximity on on-task behavior in a 15-year-old male diagnosed with autism. Following baseline, close proximity and distant proximity conditions were alternated twice before an intervention was implemented. In the close proximity condition the teaching assistant was directly next to the student and in the distant proximity condition the teaching assistant was on the other side of the room. Verbal attention was held constant across close and distant proximities. Results showed that on-task behavior was significantly higher during the distant proximity conditions. The authors suggest that the participant’s on-task behavior may have been maintained through social negative reinforcement, as a means of avoiding close contact with instructors. The results of this study suggest close proximity may decrease on-task behavior for some learners.

Young, Simpson, Myles, and Kamps (1997) also reported negative effects of close paraprofessional proximity. In this study, three autistic males, aged 7 to 9, who attended second or third grade in an inclusion program were directly observed. Behaviors measured included on-task, in-seat, self-stimulatory behavior, and vocalizations, and were examined as a function of paraprofessional proximity. Results showed that two out of three participants displayed
increased inappropriate vocalizations when the paraprofessionals were within 2 ft. Additionally, the teacher more often initiated interactions with the students when the paraprofessionals were more than 2 ft away or out of the room. These results suggest close paraprofessional proximity may have negative impacts. In-seat behavior was high for all participants both when the paraprofessionals were within 2 ft as well as when they were out of the room, suggesting in-seat behavior was not related to paraprofessional proximity. On-task behavior related to distance from the paraprofessional varied for all three participants. As a result, the experimenters were unable to draw finite conclusions about the relationship between on-task behavior and paraprofessional proximity.

**Purpose of the Current Investigation**

The body of literature examining on-task and disruptive behavior as it relates to paraprofessional proximity is scarce and inconclusive. Most of the studies involve comparisons of close proximity to distal staff positioning without evaluating the effects of varied staff positioning. Only one participant across all studies reporting age was an adolescent (15 years old), and the rest of participants were between 4 and 9 years of age. Arguably, proximity fading and increasing independence may be of greater importance as individuals grow closer to adulthood.

Part one of the current study was designed to evaluate the effects of staff proximity on on-task and disruptive behaviors of adolescents and examined the impact of staff standing at varying distances, filling important gaps in the literature. Furthermore, the existing research rarely examines interventions which aide in increasing staff proximity while maintaining high-levels of on-task behavior. Part two of this study investigates potential interventions to increase on-task behavior while staff are out of sight, thus increasing learner independence. The current
A study is warranted to determine the effects of staff proximity on adolescents with ASD in a specialized school, and to evaluate the impact of interventions on retaining high rates of on-task behavior with faded instructor proximity, ultimately helping educators teach towards true independence and improved outcomes.
Methods

Participants and Setting

Eligible participants for the current study were students attending the Douglass Developmental Disabilities Center (DDDC) between 10 and 20 years of age, with a diagnosis of ASD. Board Certified Behavior Analysts (BCBAs) employed at the center were contacted via email and asked to recommend participants from the classrooms they consult to. Informed consent was obtained from the participants’ parents or guardians before data collection was initiated.

Inclusion criteria was limited to students with the ability to complete a work task independently for a duration of 5 min while a staff member stands within 3 ft of them. To confirm eligibility, participants completed a screening session by engaging in an independent work task for 5 min with an instructor standing less than 3 ft from them. If the participant was on-task for less than 50% of the session, they were excluded. No eligible individuals were excluded for this reason. Additionally, students were screened to determine if they were currently able to remain on task for most of a 5-min session while staff were out of sight. If a participant was on-task 85% or more of the screening session with staff out of sight, they were excluded. Two eligible participants were excluded for being on-task 100% of this screening session.

Three individuals were ultimately included in the study: Steven, a 16-year-old male, John, a 17-year-old male, and Liam, a 14-year-old male. Steven’s repertoire of expressive and receptive language is limited to stimuli that he has frequent exposure to. He is able to mand vocally with utterances of up to four words, however he uses an AAC device to support his communication. Steven lacks most self-help and daily living skills. He engages in high levels of
vocal and motor stereotypy as well as aggressive and self-injurious behaviors. He has attended the DDDC for 3 years and is placed in an intensive behavioral support classroom.

John communicates vocally utilizing utterances of approximately 2 to 3 words. He is developing self-help and daily living skills including cooking simple meals, cleaning, and washing his face. John does not engage in significant challenging behavior. He has attended the DDDC for 2 years and is placed in a standard classroom.

Liam has expansive expressive and receptive vocabularies. He is able to produce complex sentences of more than 10 words and respond correctly to multi-step directions. Liam can independently perform a variety of self-help and daily living skills. Liam engages in high levels of disruptive behaviors, aggression, self-injury, flopping to the floor and elopement. He has attended the DDDC for 7 months and is placed in an intensive behavioral support classroom.

Sessions were run in the participants’ classrooms. Specific work areas were chosen such that there was adequate space for the instructor to gradually increase their distance, up to 10 ft away, with a location for the staff to move out of the participant’s sight. Additional staff members in the classroom during sessions were asked to remain a minimum of 15 ft away from the participant and to refrain from interacting with the participant. Sessions were 5 minutes long and were videorecorded when possible.

**Dependent Variables**

On-task behavior was defined for all participants as working on the assigned task while oriented towards the materials. Participants were considered off-task if they were not actively working on the assigned task while oriented towards the materials for 3 consecutive seconds. On-task behavior was measured using duration by pressing start on a timer when the participant was engaged in on-task behavior and pressing stop if the participant was off-task. Duration on-
task was converted to percent of session on-task by dividing seconds on-task by the total session duration of 300 seconds.

Disruptive behavior was defined in advance for each participant using existing classroom operational definitions.

- **Steven**: Steven’s disruptive behavior included both motor and vocal stereotypy. Motor stereotypy was defined as any non-contextual instance of the following: repetitively tapping hands or fingers on any surface including his face (e.g., putting fingers in eyes or mouth), repetitively flapping or shaking hands, and posturing hands or arms (non-contextually holding hands or arms in a fixed position for at least one second). Vocal stereotypy was defined as any instance of non-contextual vocalizing (words or non-words, including whistling) at any volume, excluding crying (with or without tears), whining, laughing (clear imitation of laughing will count), or screaming (with tears). Steven’s disruptive behavior was measured using 20-s momentary time sample data.

- **Liam**: For Liam, disruptive behavior was defined as ripping, swiping, throwing, slamming objects or dumping materials/liquids. Liam’s disruptive behavior was measured using frequency per interval. Each 5-min session was divided into five 1-min intervals.

- **John**: John’s classroom team reported he did not have any defined disruptive behaviors. For this reason, disruptive behavior was not measured for John.

Functional analyses were conducted for both Steven and Liam’s disruptive behaviors within the current academic year and results suggested both behaviors are maintained by automatic reinforcement.
Interobserver Agreement

Interobserver agreement (IOA) was collected for 39.7% of sessions. All independent observers were trained on recording disruptive and on-task behaviors prior to the study until they reached 80% agreement across three training sessions.

IOA for on-task behavior was calculated using total duration and averaged 89.8%. IOA for Steven’s on-task behavior averaged 87.3%, ranging from 69.4% to 97.5%. IOA for Liam’s on-task behavior averaged 91.7%, ranging from 80.3% to 98.0%. IOA for John’s on-task behavior averaged 91.6%, ranging from 66.2% to 99.6%.

IOA for disruptive behavior was calculated using mean count-per-interval for Liam. IOA for Liam’s disruptive behavior was 87.7%, ranging from 62% to 100%. IOA for Steven’s disruptive behavior was calculated using trial-by-trial IOA. IOA for Steven’s disruptive behavior was 83.3%, ranging from 73% to 100%.

Part 1: Proximity Assessment

Procedure

Participants were given a 5-min work task that they were able to complete independently. For Steven, the task was sorting colored plastic pieces into eight bins containing starter pieces of each color. Liam completed laminated file folder activities consisting of sorting items by belonging in the refrigerator or pantry, sorting items by belonging in the bathroom or kitchen, and sorting materials by belonging to a construction worker or doctor. John stuffed envelopes with pre-folded pieces of filler paper. The work task was placed on the desk and the participant was seated. The instructor presented the direction, “Do your work,” and did not provide any further instructions, prompts, or reinforcement throughout the session. Due to Liam’s prior history of engaging in aggressive behavior when staff ignored his remarks, the instructor replied
to any repeated comment with a neutral response (e.g., “Okay”, “That’s fine”, “Maybe later”), but did not provide feedback regarding his performance on the work task. Sessions were 5 min in duration. The participant received reinforcement in the form of mild social praise (e.g., “Thanks for doing that!”) upon completion of the session, regardless of performance. The work task for each participant remained consistent across all conditions.

**Conditions**

The following conditions were implemented during the proximity assessment:

- **Under 3 ft:** The instructor presented the direction, “Do your work,” from less than 3 ft away and remained within 3 ft of the participant for the entire session.
- **5 ft:** The instructor presented the direction, “Do your work,” from 5 ft away from the participant and remained at this distance for the entire session.
- **10 ft:** The instructor presented the direction, “Do your work,” from 10 ft away from the participant and remained at this distance for the entire session.
- **Out of sight:** The instructor presented the direction, “Do your work,” while standing greater than 10 ft away from the participant. They then moved to a location where they were out of the participant’s sight. The instructor remained out of sight for the entire session.

**Experimental Design**

A multielement design was used to conduct the proximity assessment. The conditions were run a minimum of three times each and in a randomized order. For Steven, each condition of the proximity assessment was run five times due to variable responding.
Part 2: Proximity Intervention

Procedure

Participants were given a work task that they were able to complete independently and takes a minimum of 5 min to complete. The same task was used for each participant as was used in the proximity assessment. The work task was placed on the desk and the participant was seated. During the Visual Cue and Visual Cue plus DRO conditions, an 8.5” by 11” laminated paper was placed in the top right corner of the desk/table. Following the initial direction, the instructor moved out of sight and did not provide any further instructions, prompts, or reinforcement throughout the session. Sessions were 5 min in duration.

Conditions

The following conditions were implemented during the proximity intervention:

- **Baseline**: The instructor presented the direction, “Do your work,” while standing greater than 10 ft away from the participant. They then moved to a location where they were out of the participant’s sight. The instructor remained out of sight for the entire session.

- **Visual Cue**: A visual cue specific to the work task was placed on the top right corner of the participant’s desk. The visual cue was an 8.5” by 11” laminated paper with a printed image of the participant engaging in the work task. At the beginning of the session the instructor stated, “Do your work. If you are not sure what to do, look at the card,” while pointing to the visual cue. The instructor then moved out of sight and did not provide any further instructions, prompts, or reinforcement throughout the session. The participant received noncontingent reinforcement in the form of mild social praise upon completion of the session.
• **Visual Cue plus Differential Reinforcement**: An Multiple Stimulus Without Replacement (MSWO) preference assessment was conducted prior to the first session of the day to determine the participant’s most preferred reinforcer. A visual cue was placed on the top right corner of the participant’s desk. The visual cue was an 8.5” by 11” laminated paper with a printed image of the participant engaging in the work task, the words “I am working for” and a printed image of the participant’s most preferred reinforcer. At the beginning of the session the instructor said, “Do your work. If you are not sure what to do, look at the card,” and pointed to the image of the work task. Then the instructor said, “You are working for _____,” and pointed to the image of the reinforcer. The instructor then moved out of sight and did not provide any further instructions, prompts, or reinforcement throughout the session. At the end of the session, the participant received the identified reinforcer paired with praise if they remained on-task for 80% (4 minutes total) of the session, If the participant was on-task for less than 80% of the session, they were not given the reinforcer and did not receive praise. The instructor provided the feedback, “Next time you need to do your work to earn ______.”

**Experimental Design**

A reversal design was used to evaluate the proximity interventions. The conditions were initially run a minimum of three times each in the following order: baseline, visual cue, visual cue and differential reinforcement. Data from the out of sight condition of the proximity assessment were used as the initial baseline.
Results

Part 1: Proximity Assessment

Steven

The results from Steven’s proximity assessment are displayed in Figures 1 and 2. Figure 1 shows Steven’s on-task behavior. In the under 3 ft condition, Steven averaged 62.9% of session on-task. In the 5 ft condition, Steven was on-task for an average of 37.3% of the session. With staff at 10 ft, Steven averaged 53.4% on-task. In the out of sight condition, Steven was on-task for an average of 9.9% of the session.

Figure 2 shows Steven’s disruptive behaviors during the proximity assessment. In the under 3 ft condition, he engaged in disruptive behavior an average of 81.2% of 20-s momentary time sample intervals. In the 5 ft condition he engaged in disruptive behavior an average of 81.2% of 20-s intervals. In the 10 ft condition Steven’s engaged in disruptive behaviors in 71.8% of intervals. When staff were out of sight, Steven engaged in disruptive behaviors for 90.4% of intervals, on average.
Figure 1

Steven’s Percent of Session On-Task during Proximity Assessment

![Proximity Assessment Graph](image1)

Figure 2

Steven’s Percent of Intervals Engaged in Disruptive Behaviors during Proximity Assessment

![Proximity Assessment Graph](image2)
**Liam**

Figures 3 and 4 show Liam’s results from the proximity assessment. Figure 3 displays Liam’s on-task behavior as a function of staff proximity. In the under 3 ft condition, Liam was on-task an average of 67.5%. During the 5 ft condition, Liam averaged 70.7% of session on-task. In the 10 ft condition Liam was on-task an average of 63.9% of the time. Liam was on-task an average of 56.5% of the session during the out of sight condition.

Figure 4 shows his disruptive behavior as a function of staff proximity. Liam averaged a rate of 0.07 disruptive behaviors per min during the under 3 ft condition. At 5 ft, Liam averaged 0.40 disruptive behaviors per min. In the 10 ft condition, he displayed an average of 0.27 disruptive behaviors per min. Liam averaged 0.07 disruptive behaviors per min during the out of sight condition.

**Figure 3**

*Liam’s Percent of Session On-Task during Proximity Assessment*
Figure 4

*Liam’s Frequency of Disruptive Behaviors during Proximity Assessment*

![Proximity Assessment Graph]

**John**

Figure 5 shows John’s on-task behavior during the proximity assessment. In the under 3 ft condition, he averaged 92.2% of the session on-task. In the 5 ft condition John averaged 82.4% of the session on-task. He was on-task an average of 69.2% of session in the 10 ft condition. In the out of sight condition, he was on task for an average of 74.3% of session.
Figure 5

*John’s Percent of Session On-Task during Proximity Assessment*

![Proximity Assessment Graph]

**Part 2: Proximity Intervention**

**Steven**

Figure 6 displays Steven’s on-task behavior during the proximity intervention. In the initial baseline condition Steven averaged 9.9% of the session on-task. When the visual cue was implemented, Steven’s on-task behavior increased to an average of 27.7%. During the visual cue plus differential reinforcement condition, he averaged 26.6% on-task. When returned to baseline conditions, Steven’s on-task behavior averaged 34.4%.
Liam

Liam’s on-task behavior during the proximity intervention is shown in Figure 7. During baseline, Liam’s on-task behavior averaged 56.5% of the session. During the visual cue condition, Liam’s on-task behavior averaged 55.6%. In the visual cue plus differential reinforcement condition, Liam averaged 74.1% of session on-task. When reversed to baseline, Liam’s on-task behavior decreased to an average of 53.1% of session. During the second implementation of the visual cue plus differential reinforcement condition, Liam averaged 91.9% of session on-task.
Figure 7

*Liam’s Percent of Session On-Task during Proximity Intervention*

John

John’s on-task behavior during the proximity intervention is displayed in Figure 8. In the initial baseline condition, John was on-task an average of 74.3% of the session. In the visual cue condition, his average on-task behavior decreased to 50.3%. In the visual cue plus differential reinforcement condition John was on-task for an average of 52.6% of the sessions.
Figure 8

*John’s Percent of Session On-Task during Proximity Intervention*
Discussion

In the current study, we sought to examine the effects of staff proximity on the on-task and disruptive behavior of autistic adolescents, and to investigate potential interventions to increase on-task behavior while staff are out of sight. Part 1 of this study examined the effects of staff standing less than 3 ft away, 5 ft away, 10 ft away, and out of the participant’s sight to clarify the impact of these varying distances. The results varied significantly across all of the participants. Results of the proximity assessment showed that Steven’s on-task behavior was highly variable and not consistently differentiated across the less than 3 ft, 5 ft, and 10 ft conditions. However, Steven was significantly less on-task when staff were out of his sight. Liam’s on-task behavior was also lower when staff were out of his sight but variable across all other conditions. Steven and Liam’s proximity assessment results indicate that staff presence may improve on-task behavior, regardless of staff distance for some learners. These results expand upon prior research demonstrating that closer staff proximity may result in higher levels of academic engagement or on-task behavior (Werts et al., 2001; Gunter et al., 1995; Conroy et al., 2004; Russel et al., 2015).

John’s findings were less conclusive, with variable levels of on-task behavior across all conditions. These findings support the finding by Young et al. (1997) that the impact of staff proximity on on-task behavior may vary across individuals. Additionally, John’s results highlight the importance of conducting individualized assessments.

Steven engaged in a slightly higher rate of disruptive behavior when staff were out of his sight. This result suggests that the presence of staff produce lower levels of disruptive behavior. Liam’s disruptive behavior was variable across sessions regardless of staff distance, suggesting staff proximity did not impact this behavior. While the effects of staff proximity on disruptive
behavior were minimal, these findings might be tied to the function of the behavior. Both Liam and Steven’s disruptive behaviors were automatically maintained, potentially reducing the impact of external variables such as staff proximity. Again, these differing results demonstrate the importance of conducting individualized assessments. The effect of staff proximity on disruptive behaviors may differ if the disruptive behavior is maintained by a different function. Future research could examine the effects of staff proximity on socially mediated behaviors.

Part 2 of this study assessed the effects of a visual cue and a visual cue plus differential reinforcement on the participants’ on-task behavior when staff were out of sight. The results of Part 2 were idiosyncratic across learners. Steven appeared to have a slight increase in on-task behavior when the visual cue was utilized. Adding differential reinforcement to the visual cue did not improve his on-task behavior any further. However, when reversed back to baseline conditions Steven’s on-task behavior remained at a comparable level to that of the visual cue and visual cue plus differential reinforcement conditions. For this reason, it cannot be concluded that the intervention is what caused Steven’s improvement in on-task behavior.

Liam’s on-task behavior did not change significantly on average in the visual cue condition. However, after the third session with the visual cue a downward trend was observed. Liam showed a significant improvement in his on-task behavior during the visual cue plus differential reinforcement condition. When reversed back to baseline conditions, Liam’s level of on-task began trending downwards and ultimately reached a level significantly lower than in the visual cue plus differential reinforcement condition. When the visual cue plus differential reinforcement was reinstated, Liam’s on-task returned to a high level and continued with an increasing trend. Ultimately, the visual cue plus differential reinforcement appeared to be highly effective at increasing Liam’s on-task behavior when staff are out of sight.
Neither the visual cue nor the visual cue plus differential reinforcement condition was effective at increasing John’s on-task behavior. Much like Part 1 of this study, the results of Part 2 varied dramatically across participants. It is possible that Liam responded favorably to the visual cue plus differential reinforcement condition whereas Steven and John did not respond to either intervention due to their different skill sets. Specifically, Liam’s advanced language abilities may have enabled him to understand the contingency statement. These results underscore the idiosyncrasies of autistic learners and support the importance of individualizing both assessments and interventions.

It should be noted that John and Steven never contacted the reinforcement contingency in the visual cue plus differential reinforcement condition, highlighting a weakness of the method. This limitation could be resolved in future research by assigning a more achievable threshold of on-task behavior to receive reinforcement based upon baseline responding.

This study only examined two interventions for increasing on-task behavior with staff out of sight and implemented them identically across all three participants. It is possible that other individualized treatments may have been more effective for Steven and John. For instance, the systematic proximity fading method used by Russel et al. (2015), verbal reminders, self-monitoring, pictures and videos of staff may have produced more robust treatment effects. Future studies could evaluate a wider array of interventions that are tailored to the individual.

One of the primary limitations of this study was the failure of the data collection method to assess accuracy of task completion. Both Steven and John were intermittently on-task while completing their work inaccurately. At times, Steven was observed sorting items into the incorrect color bin, while John would sometimes stuff numerous pieces of filler paper into one envelope. This may be a result of the participants learning over the course of the study that they
would not be corrected for erroneous responses. It is important to note this limitation when interpreting the results as these results do not reflect any potential impact of staff proximity on accuracy. Future research could evaluate the effects of staff proximity on accuracy.

This study was conducted in each participant’s classrooms, as opposed to in an assessment room or other private space to increase external validity. However, doing so may have introduced a confound due to the presence of additional staff in the classroom. While all staff members were asked to stay a minimum of 15 ft away from the participant and not to speak to the participant, it is possible that the presence of additional individuals in the room with strong instructional control could have influenced performance. These variables are currently unaccounted for and pose a considerable limitation.

An additional limitation is the repeated use of the same work task for each participant. While it was decided to use one task consistently to control for differential responding across tasks, there is the possibility that the repetition of the skill could have influenced participant behavior via practice effects. This could explain why Steven’s baseline level of on-task was elevated in Part 2. It is also worth noting that all three participants were selected from a small, specialized school, are male, and are close in age. As such, these results may not be generalizable to all autistic adolescents. Further research could include a broader sample.

This study provides valuable information for all stakeholders involved in the lives of those with ASD. This research confirms that without staff standing close by, some adolescents with ASD may not stay on-task and may engage in higher rates of disruptive behaviors. While this dependence may seem benign while learners are school-aged and have widely available resources, it will become significantly disadvantageous once the learner reaches adulthood and is expected to perform what they have learned independently. Educators of students with ASD
should be carefully evaluating the impacts of staff proximity on an individual basis. If a student is relying on staff proximity an intervention should be found to reduce this dependence. It is crucial that educators consider the impacts of staff proximity discussed in this study, and carefully program with this information in mind, in order to prepare autistic learners to be more independent in the future, and ultimately to improve outcomes for adults.
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