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## The Effects of Peer Mentoring on Students with Autism Spectrum Disorder

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### Abstract

The purpose of this study was to determine the characteristics of students with autism and their peer mentors that may contribute to the success of peer-mediated intervention strategies. Target students and peer mentors were matched based on skill level, age, and preferences; the students participated in a variety of activities throughout a week-long day camp. Peer mentors were taught how to interact with students, and behavior technicians were trained to facilitate these interactions. A qualitative case study was designed to determine patterns across the matched pairs. Findings indicate that peer mentor characteristics and the characteristics of the target student contribute to the success of a peer mentoring intervention.

### Introduction

Autism spectrum disorder (ASD) is an all-encompassing term used to describe a complex, lifelong developmental disability. The disability is characterized by deficits in social interactions, nonverbal communications and behaviors, and development and maintenance of meaningful relationships (American Psychiatric Association, 2014). Individuals may or may not experience all symptoms typically associated with autism; additionally, the severity of those symptoms varies from person to person. Individuals with ASD often experience qualitative impairments in social interaction, communication, and repetitive behaviors (Autism Speaks Inc., 2014; Kishore & Basu, 2014; Lesack, Bearss, Celano, & Sharp, 2014), as well as difficulties following social interaction norms, understanding nonverbal communication, and identifying functional limitations of social interactions (American Psychiatric Association, 2014).

According to the Center for Disease Control and Prevention [CDC] (2014), more than 2 million individuals in the United States are affected by ASD. Every year, about one in every 68 American children is diagnosed with ASD. ASD can affect individuals regardless of ethnicity, race, gender, or socioeconomic status, and autism is four- to five-times more common in boys than in girls (CDC, 2014). In the last 40 years, the prevalence of ASD has increased tenfold, and ASD diagnoses continue to increase by 10% to 17% annually (Autism Speaks Inc., 2014). Although increased awareness and accurate diagnoses may be contributing

factors, there is no concrete explanation given for the increase in children diagnosed with ASD in recent years.

Although each child diagnosed with ASD may experience symptoms of varying severity, Willis (2006) states that all children on the spectrum have difficulty or delays in: 1) language and communication, 2) social relationships, and 3) response to sensory stimuli. The author also notes that children with autism may display atypical or inappropriate social behaviors which, in turn, can cause social isolation (Willis, 2006). The purpose of this study was to investigate the use of a peer-mentoring intervention to increase social interactions between children with autism and typical peers without autism as a means to address social isolation.

### Literature Review

Peer-mediated intervention strategies are most commonly based on social learning theory. Bandura (1977) emphasizes that psychological functioning is not influenced by inner forces or external environmental factors; rather, this functioning is determined by “reciprocal interactions between behavior and its controlling conditions” (p. 2). Social learning theory suggests that humans can learn through both direct experiences and through modeling. In keeping with this theory, humans learn behavior by observing others instead of simply learning patterns through trial and error. Bandura (1977) also notes that humans are in control of their own behaviors, and self-regulative influences can serve as causal consequences for one’s

actions.

As peer-mediated programs continue to gain popularity in the school setting, there is an increased pressure to ensure that these programs are beneficial to both the target student (the child with ASD) and the typically developing peer mentor. Deutsch and Spencer (2009) state that individual relationships (between the mentor and mentee), and components of the program as a whole, must be understood in order to fully assess the quality of said program. Rhodes and DuBois (2006) recommend policies be put in place that will “promote evidence-based innovation, rigorous evaluation, and careful replication ... and encourage intentional and scientifically informed approaches to mentoring across the full-spectrum of youth-serving settings” (p. 1). If these requirements are met, mentoring programs should yield benefits for both the peer mentors and mentees.

In order to ensure that students will benefit from peer-mediated interventions, a specific process should be followed. There are a number of peer-mediated programs that can be used by teachers in an elementary setting; one such program, peer-mediated instruction and intervention strategies (PMII), is described in detail by Sperry, Neitzel, and Engelhardt-Wells (2010). This type of intervention is designed to “systematically teach typically developing peers way of successfully engaging children with ASD in positive social interactions” (Sperry et al., 2010, p. 256). The peer must be explicitly taught to interact in a meaningful and positive way with their classmates on the spectrum. The teacher must also follow a set procedure, consisting of five steps, in order to ensure that the intervention is as effective as possible.

The first step is to select peer mentors to participate in the intervention. Sperry and colleagues (2010) list the characteristics an ideal mentor should demonstrate. Peers should: be well liked by their peers, have a positive or neutral history with the target student, exhibit good social skills and age-appropriate play skills, show interest in participating, attend school regularly, follow adult instructions, and be able to attend to a task for at least 10 minutes. Peer models should also be able to develop friendships easily, be socially competent, and be socially responsive to their classmates (Sartini, Knight, & Collins, 2013). Locke, Rotheram-Fuller, and Kasari (2012) suggest that peers should be the same age or older than the target student, be academically strong, and have confidence in their leadership abilities.

Step two involves training and supporting the peer models. As previously mentioned, peers should be explicitly taught how to positively and effectively interact with students with autism. Teachers should discuss the similarities and differences between children with ASD and their typically developing peers, provide examples of observable behaviors children with ASD might exhibit, and teach specific strategies (such as sharing, providing assistance and praise, and basic play behaviors) to support the interaction between peers and the target children (Sperry et al., 2010).

During step three of PMII, a structured teaching session is implemented. Peers are given the opportunity to practice the skills they were taught in step two with the target children. The teacher introduces the daily activity, prompts the peer to interact with the target child, and reinforces appropriate behavior on the part of the peer and the target child.

In step four, the teacher should focus on implementing the peer-mediated intervention in the classroom and school setting. Sperry et al. (2010) suggest that teachers take a number of factors into account before implementation: classroom arrangement, selection of materials, appointment of responsible staff members, and the use of prompts and reinforcements. The peer-mediated intervention should be integrated into the daily schedule and occur at the same time each day. Target students should know what is expected of them during these activities. Prompts and reinforcements should be decreased throughout the implementation of the intervention.

The final step involves generalizing and expanding peer interactions throughout the rest of the school. The target child should have opportunities to initiate and participate in new and different types of social interactions with their peers each day. In order to provide these opportunities, teachers should consider increasing the number of peers who interact with the target child, or systematically rotating the peers interacting with that child (Sperry et al., 2010).

An ample amount of research has been conducted in order to determine the effects of peer mentoring on target students, including individuals on the autism spectrum. Positive and meaningful relationships are formed through peer mentoring programs; these relationships, according to Smith (2011), positively influence behavior change (e.g., decreases in repetitive behavior, and increases in appropriate social behavior), as well as help the target students overcome social,

personal, and academic barriers. Peer mentors also encourage the mentee to achieve success in everyday life. Peer-mediated interventions give the target student ample opportunities to improve social skills in a natural setting (Battaglia & Radley, 2014); the same study suggests that these interventions should increase the student's ability to communicate, initiate and maintain peer interactions, and take turns speaking, while decreasing undesirable social behaviors. Ogilvie (2011) mentions some strategies that can be used when mentoring a child with autism. The child and their peer mentor can work together on an assignment during class, participate in a social skills group, and role play various social situations they may encounter in the real world. Through these activities, research findings suggest that students with autism were better able to socially interact with their peers and were able to maintain the skills learned during the intervention (Ogilvie, 2011). Another study by So Hyun, Odom, and Loftin (2007) also yielded positive results. In this study, three children with high rates of stereotypical autistic behavior interacted with two typically developing peers during structured play activities. Researchers found that, through this intervention, all three children showed "collateral decreases in stereotypical behavior ... and the results were generalized to a proximal play setting" (So Hyun et al., 2007, p. 67). The authors also found that social engagement and interaction decreased both simultaneous and motor stereotypical behaviors for the children with autism. These studies suggest that, through peer-mediated interventions, a child's atypical behaviors will decrease, and social interactions with their peers will increase; these factors, in turn, lead to improved social skills and a sense of belonging in the classroom.

Because elementary-aged children spend the majority of their time in a school setting, it is crucial that all students have opportunities to form friendships with their peers and collaborate based on similar interests. Providing a safe and nurturing environment in which positive peer-to-peer interactions are encouraged leads to more positive outcomes and greater social skills, specifically in regard to elementary students (Grossman, Goldmith, Sheldon, & Arbreton, 2009). School-based mentoring programs are the most common form of mentoring in today's education system because children spend so much of their time at school. Although school-based mentoring programs may not allow for as much flexibility as other programs, the benefits far outweigh

the minor drawbacks. Smith (2011) suggests that peer mentoring interventions allow children with autism to develop social skills, as well as increase their self-esteem and self-efficacy.

Although there is a decent amount of research on the effects of peer mentoring strategies and interventions on children with autism, there is little research on the effects of these interventions on the peer mentors. The purpose of this study is to identify the characteristics of a successful peer mentoring relationship, as well as the benefits for the typically-developing peer mentors participating in the interventions. The results of the peer mentoring interventions will be reviewed in order to identify both positive and negative impacts experienced by the typically-developing children.

### **Characteristics of a Suitable Target Student**

Children on the autism spectrum who exhibit limited communication skills, do not respond or initiate social interactions with peers, and struggle in a group context are good candidates for peer-mediated interventions (Sperry et al., 2010). It is also important to "consider the student's current level and mode of communication and social interaction" (Sartini et al., 2013, p. 56) when planning and implementing a peer mentor program; the teacher should select goals for the target student based on these factors.

In order to determine the most beneficial approach for the target student, the teacher should decide if the student has a performance or acquisition deficit. If a performance deficit is present, the target student should be provided with "increased opportunities to practice the target [social] skill" (Battaglia & Radley, 2014, p. 6); if an acquisition deficit is present, the intervention should focus on providing the child with opportunities to learn the target skill, as well as receive feedback through peer modeling and direct training (Battaglia & Radley, 2014).

### **Characteristics of a Suitable Peer Mentor**

Sperry et al. (2010) indicate that there are several traits that qualify a student as a good peer mentor; peer mentors should "exhibit good social skills, language, and age-appropriate play skills, be well-liked by peers, have a positive social interaction history with the focal child, be generally compliant with adult directives, attend to an interesting task or activity for 10 minutes,

be willing to participate, and attend school on a regular basis” (p. 257).

It is suggested that peer mentors be “socially connected to children with ASD, as well as other classmates, and maintain a strong and positive role within the classroom” (Locke et al., 2012, p. 1895). Children selected as peer mentors should be capable of developing friendships with the target child, and should be self-confident leaders in the classroom (Locke et al., 2012; Sartini et al., 2013). From observation of the students who participated in the program, peer mentors should have prior knowledge of and first-hand experience working with children with disabilities.

Although all of the characteristics mentioned above are important in ensuring success in a peer-mediated intervention, the peer mentor should exhibit five defining characteristics in order for the interventions to be the most beneficial for the target student. These five characteristics were selected based on research of published literature and personal observations made during the summer program. Peer mentors should be able to follow instructions given by adults, be willing to participate, have first-hand experience working with children with special needs, be self-confident leaders, and be socially responsive to their peers (both typically developing and those with special needs).

### Methodology

The purpose of the study was to investigate the use of peer mentors to facilitate social interactions for students with autism at a Northwest Arkansas day camp. This section outlines methods and procedures. A qualitative case study design was used to determine patterns across matched pairs.

### Research Questions

1. What are the characteristics of a peer mentor that contribute to the success of a peer-mentoring program for students with autism spectrum disorders?
2. What are the characteristics of a student with autism that contribute to the success of a peer-mentoring program?
3. Are the findings consistent with those identified by Sperry et al. (2010)?

### Selection of Cases

Sample selection was purposive in nature. Eleven case study pairs were selected based upon attendance at camp, consent from parents and guardians, completed applications, and completed data collection forms from behavior technicians. Out of the 20 peer-mentoring pairs, 11 met the criteria for analysis. The data for this study were collected in the summer of 2014 and analyzed post hoc throughout the fall and spring of 2015.

To further illustrate the findings, two case studies were identified from the original 11 case study pairs for in-depth analysis. These two cases were selected based upon success of the peer mentor relationships or the lack of success of the peer mentor relationship. The most successful and least successful cases were selected and discussed.

### Data Collection

In order to identify themes across case studies, data triangulation procedures were utilized. Data triangulation included record reviews, direct observation, and data collection.

The completed applications were reviewed by the program administrator and kept in a secure location throughout the program and data analysis process; researchers had access to these applications for data collection purposes only. These applications were used to gather demographic data on the children participating in the program. Additionally, the data sheets were kept in the same secure location and were available to researchers for data analysis purposes.

Inter-observer agreement data were not collected during this study due to the researcher to camper ratio; each researcher was assigned to observe a child with autism and their typically developing peer mentor. Had there been more researchers available during the program, this data would have been collected and reviewed.

**Record Reviews.** In order to attend camp, parents were asked to complete an application. Both mentors and target children completed the application process.

Applications for children with autism were extensive and required parents and guardians to provide information including the child’s demographics (name, gender, age, grade), diagnoses, likes and dislikes,

strategies, skill level (toileting, dressing, eating), behaviors, emotional development, social development, and communication skills.

The peer mentors' parents and guardians were also asked to complete a registration form in order for their children to attend the program. Parents and guardians provided information regarding their child's demographics (e.g., name, gender, age, grade), likes and dislikes, hobbies, and academic and extracurricular activities.

**Direct Observation.** Daily observations of peer-mentoring pairs were conducted by doctorate-level behavior analysts. Observations were conducted during social play activities and during a one-to-one teaching session each day. Behavior analysts modeled appropriate support techniques such as prompting and reinforcement for the behavior technicians to facilitate the interaction of both the mentors and target students. Behavior technicians were given feedback daily from the behavior analysts on their performance in supporting the peer mentor relationships. Behavior analysts specifically observed for aggression (both verbal and physical), elopement, number of interactions between the pair to determine what level of prompting and reinforcement each pair would require.

**Data Collection.** Data were collected every day throughout the camp experience on time on-task, instructional strategies, the student's engagement in activities, manding, and peer interactions. Manding is defined as a verbal operant that is brought about by a modus operandi (MO) and followed by specific reinforcement (Cooper, Heron, & Heward, 2007).

Behavior technicians were given an hour of training each day before camp activities began; researchers were taught how to annotate specific behaviors on the data collection sheets, and what types of behaviors to look for in the children with autism. Doctorate level students trained the undergraduate level behavior technicians.

Data were organized in an Excel spreadsheet so that themes across student characteristics, peer mentor characteristics, and outcomes could be identified. Two researchers reviewed and sorted the data based on overall perceived success of the peer-mentor relationship. Pairs were labeled either successful or unsuccessful based on social interaction and consistent engagement of the peer mentor throughout the week. Interrater agreement on the successful participation was 100%. Themes were identified regarding the

characteristics of the peer mentor that may or may not have contributed to the successful relationship. Each peer was rated on the characteristics of a good peer mentor based upon the research of Sperry et al. (2010). Two researchers rated each peer mentor, and interrater agreement was 100%. Each target student was rated on the characteristics of a good candidate for using peer mentor interventions based on the research of Sperry et al. (2010). Upon review of the characteristics of a good candidate for peer mentoring, it was determined that ability to imitate, aggression, elopement, and the ability to follow simple directions were characteristics of the learner that may contribute to success, and were therefore included in analysis of the data.

### Setting

The setting was an inclusive day camp designed for students with autism spectrum disorders in the Northwest Arkansas area. Camp was held on a community church campus in Northwest Arkansas; however, there was no religious affiliation between the church and the program. Camp was held for four hours per day for one week (Monday through Friday). Two groups were held: ten campers and ten peer mentors participated in each session of the program.

Teaching space consisted of a large theatre, three classrooms, a snack area, and a large outside play area. The daily schedule included highly preferred activities across each setting. The schedule was consistent across each day. Campers and peers were rotated through each activity to avoid overcrowding in the play areas. Activities consisted of small-group, large-group, and one-to-one play. Each camper and peer were provided a daily schedule, either in a picture schedule or in a picture schedule with words depending on the needs of the camper.

### Participants

Ten students with autism and ten typically developing peers aged 5 to 8 participated in the first week of the program; ten students with autism and ten typically developing peers ages 9 to 12 participated in the second week. The program was advertised across the Northwest Arkansas area, and families volunteered to attend (both the target students and the peer mentors). The students' parents and guardians were asked to complete a questionnaire providing information about

their children's demographics, behavior characteristics, preferences, and interests. Target students were paired with peer mentors based on the answers provided on the questionnaires.

Two mentoring pairs were identified based on being most successful and least successful peer mentoring partnerships. Two case studies are presented in detail to illustrate the findings. Summaries of the characteristics of each peer-mentoring partnership, in relationship to findings in the literature on which characteristics should be exhibited by the mentor and target student, are provided in the results section.

## Procedures

Camp announcements were sent to agencies across Northwest Arkansas that support people with autism and related disabilities. These agencies included autism-support groups; speech, occupational, and behavior therapy agencies; and local special-education programs in the public school systems. Solicitation for participants began on May 1, and the deadline for complete camper and peer mentor applications was due on June 15. Acceptance was on a first-come-first-serve basis. Applicants after the first 20 were placed on a waiting list.

**Choosing and Training Peer Mentors.** Sperry et al. (2010) suggested a five-step process for using peer-mediated instruction and intervention strategies: selecting peers, training and support, structured teaching, and implementing the intervention in a classroom setting. The following outlines the training procedures according to these steps.

**Peer Mentor Selection.** The sample for peer mentors was purposive. Twenty students applied to attend camp and were automatically accepted as a peer mentor. Campers were then matched with mentors based upon interest, age, and skill level. Given all campers had to be matched with a peer based upon whoever applied, the "best match" possible was made. First, pairs were matched based on skill level. Peers who had more first-hand experience with people with disabilities were matched with students needing the most support. Age was also taken into consideration, so that younger children were not placed with older children, if at all possible. Preferably, the peer mentors were the same age or older than the target student. Finally, peers were matched based upon their interests to facilitate commonality between the pairs.

**Training and Support.** On the first day of camp, peers were asked to arrive one hour early for training. Peer mentors received one hour of training, which consisted of understanding autism, learning how to be a friend to a child with autism, gaining strategies to engage children with autism in activities (e.g., prompting and reducing the number of words), and knowing what to do if your new friend is frustrated (e.g., how to ask the behavior technicians for help and remove oneself from the area). With each topic, the students had the opportunity to role play with each other and with an instructor.

**Implementing Peer Mentoring.** The classroom setting and activities were set up to facilitate peer interactions (see schedule). Highly preferred activities for both the peers and learners were set up at centers. The pairs were instructed to stay together during these activities. The pairs rotated throughout the centers and played one-to-one during the teaching time.

**Training Behavior Technicians.** Each pair of students was assigned a behavior technician in training. Behavior technicians were undergraduate- and graduate-level students interested in learning how to apply behavior support techniques for children with autism. Behavior technicians spend three hours per day (before camp activities began) in training. On day one, the behavior technicians learned about autism, their camper, data collection procedures, and ways to support the peer mentor. Other learning topics included functional behavior assessment, discrete trial training, reinforcement, naturalistic teaching techniques, and crisis management. Each day after camp, the behavior technicians met with the behavior analysts to debrief and to receive feedback on how to better facilitate the peer relationships.

The author participated as a behavior technician during both sessions of the program. It was the responsibility of the author to facilitate social interactions between the target student and their peer mentor, as well as collect data on those interactions using the data sheet provided in Appendix F. The author received three hours of training each day before camp, as well as ongoing feedback from the behavior analysts each day after camp.

Table 1. Camper and Mentor Characteristics

Pair	Diagnosis	Camper Age	Verbal Communication	Social Initiation	Group Setting	Aggression	Elopement	Imitation	Mentor age	Defining Characteristics	Outcome
1	Autism	5	Yes	No	Yes	Yes	Yes	No	7	5	Unsuccessful
3	High functioning	7	Yes	Yes	Yes	No	No	Yes	10	3	Unsuccessful
4	Autism	7	Yes	No	Yes	Yes	Yes	No	9	5	Unsuccessful
5	Autism	11	No	No	Yes	No	Yes	No	6	5	Unsuccessful
7	Autism	11	No	Yes	Yes	No	No	Yes	10	1	Unsuccessful
9	Autism	10	Yes	No	Yes	Yes	Yes	Yes	8	1	Unsuccessful
10	Autism	9	No	No	Yes	Yes	Yes	No	10	2	Unsuccessful
2	High functioning	7	Yes	Yes	No	No	No	Yes	9	4	Successful
6	Autism	10	Yes	Yes	Yes	No	No	Yes	8	4	Successful
8	High functioning	9	Yes	Yes	Yes	No	No	Yes	9	4	Successful
11	Autism	10	Yes	No	Yes	No	Yes	No	12	5	Successful

## Results

The results of this case study are based on triangulation of data (observation, documentation, and data collection). Themes within the data across participants were identified by two researchers and compared until a consensus was found. Peer mentor data and learner data were both compared to the findings in Sperry et al. (2010). Then, the data were compared to the report outcome of the peer relationships (successful or unsuccessful). Data on each pair can be found in table 1.

In Table 1, some of the characteristics of the camper and their peer mentor are listed. “Verbal Communication” refers to the target students’ ability to independently communicate with peers and adults; “Social Initiation” refers to the target students’ ability to independently initiate social interactions with their peer mentor. The “Group Setting” column indicates whether or not the target students struggled in a group context. “Defining Characteristics” refers to the number of characteristics (mentioned in Sperry et al. (2010)) the peer mentor exhibited in each pair. Finally, “Outcome” refers to the overall success of the peer mentoring relationship.

Several different factors were taken into account in order to gauge the overall success of each peer mentoring pair. Most importantly, the number and type of interactions were tallied; the more meaningful interactions a group had, the more successful their outcome. If, by the end of the week, the majority of the interactions were unprompted (the interaction was initiated by the peer or the child with autism), and the number of interactions increased, researchers

considered the outcome successful. If the children were not engaging in social interaction throughout the day, or the number of interactions decreased throughout the week, the outcome was considered unsuccessful.

Each child’s diagnosis is included in the table above. Researchers relied on parent reports for diagnostic confirmation; it is important to note that some of the children who participated in the program had been working with the camp administrator and several of the graduate level students. Because of this, the administrator and graduate students were able to confirm the diagnosis of several of the campers. In some cases, however, researchers had to rely strictly on parent report.

Based on direct observation during the summer program, parent reports, and characteristics identified by Sperry et al. (2010), we listed five defining characteristics that contribute to the success of peer-mentoring interventions. If the peer mentor possessed the five defining characteristics, there was a positive effect on the overall success of the outcome.

We also found that there are certain characteristics the target student should exhibit in order to benefit from peer-mediated strategies. For example, the target students benefited from the program if they exhibited limited communication skills, struggled in a group context, and did not respond to or initiate social interactions with their peers. However, if the child showed signs of aggression toward themselves or others, eloped, or lacked the ability to imitate certain behaviors in a social context, there was a negative effect on the overall success of the outcome.

Our findings regarding the characteristics of a successful peer mentor were consistent with the



characteristics mentioned in Sperry et al. (2010). Although we concluded that the target student should exhibit the three characteristics mentioned in the literature, we also found that the presence of aggression, elopement, and lack of imitation skills negatively contributed to the overall success of the peer-mentoring program.

In the sections below, two case studies- the most successful and least successful pairing- were chosen and discussed in further detail to analyze the effects of peer mentoring on both the target child and the peer mentor. Ben and Kasey (pair 1) had the most successful peer mentoring relationship, while Adam and Amy (pair 2) exhibited the least successful relationship. As previously mentioned, the number and type of interactions and the overall engagement of the child with autism and their peer mentor were examined when determining the outcome of the relationships. In addition, Ben exhibited two of the three characteristics of a child who would benefit from a peer mentoring intervention, and Kasey exhibited the defining characteristics of a successful peer mentor. Adam exhibited all three characteristics of a child who would benefit from a peer mentoring intervention, but his peer mentor, Amy, showed only two of the defining characteristics of a successful peer mentor.

### **Camper (Target Child) 1 Characteristics**

Ben (pseudonym) is a ten-year-old, male student who attended the second program session (from July 28 through August 1). Ben had completed third grade before attending the program. He has been diagnosed with autism spectrum disorder, a communication disorder, and Attention Deficient and Hyperactivity Disorder (ADHD). On Ben's camp registration form, his mother specified his communication disorder by stating, "He doesn't know when to ask sometimes and is learning to talk a little." Ben's mother indicated that he uses a visual schedule for half of the day; he also uses relaxation protocols in the form of pushing or holding a pillow. Ben is completely independent in regards to toileting, dressing, and eating.

Ben's emotional development seems to be delayed. He is not yet able to request a break when he becomes frustrated or upset, does not request assistance independently, and does not express confusion. Ben does not indicate his likes and dislikes to adults or peers. With some assistance, Ben can express his

feelings. Ben can indicate relaxation with complete independence. I served as Ben's behavior technician during his camp session, thus the researcher was able to observe his emotional and social development, as well as his social interactions throughout the week. There were several instances where Ben would indicate that he was upset or frustrated, either by crying, yelling, or eloping from the current situation. However, he was not able to articulate his emotions verbally.

Ben also experiences some delays in his social development. On the registration form, Ben's mother indicated that he does not engage in solitary play, but he will engage in parallel play with peers. With some assistance, Ben will participate in group play and will share materials with his peers. He will take turns without needing to be reminded. Ben's mother mentioned that he enjoys imaginative play.

Ben needs assistance following nonverbal directions, but can independently follow verbal directions within familiar routines. With some assistance, Ben can follow verbal directions within novel activities, utilize visual supports to follow directions, and make requests for basic wants and needs. He can independently use pictures, signs, and other augmentative communication methods. Ben is able to converse with peers and adults with some assistance and prompting. According to his mother, Ben makes eye contact with children and adults, but requires some assistance to progress to the next step of verbal communication. During group activities, Ben would approach his peers (both typically developing and those with special needs) and make eye contact with them. However, he did have some difficulty verbally communicating with others.

### **Peer Mentor 1 Characteristics**

Kasey (pseudonym) was selected as Ben's peer mentor. She is a 12-year-old female who had completed seventh grade before attending the program. Having worked closely with her, the author was able to observe Kasey's personality and characteristics throughout the week.

Kasey was competent in her social and language skills and engaged in age-appropriate play skills throughout the variety of activities offered during camp. Her peers, both typically developing and those with special needs, seemed to get along with her, and she was well liked by the children and adults participating in the program. Kasey had not previously interacted with

Ben, so her social interaction with him was neutral. In regards to following directions, Kasey was consistently compliant; she willingly completed any task given to her by an adult. From what I observed throughout the week, Kasey is more than capable of attending to an interesting task or activity for an extended period of time. According to her mother, Kasey does attend school on a regular basis and participates in extracurricular activities, including volunteer work. She readily volunteered her time to participate in the program.

### **Camper (Target Child) 2 Characteristics**

Adam (pseudonym) is a 9-year-old male student who had completed the fourth grade before attending the second session (July 28 through August 1). He is diagnosed with autism and is nonverbal. Adam employs the following strategies: visual schedules, chewing gum, a weighted blanket or vest, and joint compressions. He can eat independently, but requires partial assistance when toileting and dressing. Adam has a tendency to elope, scream or yell, and scratch, bite or hit others and himself if he becomes excited or frustrated; if there is a change in his routine, Adam may become anxious or inflict self-injury. In his camp registration form, Adam's grandmother informed us that he does not do well without prompting or a schedule.

Adam exhibits some emotional developmental delays. With help, he is able to request a break when he becomes upset, request assistance, and indicate his likes and dislikes. He does not express his feelings, indicate relaxation, or express confusion.

Adam is able to engage in solitary play independently. With help, he can take turns with his peers. However, he does not yet engage in parallel play, group play, or share materials with peers. His grandmother stated that Adam "will watch other children in or around his age group in a playground setting, but will not engage in active play." He prefers to engage in independent play with electronic games and devices; he will watch his peers play games on a computer or iPad.

Delays in Adam's communication are also present. Adam uses a schedule or communication cards, and may use sign language to communicate his wants or needs. At camp, he was using a communication device, but was still learning how to use it. "He does understand one- and two-step instructions" according to notes on his camp registration form. He can independently follow

verbal directions within familiar routines, but does not consistently follow nonverbal directions. Adam does not yet call attention to others, or converse with peers and adults. He does require some processing time to follow directions, and can independently use pictures, signs, and other augmentative communication. With some assistance, Adam can make requests for his basic needs and wants, as well as follow verbal directions within novel activities and utilize visual supports to follow directions. Adam can make transitions, make choices, and wait when directed with some help.

### **Peer Mentor 2 Characteristics**

Amy (pseudonym) is a 10-year-old female student who was selected to be Adam's peer mentor during the summer program. Although the author was not able to interact with Amy during most of the program, the author was able to observe her personality and characteristics throughout the second camp session.

Through a number of group activities and games, Amy demonstrated good social skills and language, as well as the ability to engage in age-appropriate play skills. Amy was shy and tended to be quieter than the majority of her peers. Both her typically developing peers and the other campers displayed a neutral relationship toward Amy (she was neither well liked nor disliked by her peers). Amy did not have a social-interaction history with Adam or any of the campers participating in the program. She took direction well, and was compliant with adult directives. Amy seemed to enjoy the activities offered in the camp setting, and was able to attend to the tasks and activities presented to her without distraction. Amy's parents informed us that she did not have a lot of prior experience working with children with special needs; she willingly volunteered her time to participate in the program.

### **Discussion**

As previously mentioned, Table 1 was constructed in order to identify themes in the data collected throughout the camp program; themes across observations and across parent records were also examined. We found that students diagnosed with high-functioning autism tended to have a more successful outcome than those diagnosed with autism (only one student diagnosed with high-functioning autism experienced an unsuccessful outcome). In

addition, students who showed no signs of aggression benefited from the peer-mediated instruction and intervention strategies. Out of the four successful peer mentor relationships, only one student eloped. Despite exhibiting a characteristic that would normally cause an unsuccessful outcome, we contribute this student's success to his peer mentor's characteristics. In this particular case, the peer mentor remained with the target student even when the target student eloped from certain situations. In three out of the four successful pairs, the target student was able to imitate certain behaviors in social situations, allowing them to interact with their peer mentor in a meaningful and beneficial way. The peer mentors in the four successful pairings exhibited at least four of the five defining characteristics mentioned by Sperry et al. (2010); one mentor exhibited all five defining characteristics.

Through the summer program, we found that a number of factors should be taken into consideration before implementing a peer-mediated intervention aimed at improving the social-interaction skills of children with autism. As previously mentioned, several characteristics of both the target child and their peer mentor should be present; the target child and mentor should be matched according to their behavior traits and preferences in order to ensure the intervention will yield positive results. A successful outcome was determined by the number and type of social interactions between the child with autism and their typically-developing peer mentor throughout the week-long session. If the majority of interactions were initiated by the child or peer mentor, and the number of interactions increased throughout the week, the pairing was considered successful.

The target child is most likely to benefit from a peer-mediated intervention if they struggle in a group context, do not initiate or respond to social interactions, and display limited communication skills. In this particular study, Ben exhibited two of the three characteristics of a good target student (he did not show obvious signs of struggling in a group setting). Overall, Ben seemed to benefit from the intervention. Ben's peer mentor, Kasey, exhibited the five defining characteristics of a successful peer mentor; she was a self-confident leader, was socially responsive to her peers, followed directions, was willing to participate, and had first-hand experience working with children with special needs. Their relationship was considered successful because there was a significant increase

in the number of unprompted social interactions and engagements between the children throughout the week.

Because Ben exhibited the majority of the traits of a good target student and Kasey exhibited all the traits of a successful peer mentor, both students benefited from their time at camp. By the end of the week, Ben was more socially responsive to adults and his peers; he was more verbal than he had been at the beginning of the program. Ben was more willing to comply with adult instructions, and responded to verbal and nonverbal communication more frequently as the week progressed. Kasey also seemed to benefit from her interactions with Ben. She told us that she enjoyed working with Ben, and liked having the opportunity to assist children with special needs. When asked if she would attend camp again, Kasey indicated that she would like to participate in the program if given the opportunity.

The second target child mentioned in this study, Adam, exhibited all three characteristics of a good target student. However, he also exhibited several characteristics that may have negatively affected his relationship with his peer mentor. Adam displayed aggression, elopement, and was aversive to social interactions. Amy, Adam's peer mentor, did not exhibit the majority of the defining characteristics of a successful peer mentor. Although Amy was willing to participate in the program and followed instructions given by adults, she was not a self-confident leader, did not have previous experience working with children with special needs, and was not as socially responsive to her peers due to her shy demeanor. Amy was physically much smaller than Adam; the difference in size may have adversely affected the peer-mediated intervention. Adam and Amy's relationship was not beneficial, and was not considered successful for a number of reasons. Most importantly, there was not a significant increase in unprompted social interactions between the children. Throughout the week, Adam and Amy interacted with one another; however, the majority of their interactions were prompted by a behavior technician.

Although our findings were consistent with Sperry et al. (2010) in regards to the defining characteristics of a successful peer mentor, our findings were not consistent in regards to the defining characteristics of a target student who will benefit most from peer-mediated intervention strategies. Through observation during the program, we discovered that

there were three additional characteristics of the target student that should be taken into consideration when implementing this intervention. The intervention was unsuccessful if the student showed signs of aggression, elopement, or lacked the skills necessary to imitate others in a social context.

It is also important to note that the culture established in the classroom (and the overall culture of the school) may be an important factor in the success of peer-mediated interventions. In an elementary school setting, the teacher should establish a supportive and safe environment for all students, including those with special needs; if this environment is present, the peer-mentoring relationships will most likely be more beneficial for the students involved. Students should accept their peers and honor their unique qualities and characteristics, regardless of ability or disability.

### Conclusion

Based on the data collected and observations taken during the summer program, it is evident that there are certain defining characteristics of students with autism—as well as their peer mentors—that contribute to the overall success of peer-mediated intervention strategies. One target student and peer mentor pair benefited from the intervention strategies implemented during camp, while another pair experienced no observable benefits. The students with ASD who benefited the most from peer-mediated interventions exhibited less aggression and self-injurious behavior, as well as the ability to follow one-step verbal directions. Because of the observations made by a behavior technician during the program, it can be concluded that great care should be taken when matching the students with autism to their typically developing peer mentors.

As previously mentioned, characteristics of both the student with autism and their peer mentor should be taken into consideration when developing and implementing a peer mentoring program in the classroom. Based on research (Gardner et al., 2014) and literature (Battaglia & Radley, 2014; Sperry et al., 2010), students who have limited communication skills, struggle in a group context, and do not respond to or initiate social interactions with their peers typically benefit most from these interventions. Research (Locke et al., 2014), literature (Battaglia & Radley, 2014; Sartini et al., 2013; Sperry et al., 2010), and direct observation during the camp sessions indicate that the following

characteristics should be exhibited by the peer mentor in order to add to the success of the intervention: be able to follow instructions, be willing to participate, be self-confident leaders, be socially responsive to their peers, and have first-hand experience working with children with special needs.

### Implications

Peer-mediated intervention strategies based on principles of behaviorism and social learning theory are aimed to improve the social skills and increase the number of social interactions between students on the autism spectrum and their typically developing peers (Bandura, 1977; Gardner et al., 2014; Sperry et al., 2010; Wilkes-Gillan, 2014). The main focus of the intervention is to systematically and explicitly teach typically developing peers strategies to successfully engage students with ASD in positive social interactions (Sperry et al., 2010). Through peer mentoring programs, typically developing students “were more likely to be connected to children with ASD” and “maintained a strong and positive role within the classroom” (Locke et al., 2012, p. 1895).

### Limitations and Recommendations

As is the nature of research studies, there were factors that the researchers could not control that may have affected the outcome of this study. It is difficult to provide a truly authentic environment for students; although the setting was similar to a typical elementary classroom, it was not possible to replicate the exact environment to which each student was accustomed. Although the students that participated in the program were around the same age, there was an age range during both sessions. In an elementary classroom, there would not be as large of an age gap between students. This factor may have impacted the outcome of the study.

It is also important to note the size of the sample for this study. Data were collected on 11 pairs out of a total of 20 pairs that participated in both sessions; in order to draw more accurate conclusions, the study should be replicated with a larger sample size.

The time constraint of a five, four-hour sessions may not have been enough to gauge the overall success of the peer-mediated intervention strategies employed during the program. In order to accurately examine the meaningfulness of the peer relationships, the peer

mentoring strategies should be implemented throughout an extended period of time (perhaps over an entire quarter or semester in an elementary school setting).

### For the Classroom

Peer mentoring is a viable intervention for teachers to use in the inclusive classroom setting. Teachers should take care in matching students with autism with their peer mentors; a number of characteristics and traits of both students should be taken into account. The role of the teacher is to facilitate interactions among the students. Peers must be explicitly taught how to be a successful peer mentor, as well as given a clear definition of their role as a mentor. Ongoing feedback on facilitating social relationships is crucial for both the teacher and peer mentors.

### For Future Research

Recommendations for future studies include defining the characteristics of the target child that contribute to the outcome of peer-mediated intervention strategies. Researchers should focus on contributing variables including (but not limited to) elopement, aggression, and the target student's ability to imitate others in a social setting. Future research should examine the effectiveness of peer mentoring strategies on: 1) promoting social interactions between children with autism and their typically developing peers, and 2) improving the target child's ability to establish and maintain social interactions and relationships with their peers.

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