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The Impact of Peer Learning on Students with Mild Autism : A Qualitative Case Study

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Abstract

The purpose of this research study was to determine the specific abilities of students with autism and their peer learners that may contribute to the achievement of peer-mediatedintervention strategies. Autism students and peer learners were co-ordinationed based on skill level, age, and preferences; the autism students participated in a different of activities throughout a week-long day inclusive education set-up. Peer learners were taught how to interact with autism students, and what social behavioral methods to use and technicians were trained to facilitate these interactions. Current qualitative case study research was designed to determine patterns across the co-ordinationed pairs. Existing research study has endeavored to explore some research objectives to fulfill the target of study and has espoused a purposive sampling technique for the selection of respondents. Eleven case study pairs were selected based upon attendance at inclusive education set-up and set-upwas held on a TEPSE & HEPSN Centre campus in Jodhpur District, Rajasthan Findings indicate that peer learners specific abilities and the specific abilities of the autism student contribute to the achievement of a peer learning intervention.

Key-words: *Peer Learning, Students, Mild Autism and Qualitative Case Study*

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I. 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, non verbal 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 (Kishore & Basu, 2014; Lesack, Bearss, Celano, & Sharp, 2014), as well as difficulties following social interaction norms, understanding nonverbal communication, and identifying function all imitations of social interactions (American Psychiatric Association, 2014).

According to the Center for Disease Control and Prevention, 2014 (CDCP) 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 students diagnosed with autism in recent years. The purpose of this research study was to examine the use of a peer- learning intervention to increase social interactions between students with autism and typical peer learners without autism as a means to address social segregation.

II. REVIEW OF RELATED LITERATURE

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". 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 boost intentional and scientifically informed approaches to mentoring across

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the full-spectrum of youth-serving settings".If these requirements are met, mentoring programs should yield benefits for both the peer mentors and mentees.

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 over come 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).

III. CHARACTERISTICS OF A SUITABLE TARGET STUDENTS

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) 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 feed back through peer modeling and direct training (Battaglia & Radley, 2014).

IV. 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). Children selected as peer mentors should be capable of developing friendships with the target child, and should be self-confident leaders in the classroom (Lockeetal., 2012; Sartinietal., 2013). From observation of the students who participated in the program, peer mentors should have prior knowledge of and first-handexperienceworkingwithchildren 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, beself-confident leaders, and be socially responsive to their peers (both typically developing and those with special needs).

V. OBJECTIVES OF THE STUDY

1. To study the specific abilities of a peer learner that contribute to the success of a peer-learning program for students with autism spectrum disorders.
2. To study the specific abilities of a student with autism that contribute to the success of a peer-learning program.
3. To explore the findings consistent with those identified by Sperryetal. (2010).

VI. RESEARCH METHODOLOGY

The purpose of the study was to investigate the use of peer mentor to facilitate social interactions and education for students with autism at a Jodhpur District, Rajasthan (India)TEPSE & HEPSN Centre day Inclusive education set-up. This section outlines methods and procedures. A qualitative case study design was used to determine patterns across matched pairs.

VII. SELECTION OF CASES

Sample selection was purposive in nature. Eleven case study pairs were selected based upon attendance at inclusive education set-up, consent from parents and guardians, completed applications, and completed data collection forms from behavior technicians. Out of the 22 peer- learning pairs, 11 met the criteria for analysis. The data for this study were collected in the summer of 2020-21 and analyzed post hoc through out the fall and spring of 2021.

To further illustrate the findings, two case studies were identified from the original11 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.

Choosing and Training Peer Mentors. Sperryet 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.

VIII. DATA COLLECTION

Inordertoidentifythemesacrosscasestudies,datatriangulation 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 typically developing their peer mentor.

IX. RECORD REVIEWS

In order to attend camp, parents were asked to complete an application. Hence 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.

X. 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-oneteaching 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.

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 specifier in for cement(Cooper, Heron, & Heward, 2007).

XI. PROCEDURE

Camp announcements were sent to TEPSE & HEPSN Center Jodhpur District, Rajasthan (India) that support people with autism and related disabilities. These center 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 December 21. Acceptance was on a first-come-first-serve basis. Applicants after the first 20 were placed on a waiting list.

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 setup 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.

TrainingBehaviorTechnicians.Eachpairofstudentswasassigned abehaviortechnicianintraining.Behaviortechnicianswereundergraduate-andgraduate-levelstudents interested in learning how to apply behavior support techniques for children with autism. Behavior technicians spend three hours per day (before camp activities began) intraining.

Table1. Autism Students and Peers Specific Abilities

Pair	1	2	3	4
Diagnosis	Autism	High functionin	Autism	Autism
Autistmtudents Age	5	7	7	11
Verbal Communicati	Yes	Yes	Yes	No
SocialInitiation	No	Yes	No	No
Group Setting	Yes	Yes	Yes	Yes
Aggression	Yes	No	Yes	No
Elopement	Yes	No	Yes	Yes
Imitation	No	Yes	No	No
Peersage	7	10	9	6
DefiningCharacteristi	5	3	5	5
Outcome	Unsuccessful	Unsuccessful	Unsuccessful	Unsuccessful

1	2	3	4	5	6	7	8	9	10	11
Autism	Highfunctioning	Autism	Highfunctioning	Autism	Autism	Autism	Highfunctioning	Autism	Highfunctioning	Autism
10	9	10	7	11	10	9	7	10	9	10
Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes
No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
No	No	No	No	No	Yes	Yes	No	No	No	No
Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
No	No	No	Yes	Yes	Yes	No	Yes	No	Yes	No
12	9	8	9	10	8	10	9	8	9	10
5	4	4	4	1	1	2	4	4	4	1
Successful	Successful	Successful	Successful	Unsuccessful	Unsuccessful	Unsuccessful	Successful	Successful	Successful	Unsuccessful

XII. RESULTS

The result soft his 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).Dataon each pair can be found 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 Sperryetal. (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.

Current research has 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 benefitted 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 them selves 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.

XIII. 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 typically developing their 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 etal. 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 with in the classroom" (Lockeet al., 2012).

XIV. DISCUSSION

As previously mentioned, Table 1 was constructed in order to identify themes in the data collected through out 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 benefitted 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.

XV. 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 over all success of peer-mediated intervention strategies. One target student and peer mentor pair benefited from the intervention strategies implemented during camp, while an other 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; Sperryet 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.

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