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Use of PBIS Methods to Reinforce Sportsmanship in a Recreational Setting for Children and Adolescents with Autism Spectrum Disorders

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In structured classrooms, behaviors such as calling out, arguing, and violating personal space, are extremely problematic for teachers and other students alike. These behaviors occur often in core classrooms and are often researched and discussed (Horner, Carr, Strain, Todd, & Reed, 2002). The set of procedures known as Positive Behavioral Intervention and Support, or PBIS, includes clear and operationally defined behavioral expectations, that are taught using direct instructional procedures. In addition, all students receive frequent positive reinforcement for meeting school-wide expectations and logical consequences for displaying problem behavior. (Horner, Sugai, & Anderson, 2010).

Autism Spectrum Disorder (ASD) is defined as an impairment in understanding verbal and non-verbal communication, which can result in significant social impairment, and the occurrence of stereotypies (National Institute of Mental Health, 2009). The Diagnostic and Statistical Manual of Mental Disorders- Fifth Edition (DSM-V) diagnostic criteria include three function levels for autism patients under the category of Autism Spectrum Disorders based on the amount of support required (APA, 2013). The official prevalence of ASD, as reported by the CDC, stands at 1 in 68 children. However, a recent study found a prevalence rate of 1 in 50 children aged 6-17 (Blumberg et al., 2013). The authors found since 2008, almost all diagnoses have been mild or moderate autism, and less than one-half as likely to be severe ASD. In 2007, 16.3% of children were diagnosed with severe autism, and that rate has declined to 6.9% in 2008.

Research on children with ASD revealed that these children struggle with social attribution; they have difficulty understanding perspective that is different from their own and the behavioral intentions of other people (Grandin, 2008). A child with autism might perceive a request to be a command or an enforcement, which they would argue against (Grandin, 2008). A study examining executive functioning in children with autism found that these children have difficulty with self-regulation. They have difficulty with self-cuing, and in directing their own thoughts and behaviors in the context of their social interactions; and controlling inappropriate reactions or responses (Grandin, 2008). They struggle with switching tasks and activities. A study of children with autism in a false belief task found that those with autism were unable to understand messages that required mental representations, but not those that included images, pictures, and maps (Happe, 1994). It is plausible that children with autism can benefit from instruction that incorporates images, pictures and maps to indicate the preferred behavior. Thus, instructing children with autism on proper social skills is possible with the proper guidance and modeling.

According to research, advances have been made in the field of cognitive and affective psychopathology and applied behavior analysis, contributing to the positive outcome for individuals with ASD. These advances have resulted in the development of new methods of early detection and more efficient treatment for both children and adolescents (Vismara & Rogers, 2010). These intervention programs apply the scientific teaching principles of applied behavior analysis. Behavioral intervention approaches are imperative in addressing all the developmental areas of need since they are designed as comprehensive programs (Dawson, 2008). Also, there are other approaches that are skill based and directed towards a more specific set of goals.

The approaches used improved the communication, social skills, and management of problem behavior for children with ASD (Dawson, 2008). There are slow but better adaptation methods for the children in recreational facilities when programs are designed to benefit them in all ways possible. “Psychosocial treatments include different types of psychotherapy and social vocational training, and aim to provide support, education, and guidance” (National Alliance on Mental Illness, 2017). For example, in a study testing the effects of psychosocial intervention at recess on peer engagement for children with ASD there were improved behaviors (Kretzmann, Shih, & Kasari, 2015). The intervention consisted of an immediate treatment (IT) group and a wait-list (WL) group. The IT group consisted of 11 male and 2 female students, while the WL group included seven male and four female students. All students involved had diagnoses of ASD and were in general education classes.

Results revealed that as significantly improved for the IT group and maintained throughout the follow-up sessions. Additionally, the playground staff assigned to this group of students had increased their own behaviors aimed at boosting the peer engagement. (Kretzmann et al., 2015). While treatment effects on peer engagement remained significant at follow-up, staff behaviors did not maintain. Hence, the small dose brief intervention can be beneficial in increasing peer engagement for ASD children in an inclusive setting, but better results can be achieved with continued support of the staff.

Sportsmanship Skills

Similarly, Clark and Nwokah (2010) demonstrated positive outcomes when involving children with special needs in summer camps. The different activities that the children participated in produced particular impacts on the children. The play content, design, and goals of summer camps for these kids may be disability-specific or non-specific about what they want

to accomplish (Clark & Nwokah, 2010). In the evaluation of children who attended different summer camps, parents completed the Affective Behavior Scale for the Disabled (ABSD) while counselors used outdoor skills inventory both at the beginning and at the end of the camp. The results showed that campers had a significant growth in communication, social skills, domestic responsibility, self-esteem, and independence according to the ABSD (Clark & Nwokah, 2010). The Office for Social Inclusion (OSI) also noted a commendable growth in personal and social skills with the major outcome from the one-week summer camp being increased self-reliance.

Sanderson et al., (2009) examined the efficacy of improving the overall social functioning among pre-school children using UCLA-Preschool Applied Learning of Social Skills Program (UCLA-PALS). Twenty-nine children were enrolled in the program as part of their participation in an intensive therapeutic social recreational program. Their social skills, problem behaviors, and social responsiveness were rated prior to and after each round of the PALS program using Social Skills Rating System (SSRS) and Social Responsiveness Scale (SRS). Puppet facilitated script didactic lessons were included with role playing exercises by peer models and group leaders. **(**Sanderson et al., 2009). Parents received weekly handouts with skill-reinforcing strategies for other settings.

The children and enrollees learned steps of social etiquette that enhanced communication, sharing, peer entry, good sportsmanship, turn-taking, teamwork, body boundaries and helping behavior. According to the parent reports, there was improved self-control, social awareness, and social responsiveness for the children who had received PALS at least two times weekly.

Through these findings, PALS was found efficacious in improving social functioning of pre-school children with ASD and better results continued after follow-up and monitoring. It is suggested that PALS could be used as a manualized social skills treatment to improve the social

responsiveness of individuals (Sanderson et al., 2009). PALS worked under the dimension of social motivation, awareness, and cognition to develop the assertiveness of students within a classroom setting. Analysis of SRS revealed significant improvement on the parents' reports about the social cognition, motivation, and awareness (Sanderson et al., 2016). The findings show that use of a standard social skills treatment package can improve the motivation and assertiveness of children in schools.

There is evidence that supporting the recreational participation of children with high functioning autism benefits both clinicians and parents in helping these children perform different sports activities. A study comparing the recreational engagement of children with high functioning autism (HFA) and their typically developing peers showed that, aside from characteristics specific to ASD, they had similar attributes impacting on their play (Schreiber, 2011). The two groups were similar in how often they partook in activities, enjoyment, or preferences of recreation. Children with HFA differed from peers in terms of social aspects, in that they played with fewer peers, and locations of recreation.

Potvin, Snider, Prelock, Kehayia, & Wood-Dauphinee (2013) conducted a study using prisoner dilemma game, a game theory that shows why two individuals may not cooperate, even if it is in their best interest to do so, and cooperative tasks such as Theory of Mind (Li , Zhu , Liu & Li, 2014) to engage children with HFA and those that were typically developing. The children were placed under an adult assistant who interrupted them within the sessions and measured their difference in cooperation during this period. Children with HFA had significantly less cooperative behavior than typically developing participants during the irregular period of implementation. Moreover, kids with HFA engaged in different types of collaborative and

communicative behavior during the interruption time. Results indicated that children with HFA performed differently on the everyday tasks relying on their cognitive abilities.

In assessing the contribution of executive functions of children aged six through nine while participating in school activity, there was a control for any sensory processing as measured by the sensory profile. Scores on the auditory, visual, vestibular and touch sections were analyzed. Dunn (1991) indicated the Sensory Profile assessing processing and modulation of input across sensory systems, as well as behavioral and emotional responses, was associated with sensory processing. The study involving 24 children had the children's teachers complete the behavior-rating inventory of school and executive function in the assessment questionnaire. In addition, the teachers completed a sensory profile and demographic survey.

According to the assessment, it was found that executive functions contributed more than sensory processing to participation in school activities for all the children. It was observed that children's ability to stop a behavior at an appropriate time, resist automatic responses, and regulate emotional responses worked towards their overall contribution in the play (Clark & Nwokah, 2010). Additionally, research in this area recommended that pediatric therapists should be encouraged to address executive functions in their treatment. Investigations were obtained from pre-camp and post-camp measures of self-perceptions and peer comparisons, and it was concluded that there were improved friendship skills for children with special needs (Clark & Nwokah, 2010). Boys with attention deficit hyperactivity disorder (ADHD) who participated in sports summer camps were seen to have more shots and more passes in basketball games when good sportsmanship was reinforced. Therefore, a corresponding increase in sportsmanlike behavior has been observed to have a positive impact on the performance of the match (Clark &

Nwokah, 2010). In this regard, studies show that in a camp of longer duration, reinforcement could be used to determine whether sportsmanlike behavior results from improved performance.

Hupp and Reitman (1999) showed that sportsmanship and sports skills can be useful in teaching children diagnosed with ADHD. In my view, when applied consistently, these same skills might be important for children with ASD. Interventions with multiple components have shown that there is effective behavioral management for this population of students. (Hupp & Reitman, 1999). Through the training, dribbling errors were significantly reduced and social perspective improved.

Seventy-nine children with ASD and 79 randomly-selected, gender-matched peers elementary classrooms across 30 schools completed social network surveys examining each child's reciprocal friendships, peer rejection, acceptance, and social involvement (Rotheram-Fuller, Kasari, Chamberlain, & Locke, 2010). Results of a social network survey indicated positive results; however, the peers did not reciprocate friendships with children having ASD as much as they did with typical children. Also, there was more evidence of isolation for ASD children when their teacher was not involved in conducting the social forums.

To protect social relationships, promoting programs that improve children's skills earlier in life in activities can be used as a preventive measure (Kretzmann et al., 2015). Study results suggest that overall interactions and social skills later in life are improved with earlier inclusion of children. For children with high functioning autism, social skills intervention was seen as effective in increasing their participation in the recreational activities. The intervention strategies involved enhanced their communication, interaction and engagement with peers.

The behavioral interventions involving recreational activities that promote good character in children and adolescents should be adopted. A system for peer connections and social

interactions can help children with higher functioning autism to associate with others without psychiatric diagnoses. In a camp setting, with activities of longer duration, reinforcement could be phased out to determine whether sportsmanlike behavior continues as a result of improved performance. Behavioral care systems may be most useful when treatment is initiated earlier in life.

Positive Behavioral Intervention and Support

Positive Behavioral Intervention and Support (PBIS) is a proactive way to deal with setting up the behavioral expectations and social culture required for all students in a school to accomplish social and scholarly achievement (Klin, 2010). PBIS is a proactive approach to promote a positive culture and establish the behavioral supports for all students in a school to achieve academic, emotional, and social success. Attention is focused on using a three-tiered approach; primary (school-wide), secondary (classroom), and tertiary (individual) systems of support. PBIS is designed to shift the function of behaviors by making misbehavior less effective, efficient, and relevant; and making desired behaviors more rewarding. (Horner et al., 2004).

Colvin and Sugai (1993) argued that prior to the development of School-Wide Positive Behavioral Interventions and Supports (SWPBIS), the focus of interventions for problem behaviors tended to be reactive, inconsistent, and punitive instead of preventative (as cited in Hershey, n.d.). Attention was focused on a student's misconduct; and discipline was based on methodologies including censures, loss of benefits, office referrals, and suspensions (Martinez, 2013). The system of retributive justice was found to be unbeneficial in many areas as it did not allow students to learn, practice pro-social skills, or increase self- management skills (Colvin, Kame'enui & Sugai, 1994).

Research has demonstrated that positive behavior through the use of discipline and the absence of positive procedures is not achievable (Horner, Sugai & Lewis, 2015). Presenting and displaying positive social conduct is vital to a student's educational needs. Instructing positive behaviors and reinforcing them is a more successful methodology than reacting with punishment after the problem behavior has occurred. The goal in setting up a PBIS program is for proper conduct to be the standard (Marchant & Christensen, 2007). Schools are required to conduct a functional behavioral assessment (FBA) and use positive behavior support with students who have individualized education plans (IEPs) and are at danger of expulsion, or after 10 days of suspension (Marchant & Christensen, 2007). Regardless of the way FBA is required under limited conditions, it is best practice to use this approach when overseeing issues in the school setting.

Cheney et. al. (2010) conducted a two-year study of a PBIS intervention, The Check, Connect, and Expect which included an adult mentor to supervise, monitor, provide feedback to, and problem solve with students concerning their behavior in school. It was designed for students at risk for severe behavior problems by maintaining school engagement and reducing problem behavior of middle and high school students with learning, emotional, or behavioral disabilities. "The check component was composed of the mentor employing daily monitoring procedures for school risk factors: tardiness, absenteeism, behavior referrals, detention, suspension, course grades, and credits. The Connect referred to the mentor forming positive relationships with students in order to implement two levels of intervention for student progress monitoring of risk factors. Social-skills instruction and problem-solving instruction were implemented when students do not meet daily social expectation" (Cheney et al., 2010, p. 153). Problem behavior significantly decreased for Check Connect Expect graduates; however, social

skills and academic measures did not change significantly. A limitation was that having a one-to-one mentor with a child on a consistent basis was almost always unrealistic (Cheney et al., 2010).

Cuccaro and Geitner (2007) conducted a study wherein a group of fifth-grade students who had persistent problems at lunch and recess were identified and provided with direct instruction in pro-social skills. The skills were taught by the authors in a two-week program that they called the "Alternative to Lunch Program for Students" (ALPS). The researchers attempted to measure the impact of the intervention on the targeted group of students and their ability to demonstrate skills such as using self-control, avoiding trouble, and accepting consequences. ALPS was part of a larger School-Wide Positive Behavioral Interventions and Supports (SWPBIS) initiative. Results from survey data suggested that, for most students, the ALPS resulted in improved behavior within the cafeteria and at recess (Cuccaro & Geitner, 2007). Due to limitations, however, the results were interpreted with caution as the changes in survey data may have reflected a "halo" effect by which adult perceptions of changes in student behaviors were influenced by their knowledge of the student participation in ALPS. Lastly, while the number of referrals following ALPS was fewer than previous months, it is unclear if the difference is statistically significant. In addition, there was a general downward trend in referrals from December through February and the April results may reflect a continuation of this trend. (Cuccaro & Geitner, 2007).

Lampron and Gonsoulin (2013) discussed the benefits of their implementation of a PBIS intervention in a juvenile restrictive setting and reviewed the need for behavior management skills for those in the education field. The main purpose of alternative education was to provide those children with an opportunity to redirect their lives, receive supports, and gain skills they

needed to have successful and productive futures. They found PBIS to be a solid, proven, yet flexible support structure under which the rules and interventions that best meet the varied needs of students are used (Lampron & Gonsulin, 2013). Limitations of their research included: students were not randomly assigned to groups, the intervention group was larger than the comparison group, and data were not collected concurrently.

PBIS has been implemented in a number of schools and, in order to test the effectiveness of the system in minimizing the incidence of discipline-related problem behaviors of students, a longitudinal study of participant schools was conducted. The results showed that schools that had PBIS training and implemented the system had significantly lower student suspensions and office discipline sanctions (Sugai & Horner, 2008) than schools that implemented PBIS but did not have the training. In a follow-up study, schools that implemented PBIS and had undergone training were compared in terms of school-wide positive behavior support. The study's findings revealed that PBIS was potentially beneficial to the school and the students as it was linked to an increase in social competence and achievement of the students. Thus, PBIS provides the system or the framework from which to anchor the instruction of proper social skills among children with autism. The social ineptness of children with autism can be viewed as problem behaviors and PBIS can effectively influence such behaviors.

Use of Positive Behavioral Interventions and Supports in Recreational Settings Outside of the Classroom

Schreiber (2011) indicated substantial improvement in the behavior of four boys with autism spectrum when involved in a behavioral summer treatment program. The participants engaged in daily in multiple recreational activities, as well as a social skills training class in a naturalistic setting. "They were awarded points for positive social behavior and lost points for

negative behavior across settings" (Schreiber, 2011, p 51). The study included detailed daily data on the positive and negative social behaviors over a period of six years. Weekly behavioral frequencies were evaluated to assess improvements through participation in the six-week program. Results showed the children each made significant gains in their social competence according staff evaluation on the individual daily report card. The boys also demonstrated a higher rate of initiating peer interactions, and higher quality reciriporcal comminucation (Schreiber, 2011, p 51).

Alternatively, a power card strategy has been used to teach sportsmanship skills to children with autism, showing significant improvements in their interactions. This strategy is similar to social stories, but also incorporates children's special interests. Attwood (1998) stated that special interest areas (SIAs) "dominate the person's time and conversation and the imposition of routines that must be completed" (p.89). These interests can be extremely motivating for students with autism. For example, a ten-year-old girl was shown the plan, incorporating special interests in teaching and reinforcing positive behavior for the child (Keeling, Myles, Gagnon, & Simpson, 2003). It was evaluated through the use of a multiple baseline design across three conditions, which included academic, behavior, and social skills instruction. The girl's whining and screaming was significantly reduced in the event of losing a game, possibly through her involvement in the power card strategy. The investigation revealed the effectiveness of the approach in teaching sportsmanship skills and general positive behaviors within different settings (Keeling et al., 2003). It is operational since it offers a creative and flexible means of positive management of problem behaviors with appropriate replacement options.

Walsh and Petty (2006) found a token economy system could be used to increase or decrease certain types of behavior, in an array of different settings. Within an educational setting, a token economy is a system of providing positive reinforcement as a type of behavioral modification method (Walsh & Petty, 2006). The token economy systems are designed to shape behavior by rewarding individuals that meet positive behaviors with reinforcement (tokens) that they can use to obtain some type of back-up reward. Token economies are often quite effective for students who are resistant to other types of motivational or behavior management techniques. This system can be used to increase or decrease certain types of behavior in an array of different settings (Walsh & Petty, 2006).

Miller, Dufrene, Sterling, Olmi, and Bachmayer (2014) reviewed the literature evaluating a Check-In Check-Out (CICO) intervention. This study tested CICO's effectiveness in improving student behavior as well as fading out intervention components. Following effective implementation of CICO, a fading process was used that included use of Mystery Motivators (MM). Results indicated that MM successfully maintained behavioral performance for two of the three students. (Miller et al., 2014)

Lewis, Sugai, & Colvin (2008) found several steps that can be taken on the playgrounds and gyms regarding the use of PBIS (See Appendices A1 and A2). Lewis, Powers, Kely, & Newcomer (2012) investigated the effects of Positive Behavior Supports (PBS) strategies on an urban school playground. The purpose of their study was to investigate the efficacy of PBS prevention/early intervention strategies on the rate of problem behavior displayed by elementary school students during recess. Results indicated that the intervention reduced the frequency of problem behavior across three recess periods. The study did include limitations. First, the specific factor that affected student behavior could not be determined as both social skill

instruction and group contingencies were implemented simultaneously. Additionally due to a very low baseline level of frequency of problem behaviors observed, intervention effects were minimal. However, intervention data showed a decreasing trend (Lewis et al, 2002). By using simple instructional and reinforcement strategies, this study showed that schools can have an impact on problem behavior

The PLAY intervention described below is designed to instruct children with autism in the appropriate social skills when they are playing outside the classroom setting, or when they are interacting with peers and adults in recreational settings within the school. The intervention program is anchored in the PBIS system and focuses on rewarding positive behavior rather than punishing negative behavior. PBIS also makes use of methods like role-playing, reinforcement, modeling and repetitive behaviors.

The purpose of the research study described below is to expand on the results found by Lewis et al (2002), and to develop an intervention that will teach children with autism spectrum disorder (ASD) the steps to play appropriately in the gymnasium. Use of role-play, repetition of the "PLAY" steps, and reinforcement were used to teach children how to act appropriately in a physical education setting.

Method

Participants

Twenty-seven physically healthy children between the ages of six and seventeen years participated in the PLAY program. Four of the participants were female, while the remaining twenty-three participants were male. Three individuals, all females, were excluded from the intervention due to Tier Three behavioral interventions in place for those students. One male did not provide assent for his data to be used, so although he participated in the intervention, his data

were not included in the study. Informed consent was obtained from the parents of the participating children. Data were collected on four females, and twenty-two males. All the students were enrolled in a recreational program for children with autism spectrum disorder that focused on socials skills training. All participants had ASD diagnoses, lived with their families, and were generally considered high functioning. The research methods of this study were approved by the university's Committee on the Protection of Human Participants.

Setting

The research was conducted at a university in northeastern New York State while the participants were attending a campus-based social skills program. Funding for the social skills program was obtained through a grant from the NYS Office for People with Developmental Disabilities (OPWDD), and all participants of the program were deemed eligible for admission by OPWDD standards.

The research and intervention began in a gymnasium at SUNY Plattsburgh. Partway through the study, because the gym was being renovated, the research continued outside the building, and inside the hallways of the building. The gym was the size of a typical school gym, and the participants occupied half of it while they were engaged in the activities. When the activities were conducted in the halls, the space was narrow, about 9 feet in width and 80 feet in length.

Fieldworkers

Fieldworker**s** were composed of undergraduate psychology and graduate students from psychology, communication disorders, and education departments. Most of the fieldworkers received practicum credit, and a small percentage volunteered their time to the program. They

were each assigned one to three children to support by providing assistance, encouragement, other prompts, and reinforcement.

Materials and Procedures

A matrix of four rules and corresponding positive behaviors, was shown on poster board as well as verbally explained (See Appendix C). A token reinforcement system was established and tokens (i.e., colored loops) were distributed to children for demonstrating any of the four rules. Students would then wear their loops on their wrists, put them in their pocket, or ask their fieldworker to hold them while the child played. After the game was over each loop was placed around a water bottle. Once the water bottle was completely covered by the loops, the children were rewarded with a pizza party. In a typical session, the group earned approximately 100 loops combined. After the first pizza party, a child from each group would count the loops each week and mark progress on a drawn thermometer to have a continuous visual of their progress. Five hundred loops earned a pizza party.

The activities that were conducted during the intervention program were crazy legs, extreme red-light green light, clothespin races, tree tag, and similar recreational games. Other materials included those required for specific games, such as bases, balls, etc...

Experimental Design

The program was evaluated through the use of an ABAB or reversal design. First, behavioral data were recorded using Antecedent Behavior Consequence (A-B-C) analysis (See Appendix B), to find which behaviors were occurring most frequently, impeding activities in non-structured settings. After identifying all problem behaviors, frequency data were then collected. Following baseline, intervention began, followed by a return to baseline conditions and, finally, a return to intervention conditions.

Measures

Frequency data were collected according to the "PLAY" rules. A tally was recorded for each student making an infraction of any of the rules: (a) invading personal space, (b) not listening, (c) arguing, and (d) disrespecting others. Each observation session lasted fifteen minutes, beginning with the instructor reviewing the rules. Data were collected by research assistants on a data sheet (see Appendix D) and were entered by the lead researcher into a spreadsheet before the next session. Interobserver data were collected by having two research students observe and record data. After each session, data were transferred to a data summary sheet (See Appendix E) and a total percentage of violations per child was calculated for each session. Because we were interested in further analysis of the number of rules each child violated, we also calculated the mean number of violations per violator.

Baseline

When entering the designated setting, the rules for the game were first reviewed by the group leader. During this review and the game that followed, if any disruptive behavior occurred, their fieldworkers corrected it immediately, which allowed the leader to continue. Students were given verbal praise for playing gym games appropriately and, occasionally, bonus points on their program self-monitoring sheet for 'exceptional' behavior.

Intervention

Intervention consisted of the social skill instruction described earlier, modeling of desired behavior, and a group contingency. Participants were rewarded with 'loops' for demonstrating exceptional behavior, and the entire group worked together to trade their loops in for a group party when their goal was achieved. When a participant violated a rule, he or she was corrected

with immediate feedback. Observation routines were developed and continued until observers reached at least 80% interobserver agreement.

Fieldworker Training

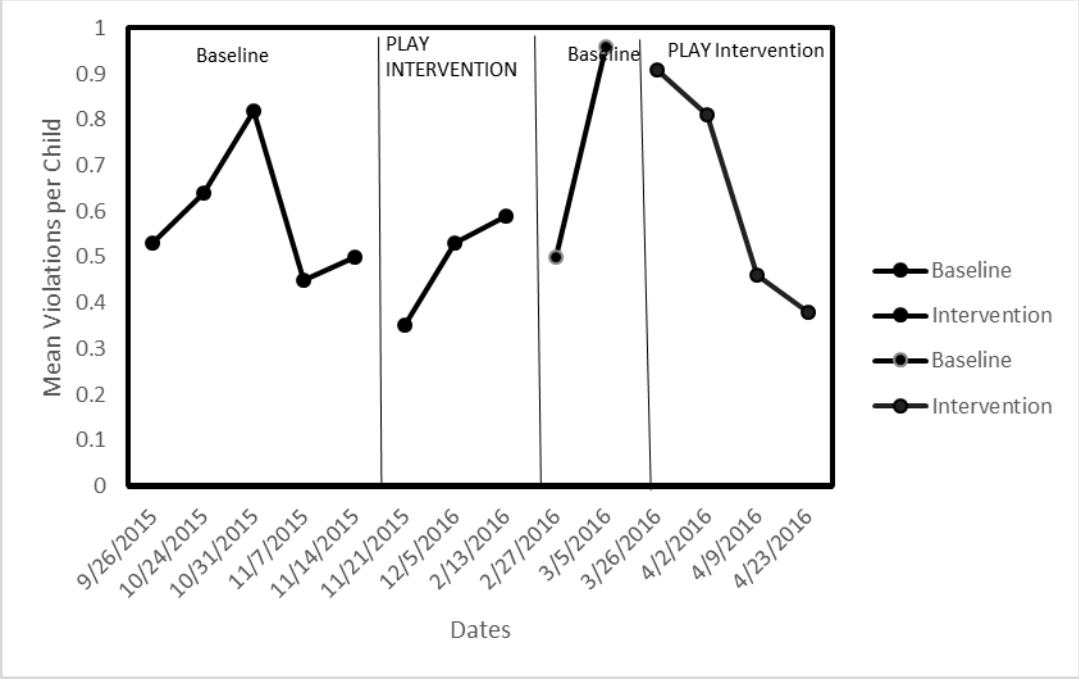
All fieldwork students attended a one-hour training session without children present, in which definitions of the four target behaviors were explained in detail. Poster boards were shown with pictures and five "do's" for children to earn points. After the explanation, each rule was modeled, followed by role play by fieldworkers who volunteered to act out scenarios. For each rule, two examples were modeled; one demonstrated actions and words considered to be violations, and one demonstrated how prosocial behavior was rewarded. For example: as a model for personal space rule, volunteer fieldworkers modeled two children standing in line while another leaned over the shoulder of one of 'the kids'. An adult called the child by name, and said "Remember personal space" and then modeled an arm's length. For the personal space role-play, fieldworkers demonstrated three kids sitting on the floor, one had a ball, and one grabbed the ball away. An adult interrupted and said, "Remember personal space, hands to yourself." This was followed by role-play of kids sitting on the floor, one had the ball; another asked, "Can I see that ball for a minute?" An adult then gave that child a loop, and said "Great job for keeping your hands to yourself!" After the training, the fieldworkers were given "cheat sheets" of all the behaviors with definitions, as well as examples of positive behaviors (See Appendix C).

Results

The results of the PLAY intervention are displayed below. In Figure 1, an immediate and substantial decrease in violations from Baseline to Intervention occurred. Despite a gradual ascending trend, rates of violations remained lower than during the baseline phase. When conditions were returned to Baseline, an almost immediate surge in violations was observed.

When Intervention was resumed in the second Intervention phase, violations decreased rapidly, across all four observation sessions. Baseline data were recorded and revealed about fifty to eighty-five percent of violations per child. Following intervention, there were thirty to sixty percent of violations per child. When the intervention was suspended for a two-week reversal, the violations drastically rose to around ninety percent per child. Again, when the intervention program was resumed, the violations decreased to forty percent in the final weeks. Interobserver agreement checks were conducted throughout the study by the lead researcher, which occurred 43% of the data collection sessions. Interobserver agreement data showed a range of 81-100% with an average of 84%.

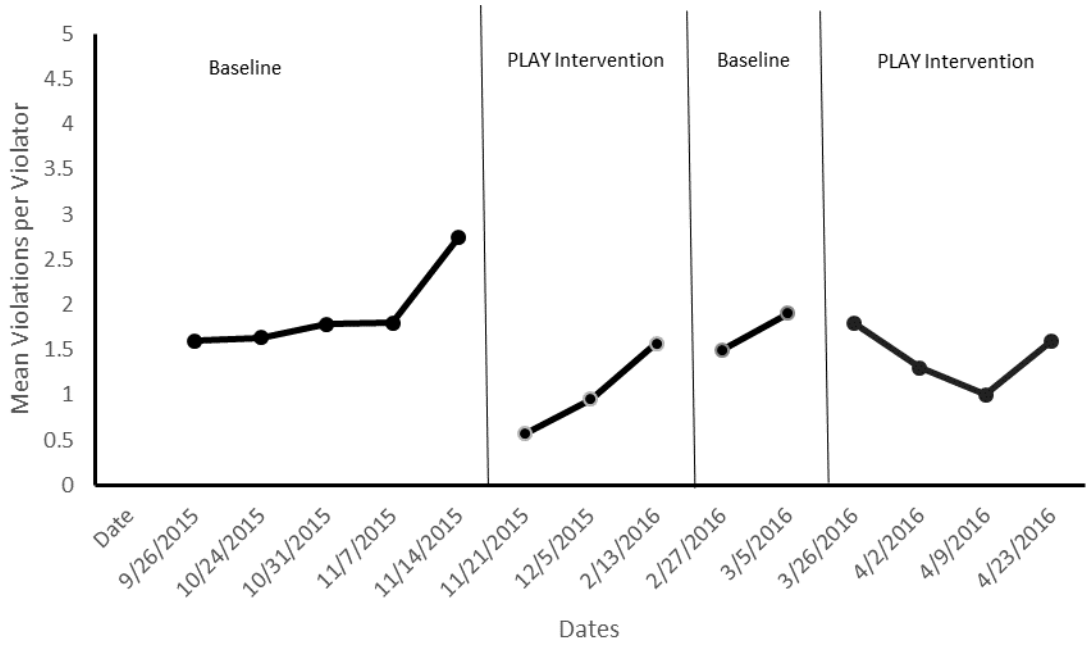
Figure 1. Mean Violations per Child



An analysis of violations per violator was conducted to determine whether the most frequent violators had reduced their mean number of violations during intervention phases. Figure 2 shows that violations among the students who broke the rules did decrease significantly at the

start of the intervention; however, they gradually increased throughout the first intervention phase. The return to baseline showed a continued ascending trend in violations per violator, but a return to intervention subsequently decreased the rate of violations, except for a minor uptick in the final data point.

Figure 2. Mean Violations per Violator



Discussion

The purpose of this thesis project was to demonstrate and evaluate implementation of a Positive Behavior Intervention Supports framework to decrease problem behavior of children with ASDs in a recreational setting. Cooperative games require respect, listening, team work, precise rules, and team spirit. This intervention used a multicomponent approach of social skill instruction, corrective feedback, and token reinforcement to increase prosocial behaviors required for cooperative games. Results lead to the conclusion that PBIS may be an effective means of decreasing problem behavior in recreational settings. This research study was conducted from August 29, 2015 through April 30, 2016. There was a two-month break between

semesters, between early December and mid- February. The study was withdrawn at the end of the school year.

In Figure 1, there was a decrease in problem behavior at the start of the intervention phase. Though violations increased through the implementation phase, no dramatic escalation was notes; overall rates of behaviors were more manageable. A considerable increase was observed when the study returned to baseline, however, violations steadily decreased when intervention was reinstated. It is possible that there were immediate effects when first introduced because all researchers were very diligent when it came to rewarding loops when necessary. As time went on, it is possible that the reinforcement decreased in frequency as researchers were not as attentive, causing violations to increase. After returning to the intervention phase, it is plausible to consider that violations may have decreased because participants realized they needed more loops for a final party. Fieldworkers may have handed out more loops, or reminded peers more frequently that they were working towards a party serving as motivation to be on their best behavior.

In Figure 2, an immediate and substantial effect can be seen when intervention first began, but it was not sustained. The second baseline showed a slight increase in negative behavior, which may have been a continued trend of the first intervention. As noted previously, this could be due to frequent reinforcement by staff initially, but more lenient attitudes as the intervention progressed. The final data point demonstrated slightly more violations per violator on the final session. It is possible that the individual students had more difficulty as it was the last session of the school year.

In this study, arguing/inappropriate language was defined as “backtalk, arguing, criticizing, or yelling directed at an adult.” Examples of this included: “You’re so slow,” “That’s

not how we play in school," "That's not fair," etc. This was the most frequent behavior observed, and through this intervention, this behavior decreased considerably. Violating Personal Space was deemed to be the most infrequent infringement. This may be due to difficulty deciphering between exceptions (i.e., during a chase game) and standing to close to a peer, which would be considered a violation. Results demonstrated that both total violations and violations per violator decreased during intervention periods, which can be correlated with a decrease in behaviors in the most frequent violators.

An observed benefit of the PLAY program, albeit anecdotal, was increased peer support (i.e., cheering for team mates); additionally, participants began working together to earn loops. Another benefit was observable increase in staff engagement with the children. Overall, the steps in the intervention were relatively simple, making it a practical option for non-educational settings.

This study; however, had a number of limitations: originally, the intervention consisted of hand gestures as well as modeling and feedback; however, the only hand gesture consistently observed and utilized was for personal space. Due to lack of review, modeling, and practice, the use of hand gestures as visual cues was eliminated in February of 2016. Additionally, the bottle that was being used to collect loops was deemed too small and was removed. To address this limitation, a thermometer was drawn by a research assistant to serve as a visual cue of progress. A goal to earn 500 loops was set, and a volunteer from each group counted the loops for that session and then mark/color in the thermometer. Children began to frequently ask about parties, because they were earning so many loops demonstrating effective reinforcement. An additional limitation was that of program costs included the loops, posters, and pizza parties.

PBIS researchers have noted that adequate staff training was a difficulty (Kretzmann, Shih, & Kasari, 2015). This was found to be a significant limitation in the present study as well. To alleviate training difficulties, this study utilized "cheat cards" for fieldwork students. On one side, frequent violations were listed, while suggested prompts for good behavior could be found on the other. While some research students did well with specific praise and loop distribution, fieldworkers had to be prompted often to get closer and reinforce children during games. Teaching the children that the loops were tokens that could be traded in for more valuable back-up reinforcement, such as a party, was difficult. Some of the children seemed to perceive turning in loops as a negative consequence.

Another limitation was that there were only approximately five frequent violators who were consistently rewarded when exhibiting positive behaviors. Consequently, a reward was not given to those who did not violate the rules, but also did not exhibit the desired behaviors. Additionally, when returning to baseline, some of the staff had difficulty limiting their responses to the positive behavior of the participants.

The research setting in which the activities and interventions were conducted changed in September of 2015. The gymnasium that was originally being utilized went under construction, which led to the study being conducted in the hallways of the building. This change from a large area to a smaller space may have affected the behavior of the participants. Another change that occurred in March of 2016 was that participants were given the option to play games or to walk laps around the building. This was a significant change, as many of main violators opted to walk instead of playing the games, thereby affecting the number of participants for whom data were collected. Therefore, it is also possible that the 'walking option' caused some of the major violators to drop out, thus improving results.

Similar to Horner, Sugai, & Lewis (2015), the results of this study demonstrated that when PBIS is implemented in schools, it is typically 1-5% of the students that demonstrate 80-90% of problem behaviors. Approximately 5.2% of the twenty-seven children who participated in this study demonstrated the most problem behavior. As noted previously, the largest decrease in behaviors was noted for arguing/inappropriate language. This was observed to decrease in four of the twenty-seven participants, who were noted to have the greatest difficulty in this setting, coinciding with previous research.

In conclusion, this study contributes to the research literature, which to date has only a few examples of PBIS programs in non-educational settings. A Positive Behavioral Interventions and Supports program, such as the one described in this paper, is recommended for use in similar settings, to help manage groups of children with or without disabilities. An obvious advantage of extending school-based procedures to recreational and other non-educational settings is that most children are exposed to similar programs in their schools. Their familiarity with the general methods and procedures can facilitate seamless implementation. Furthermore, researchers can use components of successful school-based programs to develop systems that are feasible in their own settings. Future researchers are advised to devote significant resources towards improving internal validity issues, such as staff training; fidelity methods, and personnel to ensure procedural integrity.

Appendix A1

Steps Regarding the use of PBIS on the Playground

Step 1: Make guidelines for defining "proper" and improper" playground behaviors, as well as concise definitions. For example, taunting could be defined as “provoking or challenging someone with insulting remarks. (For example, teasing peers, using negative commentary, or bullying others)."

Step 2: Playground monitors should be trained and prepared to:

Distinguish when students are carrying on properly on the play area (as indicated by the school conduct rules) and give kids specific praise about their positive conduct (e.g., "Jane, thank you for cheering on your team mates that was very respectful of you!").

Reward students with tickets or other tokens for indicating suitable conduct (National Institute of Mental Health, 2009). Recognize when students are getting out of hand (as indicated by the school conduct rules), give the students a verbal prompt, and show kids the guidelines of the proper ways to play.

Appendix A2

Steps Regarding the use of PBIS on the Playground

Step 3: Train Students in Appropriate Playground Behaviors.

Instructors should than introduce their students to the behavioral rules (made in Step 1) for utilizing the play area. (Lewis et al., 2008). Once students appear to see how they are expected to behave in that setting, take the entire class out to the play area for an administered instructional session. Have students hone their aptitudes (e.g., "Class, watch Travis tagging his peers safely. That is the right approach to do it. Great job!"), and brief corrective feedback (e.g., "Chris, you called out your question in the middle of instruction, next time you should raise your hand and wait to be called on"). Perfecting proper behaviors in the play area would help kids to rapidly sum up their abilities and apply them to another setting (Weintraub, 2013).

Step 4: Start the Intervention.

Tokens such as 'great conduct' tickets should be given to students who are acting properly. For example, in a study conducted by Franzen and Kamps, instructors gathered the 'great conduct' tickets when their students came back to the classroom; these tickets were tallied and placed into a jug. At the point when the class had gathered a specific number of tickets (to be controlled by the instructor), the class would get a prize or benefit such as hosting a pizza get-together, or being permitted an extra break (Franzen & Kamps, 2008).

Appendix B

A-B-C Analysis

Date/Time	Activity	Antecedent	Brief Description of Behavior	Consequence

Appendix C

PLAY definitions

Personal Space	Touching peer unnecessarily (e.g., pulling on clothes, wrestling or rough play, pushing, hugging, leaning over a person's shoulder, holding onto someone); or staying too close to a peer who is moving away during non-chase games.
Not Listening	Calling out while a child or adult is speaking to the group; or other verbal or nonverbal disruptive behavior that interrupts the speaker
Arguing/Inappropriate Language	Backtalk, arguing, criticizing, or yelling directed at adult
Disrespect	Verbal or nonverbal teasing or making fun of peer(s) -- includes "making a face" at a peer; or not responding to an adult instruction after the second-time given

Appendix D

Data Sheet

Student	Personal Space	Not Listening	Arguing/Inapprop Language	Disrespect

P- Personal space- **L** –Listen to the adult quietly, and wait to be called on **A**- Avoid arguing and inappropriate language **Y**-Say YES to cooperation & respect

Personal Space
Touching peer unnecessarily (e.g., pulling on clothes, wrestling or rough play, pushing, shoving, hugging, leaning over a person's shoulder, holding onto someone), being too close to a peer who is moving away during non-chase games).

Not Listening
Verbal or nonverbal interruption of a child or adult who is speaking, talking during instructions (e.g., calling out questions, answers, or comments, behavior that causes the speaker to stop talking).

Arguing/Inappropriate language
Argumentative or noncompliant responses (e.g., "That's not how you play it", "that's not fair"), criticizing, yelling at, general inappropriate remarks or gestures (e.g., rude hand gestures), backtalk to adults.

Disrespect
Teasing or making fun of peers and/or failure to respond to an adult instruction after the second time given

Appendix E

Data Summary Sheet

Date											
Condition											
(a) **Wild Things** # violations/# children											
(b) **Firecrackers** # violations/# children											
Total # violations/total # children (a) + (b)											
Total % of violations per child											
Wild Things (a) # rules violated (total boxes with tallies)/# violators											
Firecrackers (b) # rules violated (total boxes with tallies)/# violators											
Total violations/Total violators (a) + (b)											
Mean Violations per violator											

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