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Facilitating Friendships Between Students with Autism Spectrum Disorder and their Neuro-Typical Peers Utilizing Peer Mediated Interventions

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FACILITATING FRIENDSHIPS BETWEEN STUDENTS WITH AUTISM SPECTRUM DISORDER AND THEIR NEURO-TYPICAL PEERS UTILIZING PEER-MEDIATED INTERVENTIONS

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Abstract

Autism Spectrum Disorder (ASD), the fastest growing developmental disorder in the United States, currently affects 1 in 54 children. As students with ASD spend more time mainstreamed with their neuro-typical peers, there is an increased need for effective social skills interventions that improve positive social interactions and promote friendships. This literature review focuses on Peer Mediated Instruction and Intervention (PMII) to increase social communication and interactions for students with ASD. The research indicated implementing PMII leads to significant social skills improvement for individuals with ASD. Information gained through the literature review provided the basis for a PMII program designed for use in special and general education classrooms to support positive social interactions for students with ASD with peer support.

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Chapter I: Introduction

Several years ago, I asked a young student to show me what she liked to do at recess. She walked me over to one of the slides. As most of us would, I assumed she was going to say she liked the slide, but instead she pointed underneath saying she liked to sit there because it was "safe". This was a child already had minimally three years of direct social skills instruction and speech language interventions, and direct adult support throughout the school day, yet she sat alone under a slide at recess because that is what felt safe. This interaction affected me deeply and sparked my desire to find methods to effectively support the social needs of students with ASD.

Autism Spectrum Disorder is the fastest growing developmental disorder currently affecting children in the United States (Ardhanareeswaran and Volkmar, 2015). As more children with autism join in mainstream education classrooms there is a need to develop effective practices that encourage social interactions between students with autism and their typically developing peers. Individuals with autism struggle to develop and keep friendships, which affects their ability to fully join in the academic and social aspects of the school experience. This social skills deficit is most noticeable during unstructured activities such as lunch, recess, and free choice time, particularly for preschool and elementary-aged students.

Definitions, Statistics, and Characteristics of Autism Spectrum Disorder

The Centers for Disease Control and Prevention (CDC) defines Autism Spectrum Disorder as a "developmental disability that can cause significant social, communication, and behavioral challenges" (CDC, 2020, What Is Autism Spectrum Disorder? section, para.1). Individuals with ASD may learn, behave, communicate, and interact differently than most people. Current statistics estimate that 1 in 54 children are diagnosed with ASD, with boys

identified four times the rate of girls. ASD occurs across all racial, ethnic, and socioeconomic groups (CDC, 2020, Prevalence section).

The American Psychiatric Association (APA) defines ASD as a "neurodevelopmental disorder that is characterized by difficulties with social communication, social interaction, and repetitive patterns in behaviors, interests, and activities" (APA, 2020, Autism spectrum disorder section, para. 1). Individuals with ASD display a variety of symptoms, with the severity and combination manifested differently for each person. Common characteristics fall into two main categories; social interaction and social communication problems, and restricted and repetitive patterns of behaviors, interests, or activities. Current or earlier challenges in these areas must be documented to meet the diagnostic criteria for ASD under the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (American Psychiatric Association; 2013).

The Autism and Developmental Disabilities Monitoring (ADDM) Network is provided funding by the CDC with its' goal to collect information on the prevalence of ASD and other developmental disorders in children across the United States. The most recent statistics reported for Minnesota was 2016 that estimated 1 in 44, or 8.3% of eight-year-old children in a specific area of Minnesota were identified with ASD; a significant increase from the 2014 data which estimated 1 in 59 or 1.7%. Boys are 3.9 times more likely to have ASD than girls. Fifty-four percent of children identified by the ADDM with ASD also had a medical diagnosis of ASD, and 39% received a comprehensive developmental evaluation by the age of three. No significant differences were found in the occurrence of ASD among white, black, and Hispanic children (ADDM, 2020).

Autism in Schools

In the state of Minnesota, eligibility for special education services for Autism Spectrum Disorders is determined by a multi-disciplinary team, and requires evidence of qualitative impairments of both social interactions and communication, and the existence of restricted, repetitive, or stereotyped patterns of interests, behaviors or activities. Impairments in social interactions include limited joint attention, the lack of showing or bringing objects to indicate interest in activities, difficulty relating to people, objects, or events, the inability to make and keep friends, preference for solitary activities, misinterpretation of social cues or behaviors, or other impairments noted by the assessment team. Communication impairments include the absence of using a finger to point or request, the use of another person's hand or body as a tool to gain access to items, the lack of spontaneous imitation or imaginative play, absence or delay of spoken language, the limited use or understanding of nonverbal communication, odd speech production, repetitive or inappropriate word use, or difficulty initiating and maintaining conversations. Repetitive, restricted, or stereotyped patterns of behavior, interests, or activities are defined as the need to follow specific routines or rituals, anxiety or resistance to changes in activities, repetitive hand or finger movements, lack of imaginative play, abnormal reaction to sensory stimuli, rigid patterns of thinking, or an intense focus on a limited scope of activities, interests, or topics. To qualify for special education services, a student must exhibit impairments in social interactions, with evidence of communication impairments or restricted patterns of behavior, interests, or activities. Additionally, the team must determine that the identified impairments inhibit the student's performance (Minnesota Rules, part 3525.1325 Autism Spectrum Disorders (ASD) 2019).

Once a student qualifies for special education services the Individual Education Plan (IEP) team collaborates to complete a comprehensive education plan that addresses the student's individual needs. Students with ASD often demonstrate the need for specialized instruction and/or supports in social skills, communication, behavior regulation, and sensory processing. Additionally, students with ASD may require specialized instruction or support in academic areas, particularly reading comprehension and writing. Typically, social skills instruction is limited to direct instruction in groups with other ASD students or documented social difficulties, although on occasion services may be delivered in the general education setting.

What Characteristics Interfere with the Ability to Make Friends?

Theory of Mind

Theory of mind (ToM) refers to the ability to attribute mental states such as beliefs, intentions, emotions, and desires to oneself and to others. This information allows one to understand and predict one's own behavior the behavior of others. Lack of awareness that individuals have mental states independent of their own inhibits the ability to consider the perspective of others (Szumski, et al., 2017).

Research indicates that individuals with ASD often struggle to understand that others experience mental states different from their own. This lack of perspective can significantly impact the ability to effectively engage in social interactions. Interactions with autistic individuals are often observed as one-sided where the individual with ASD is focused solely on their own interests, wants, and needs.

Face Blindness

Prosopagnosia or "face blindness" is a neurological condition in which individuals have an inability to recognize the faces of familiar people. While this is not a core symptom or feature

of ASD, many people with ASD also experience face blindness. It can affect an individual's ability to differentiate faces and emotions, significantly hindering the ability to interact in a socially appropriate manner (Rudy, 2020). Individuals with ASD do not typically focus on faces of individuals during social interactions, due to limited eye contact because of the way individuals with ASD process auditory information. Difficulty with face recognition combined with a lack of orientation towards faces during social interactions can lead to misunderstandings and lost non-verbal cues

Deficits in Language

Common language deficits in people with ASD include literal interpretation of words, misuse of pronouns, and difficulty generalizing concepts from one situation to another. These deficits combined with Theory of Mind challenges result in frequent misunderstandings and social faux paus. Individuals with ASD experience challenges understanding figurative language concepts including sarcasm, metaphors, similes, and words with multiple meanings. Literal language combined with theory of mind and face blindness cause social skills challenges. Being too honest or saying what comes to mind with little regard for another's perspective results in children with ASD saying inappropriate things to peers such as "you're fat", "you're hair looks funny" or "I don't want to be on your team because you're too slow". This can lead to hurt feelings, further limiting the social circles of children with ASD and their opportunities for friendships.

Peer Mediated Instruction and Interventions for Students with ASD

Several types of formal peer mediated instruction and intervention models (PMII) increase social learning and the enjoyment of students with ASD. All the PMII models involve training peers to implement strategies that engage students with ASD in positive social interactions. PMII can involve training a single peer, a select group of peers, or an entire class.

Interventions focus on training typically developing peers to promote targeted skills or to incorporate training for both peers and target students (Merril 2014)

Peer-mediated instruction and intervention (PMII) applies several goals that when combined, improve social interactions for students with ASD. PMII engages typically developing peers as social models to improve initiations, responses, and interactions for students with ASD. According to Autism Internet Modules (AIM) the use of highly structured training teaches peers invaluable strategies to communicate and interact with ASD students. Training also increases both the quantity and the quality of interactions between students with ASD and their typical peers. In addition, training peers is believed to lead to the skills generalization across activities and environments and reduce the need for teacher support. Finally, peer-mediated interventions foster the occurrence of natural, positive interactions between students with ASD and their peers (Neitzel et al., 2008)

Guiding Questions

Several questions guided both the literature review and the development of application material for this thesis. The preliminary question considered during the planning phase was "how can schools facilitate friendships for students with ASD?" After reviewing multiple research studies, the author chose PMII as the focus of this paper, which led to the following questions: Which PMII methods are endorsed for students with ASD? Has PMII increased social skills and connections for students with ASD? Is PMII successful as a stand-alone intervention, or are results enhanced when combined with direct instruction for students with ASD? Finally, considerations for developing application materials to implement a PMII intervention included: Which specific social skills increase social connections for students with ASD? How can teachers combine the Minnesota Department of Education Social Emotional Learning Guidance

learning goals and benchmarks with PMII? This thesis will define target skills for students with ASD and aid in selecting appropriate social skills interventions.

Chapter II: Literature Review

To locate the literature for this thesis, searches of Educator's Reference Complete, Expanded Academic ASAP, Education Journals, ERIC, EBSCO MegaFILE were conducted for publications from 2007 to 2020. This list was narrowed by only reviewing published studies articles from peer-reviewed journals that focused on increasing social interactions and social competencies through peer-mediated interventions. The key words used in these searches were "autism", "friendship", "social skills", "peer mediated intervention", and "peer networks". The structure of this chapter is to review the literature on friendships, social skills interventions, and peer-mediated interventions for autism.

Friendship Studies

Rotheram-Fuller et al. (2010) in the *Journal of Child Psychology and Psychiatry* studied the frequency students with ASD were part of a reciprocal friendship compared to their typical peers. Seventy-nine students with ASD and 79 gender-matched peers ages 5 to 11 completed surveys that identified students they liked to play with, students they did not like to play with, and groups of students who hung out together. In addition, when listing the students they liked to play with, participants were also asked to circle their top three best friends. The data determined the reciprocal top three friendships, best friends (only if reciprocated), acceptance, rejection, social network centrality, and social connections (Rotheram-Fuller et al., 2010).

Results of the study showed that children with ASD were more frequently included in the early and middle grades (55% and 57.9%) than they were in later grades (23.8%). The differences in number of top three reciprocal friendships, best friendships, acceptance, rejection, and number of social connections differed insignificantly across the grade levels. Across grade levels the gender-matched peers showed no differences in reciprocal top three friendships, best

friends, social network centrality, or rejection. The data showed that the peers experienced higher levels of acceptance in the early grades. Children with ASD were significantly less socially involved in classrooms than their matched peers (48.1% vs. 91.1%). The authors concluded that nearly half of the students with ASD were socially involved in their classrooms across all grade levels. The level of involvement was like that of typical peers in the early grade levels, but less in later grades. The data also concluded that reciprocal friendships were difficult for children with ASD in inclusive classroom settings. This was apparent across all grade levels. Finally, additional common activities and skill building, over and above current inclusion practices, are necessary to fully involve students with ASD in social groupings with their peers (Rotheram-Fuller et al., 2010).

In 2011, a study in *Research & Practice for Persons with Severe Disabilities* examined the dynamics of friendships between high school students with autism or severe disabilities and their typical peers. The authors completed a total of 44 observations of three friendship groups, with each observation ranging from two to three hours. Information recorded included details of activities, conversations, interactions, and observer comments. In addition, participants were interviewed regarding specific aspects of their friendships (Rossetti, 2011).

All the friendships observed were reciprocal, and there were obvious connections between the participants. Obvious barriers and difficulties were noted in all the friendships, which required intervention to strengthen. The friend(s) who did not have a disability completed the greater portion of the friendship work, which became like second nature to them. While the friendships may have appeared ‘one-sided’, this was not the case in the context of these relationships. The disabled participants all contributed to the friendships in several ways that were “respected, appreciated, and enjoyed”. The author concluded that this study supported

"practices of ongoing and individualized friendship facilitation by educators". For this to happen, students must interact in the same environment, which supported the argument for inclusive classrooms in schools. The author felt that it was important for educators to model friendship skills work. In addition, Rosetti noted that educators should collaborate with disabled and nondisabled students to determine the mechanics of social interactions and to share information with each other (Rossetti 2011).

Peer Training

Owen-DeSchryver et al. (2008) in *Focus on Autism and Other Developmental Disabilities* examined the peer training intervention effect on the social interactions between students with ASD and their peers. Researchers collected baseline data for 3 - 6 weeks prior to implementing the peer training intervention. Peer groups then participated in two weeks of intervention training that occurred in three phases. Phase one included studying and discussing a book about a boy with autism in school and included a Circle of Friends activity for the older group. In phase two the peer groups participated in discussions regarding the social skills strengths and weaknesses of the peers with ASD. They also identified their own strengths and weaknesses. Phase three consisted of discussions and training examining strategies that to use when interacting with students with ASD. For a period of up to 14 weeks following the peer training, the team collected data by observing peer interactions during lunch and recess periods. The data showed that peer training positively influenced the quantity of social interactions. There was an increase in social initiations by the trained peers followed by increased responses from the students with ASD. In addition, the non-trained peers also increased the number of times they initiated socially with their ASD classmates. The authors concluded that peer training was a viable strategy that increased social interactions between students with ASD and their neuro-

typical peers. Not only did training increase initiations by trained peers, it increased the number of initiations made by non-trained peers. The authors hypothesized that this increase in initiations could be the result of the behavior modeling demonstrated by the trained peer groups. Finally, the study suggested that intensive training for students with ASD is not always needed if peer groups are trained (Owen-DeSchryver et al., 2008).

Kasari et al. (2012) compared a peer-mediated approach (PEER) to increase social skills to a child-assisted approach (CHILD) for students with high functioning ASD. In addition, the study examined the outcomes for students who received both the PEER and CHILD interventions. This large study included 60 target students and 815 typically developing students across 56 classrooms in 30 schools. Target students ranged from 1st to 5th grade and participated in the general education classroom a minimum of 80% of the school day. Participants in both groups attended 12 intervention sessions over 12 weeks, with follow-up after 3 months.

Typically developing students in the PEER group learned strategies to identify and engage socially isolated students with the goal to increase appropriate and meaningful interactions for students with ASD. The peers received training on ways to incorporate modeling, role-play, rehearsal, and direct instruction to provide social support for students in their class who demonstrated social difficulties. The variety of topics presented included facilitating engagement, identifying appropriate and inappropriate behaviors, conflict resolution, and initiating play interactions. The identity of the target students was not disclosed to maintain confidentiality (Kassari et al., 2012).

Students with ASD who participated in the CHILD intervention received individualized direct instruction to learn strategies to engage socially with their peers. Researchers assessed students' social strengths and weaknesses through observation and teacher and parent reports to

determine target skills for the intervention. Interventions were individualized based each student's areas of need with skills introduced one at a time with new skills added following mastery of previous skills. The instructional methods included didactic instruction, role play, and practice with the interventionist (Kassari et al., 2012).

The primary outcomes of this study were measured using the Social Network Salience (SNS) scores and playground observations of peer engagement. Blind observations of social engagement on the playground was completed using a timed interval coding system. The total time a student spent in solitary play or jointly engaged with their peers measured student engagement. Secondary outcomes were identified by friendship nominations, rejections, and reciprocal friendships via the Social Network Survey and the results of the Teacher Perception of Social Skills (TPSS) survey (Kassari et al., 2012).

The study results indicated that peer-mediated interactions were more effective than individual direct instruction for multiple outcomes and that gains persisted after the interventions ceased. SNS scores increased for all children with ASD. Students in the PEER group achieved greater improvement than students in the CHILD group, and students who received both PEER and CHILD interventions demonstrated the largest gains. Following the interventions playground observational data showed that students in the PEER group appeared less isolated, while students in the CHILD group demonstrated no significant changes. Students in the PEER group also received an increased number of friendship nominations from their classmates, including nominations by students who were not part of the peer intervention group; while no significant changes were noted for students in the CHILD group. Additionally, teacher ratings indicated that in the classroom students who participated in the PEER group improved socially following the intervention (Kassari et al., 2012).

Mason et al. (2014) examined the communicative and social interactive effects from peer-mediated social skills groups held at recess for students with ASD. This small study consisted of three target students ranging in age from 6 - 8, all who were previously diagnosed or had an educational evaluation that confirmed ASD. The Childhood Autism Rating Scale (CARS) was administered prior to inclusion and all participants scored in the mild/moderate range of autism. Communication and adaptive skills were also assessed. The students previously participated in interventions to increase social skills which consisted of a lesson about engaging in conversations during play and included visual cues and reinforcement for communicative acts. Four to six typically developing peers from each students' classroom were selected to participate in the study. These peers had previously engaged in lessons about interacting and prompting students with ASD (Mason et al., 2014)

The intervention sessions occurred during recess that included one target student and two peers per group. The interventionist began each session with, "Today we are going to talk and play nice with our friends," followed by multiple examples of what the interactions would look like. The interventionist helped the students select an activity for recess, after which they were asked to share examples of things they could say to "talk, share, and play with" their friends. Good examples were affirmed verbally and then written on a blank cue card. When students provided incorrect examples they were corrected and prompted for another answer. Following the instruction, the group members looked at one reinforcement card consisting of 20 blank spaces. They learned that each time they used the new skill they would receive a smiley face in one of the squares; when someone filled up all the spaces, they would each get to pick an item from a treat bag. Students were told that the interventionist would be listening and was available

to help them to remember to “talk, share, and play nice.” Students were then instructed to begin the activity (Mason et al., 2014)

The interventionist moved away when the group was engaged in the chosen activity, but provided intermittent, specific praise when the target student correctly delivered a communicative act such as eye contact, on-topic verbalization, and body orientation. At approximately 30-second intervals, if the target student did not initiate a communicative act, the interventionist prompted a peer to prompt the target student. The peer then prompted the target student by cueing “Say,” and pointing to a visual cue card and/or providing hand-over-hand assistance so the target child pointed to the cue card and completed the prompt. If the target student did not spontaneously respond after two peer prompts, the interventionist prompted the student. Following the activity the group received verbal praise for using targeted skills and the reinforcement card was reviewed. If the group met the previously stated goal, all members got to choose an item from the treat bag (Mason et al., 2014)

Results showed significant increases in communicative acts for all three participants. Participant One increased communicative acts from an average of 7 to 31, Participant Two from an average of 4.8 to 29.9, and Participant Three from an average of 3.8 to 23.6. School-based implementers completed the *Recess Implementer Satisfaction Survey* following the completion of the study. All three raters reported growth in social interactions between the target students and their peers. Additionally, two of the three raters indicated that their target student continued to demonstrate improved social interactions after interventions ceased. Mason et al. (2014) concluded that the results of this study supported the use of prior research targeting recess interventions that implemented direct instruction and peer mediation. This study confirmed the benefits of utilizing peer networks for students with ASD (Mason et al., 2014).

Banda et al. (2010) studied how training students to ask and answer questions immediately prior to the students' center time activities impacted the frequency of initiations and responses during center time. The study participants included two male kindergarten students with diagnoses of Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS) and two to three typical peers from each of their classrooms. Prior to engaging in center time activities, the targeted student and his selected peer group participated in a brief training where they practiced on asking peers questions and responding to questions posed by peers. The training method included prompting students to ask questions, praising communication attempts, and modeling appropriate responses. During the subsequent circle time activities, the interventionists prompted initiations or responses within 5 seconds of a natural conversational break, or when a question was posed. The participants were observed only during center activities that involved cooperative play or sharing materials, as these were natural opportunities for interactions.

Target Student One increased his average communicative initiations from 1.0 to 9.7 and from 1.0 to 9.3 average responses during the intervention. Target Student Two demonstrated increases from .5 to 9.4 average initiations and .63 to 8.2 average responses. The study results supported multiple strategies to increase interactions between students with ASD and their typical peers that included: prompting, modeling, positive reinforcement, and the combination of direct instruction and peer training, as successful interventions for increasing communication and social interactions between students with ASD and their neuro-typical peers (Banda et al., 2010).

The effects of peer groups who utilized Pivotal Response Training (PRT) during recess activities was the focus of a study published in the *Journal of Autism and Developmental Disorders*. Two male students diagnosed with ASD, both fully included in 3rd grade,

participated in the study, along with a six neuro-typical peers (two peers per participant, plus two alternates in case of absence or drop-out). The peers received five days of training and review in PRT techniques, and two days of training generalizing the skills on the playground. During the intervention, triads were formed with one participant and two trained peers, where the peers used the PRT strategies to initiate and maintain play with the subjects during morning recess (Harper et al., 2008).

Data was collected for the number of times Participant One tried to gain peer attention and the number of turn-taking interactions, initiations to play, and turn taking exchanges for Participant Two. During the intervention period, Participant One increased attempts to gain peer attention from 0 or 1 time per probe to an average of 4.8 occurrences during the intervention period, with results maintained at an average of 4.6 occurrences during the generalization period. Participant One also increased turn taking exchanges from 0 during the baseline period to 12.5 during intervention, and 10.2 during the generalization period. Baseline data for Participant Two averaged less than 1 initiation per probe, which steadily increased during the intervention and baseline phases to 3.25 occurrences per probe. Participant Two also displayed no turn-taking exchanges during the baseline period and increased to 1.5. Results of the study supported the use of peer-mediated strategies to promote social interactions during recess activities in naturalistic settings for students with ASD. The authors suggested that such interventions may lead to positive outcomes and continued growth following intervention completion (Harper et al., 2008).

In a more recent study, Brock et al. (2018) looked for ways peer-mediated pivotal response training (PRT) impacted social interactions for students with ASD, specifically looking at the quantity of communicative acts and quality of play. Students with an educational label of ASD who met the study criteria were nominated by special education teachers from elementary

and middle schools in the selected area. Participants included 11 students with ASD, 19 of their typically developing peers, and 11 recess supervisors who agreed to implement the interventions. Of these participants, a randomized control group of five students with ASD and five adults was created. No training or added support was provided to members of the control group.

Adult facilitators participated in a one-hour training session designed to help them find, train, and support peers as part of a daily intervention. Potential peers were identified from earlier positive interactions with the focus student and by asking the focus student about their preferred peers. Once selected, peers participated in a 45-minute session where they were given background information about the focus student, learned the rationale for the intervention, and discussed confidentiality and appropriate language. Peers were introduced to the five strategies to increase communication and quality of play that would be used during the intervention; 1. Get your buddy to look at you, 2. Ask your buddy to play something with you, 3. Show and talk about how to play, 4. Compliment your buddy, and 5. If you can't play at the same time, take turns. Following this training adult facilitators supplied on-going support during recess through modeling, referencing the five support strategies, and talking about peer roles (Brock et al., 2018).

Base-line data for communicative acts and quality of play was collected prior beginning intervention, and four times during implementation. Interactions or communicative acts included verbal and non-verbal communication directed from the focus student to their peers and from the peers to the focus student. Play activities were coded as appropriate peer play, appropriate solitary play, inappropriate play, or no play (Brock et al., 2018)

Results of the study showed a statistically significant increase in the number of interactions between the focus students and their peers. This included overall interactions,

interactions initiated by the focus students, and interactions initiated by peers. While a statistically significant effect on quality of play was not detected, substantial effects were seen, including an increase in appropriate peer play, and decreases in solitary play, inappropriate play, and no play. Most participants supplied feedback information that supported positive feelings about the intervention and the feasibility of maintaining it. The authors concluded that the results provided promising evidence to support the feasibility and effectiveness of peer-mediated PRT for students with ASD (Brock et al., 2018).

Peer Networks

Gardner et al. (2014) in *Research & Practice for Persons with Severe Disabilities* examined the success and social validity of peer networks as an intervention to increase peer interactions and social competence for high school students with ASD. Two male high school students with ASD participated in the study, along with three peers from each of their schools. Each peer group met one to two times per week during the intervention phase, where they participated in at least one joint-activity or conversation such as trivia games, current events, or word games. The activities and conversations focused on specific topics or skills, including turn-taking, teaching participation skills, responding to questions, and cooperation. The study included a baseline, intervention, withdrawal, and reintroduction phases. Data was collected for the number of social interactions (verbal and behavioral), social engagement (measure by communicative behaviors) and target social behaviors (not interrupting, eye contact, responding to peers). Social validity was measured by surveys that addressed the peer network, friendships, and school enjoyment. Neuro-typical peers answered additional questions regarding whether they would recommend the group to other peers, and if the school should offer additional peer network groups in the future (Gardner et al, 2014).

Results of the study showed significant increases in engagement (active and passive) for both students when participating in the peer network. Participant One displayed in increase from 4% to 68% in active engagement during the intervention, while Participant Two's level of active engagement increased from 10% to 50%. Peer interactions also increased during the intervention phase, with an increase from 3% to 54% for Participant One, and from 16% to 65% for Participant Two. There was no increase for Participant One in target social behaviors during the initial intervention phase, but he showed an increase from 0% of 23% during the re-introduction of the peer network. Participant Two increased targeted social behaviors from 0% to 37% during the intervention phase. The authors concluded that peer networks provided effective and practical means to increase peer interactions and social engagement. In addition, gains in targeted social behavior suggested that when designed correctly, some social-related goals could be naturally addressed in a peer group setting. Importantly, most of these gains were lost during the withdrawal phase, which indicated while peer networks increased social engagement and peer interactions, the effects did not generalize to other settings. Results of the social validity surveys suggested that peers and facilitators enjoyed participating in the peer networks. Peers felt it benefited them and also the focus student, and that their schools should offer more group opportunities like the peer network intervention. Focus student surveys showed that Participant One enjoyed participating in the peer network, felt he benefited from the experience, and would like to continue participating in the future. Participant Two was unclear or unsure (Gardner et al., 2014)

Kamps et al. (2014) in *Focus on Autism and Other Developmental Disabilities* examined the peer network effects on the communicative acts in elementary students with ASD. The study utilized peer training, scripted practice, visual cues, and reinforcement during social skills

instruction, and measured communicative acts during free play following the instructional session. Data was collected for initiations, responses, comments, requests/sharing, turn-taking, play organization, niceties (defined as compliments and good manners), and non-verbal communication acts. Four students with ASD participated in the study, along with four to six peers from each student's classroom. The study lasted for three months, with peer groups meeting up to three times a week for 30 minutes. Results of the study showed that all four students with ASD demonstrated gains in social communication following the social communication instruction and peer networks. Participants One, Two, and Three significantly increased the number of initiations, while Participant Four showed only a minimal increase. Increases in responses were significant for all participants except Participant Two. All participants showed increased social communication behaviors. Kamps et al. (2014) concluded that implementation of structured social skills training and peer networks led to improved social communication skills for all participants, and that continued research for intervention components was warranted.

The effects of a Peer Network Intervention Package (PNRI) that addressed social relations between students with ASD and their neuro-typical peers was examined in a seven-month study conducted by McFadden et al. (2014). Participants included four male students diagnosed with ASD between the ages of 5 and 8, and their same-aged peers. The PNRI consisted of class-wide instruction, pre-recess huddles, prompting and feedback, whistle-stops, post recess huddles, and classroom celebrations. Results of the study showed significant increases in social communication behaviors. Additional increases were noted in both peer initiations and responses across the peer networks. Observations conducted during non-intervention recess periods showed that targeted behaviors remained above the baseline for

participants and peers. The authors concluded that the results provided solid evidence for implementing peer mediated interventions during recess to improve reciprocal communications between students with ASD and their peers (McFadden et al., 2014).

Koegel, R et al. (2012) in the *Journal of Positive Behavior Interventions* investigated how participation in social clubs designed around perseverative interests impacted social interactions between students with ASD and their typical peers. Three students diagnosed with ASD between the ages of 11 and 14 participated in the study. The authors developed three lunchtime social clubs based on the perseverative interests of each participant and advertised the groups for all students through flyers and announcements. Peers that elected to join the club were not told that the clubs were designed around the interests of the study participants, nor were they made aware of the participants' ASD diagnoses. Club members met during their lunch period and were provided with snacks and refreshments. At no time were students or study participants given training or prompts to interact (Koegel, R. et al., 2012).

Baseline data was collected for the frequency of peer initiations while data for engagement with peers was collected through multiple observations during the participants' lunch periods. The data showed that all three participants displayed little to no peer engagement with no peer initiations during the baseline probes. Observers collected engagement and initiations data during approximately 20% of the participants' social club meetings, and the results showed that all three participants made significant growth in peer engagement. Additionally, two of the participants displayed a significant increase in the number of peer initiations. Participant One increased peer engagement from 0% to 100% by the end of the intervention period, and initiations with peers increased from 0 to an average of 16 per session. Participant Two changed schools twice during the study, but also demonstrated increased peer

engagement from 0% to 100% during the initial intervention. During the final intervention period at his third school, Participant Two reached 80% engagement during intervention. He also increased the number of initiations with peers from 0 to 11.3 during the final intervention period. Participant Three increased peer engagement from 3% to 100% and showed small gains in initiations from 0 to 2.6 per session. It was noted that Participant Three started to make gains in initiations with peers, but lost these gains following the fourth session, which may have been related to beginning medication at that time (Koegel et al., 2012).

The authors concluded that the study results supported naturalistic social interventions and utilizing the perseverative interests of individuals with ASD as ways to develop a 'common ground' to increase peer interactions. They also noted that the results validated previous research using youth clubs for individuals with ASD to increase positive social interactions. The small number of participants and the lack of female participants limited this study which made generalizing the results to larger populations difficult. Future research in this area should include follow-up on the nature, quality, and duration of relationships developed during the interventions (Koegel et al., 2012)

Kamps et al. (2015) studied the peer network intervention effects on the social communication skills for children with ASD. This study followed 95 students with ASD beginning in the fall of their kindergarten year and through the 1st grade. Fifty-six students participated in the experimental group and 39 were in the control group. Participation criteria required that the public school students were at least partially included in the general education classroom, communicated using a minimum of two-to-three word phrases, followed simple directions, and achieved a minimum standard score of 50 on the Peabody Picture Vocabulary Test (PPVT), 4th Edition.

A group of four to six typically developing peers nominated by the teacher were selected from each subjects' classroom. Peer criteria included: history of good attendance, well-liked by majority of peers, age-appropriate social skills, and a willingness to participate. Peers took turns participating in pairs with target students in an area separate from the rest of the class while the res of the class was engaged in other learning activities. Kindergarten students participated for an average of 50 sessions while 1st grade students averaged 47 sessions.

The intervention structure consisted of a 10-minute targeted social communication lesson, including child-peer practice; a 10-15-minute play activity where peers prompted for skill use; along with teacher reinforcement and feedback. Picture and word text cues were used to teach the lesson and during the activity to prompt peers and subjects to use the targeted skill. Specific skills targeted included requests and shares ("Ask and Share"), comments about one's activities or actions ("Tell about my toys"), comments about others' play activities of actions ("Tell about friends' toys"), saying please, thank you, or giving compliments ("Talk Nice"), and play organizers ("Ways to Play") (Kamps et al., 2015).

Data for the number of communicative acts (initiations and responses) was collected during non-treatment social probes, generalization probes, and treatments sessions. While significant differences were absent from the control group considering their growth in responses and total communicative acts, students in the intervention group exhibited more growth in initiations during social probes and generalization sessions. Information gathered for teachers' impressions of subjects' social behaviors was collected using the Teacher Impression Scale (TIS). Teachers rated students in the peer network as having shown significantly more growth than students in the comparison group. The authors concluded that using the peer network intervention showed promise for young students with ASD (Kamps et al., 2015).

Social Stories

Bray et al. (2010) in *School Psychology Review* studied how Social Stories impacted ASD students' verbal initiations and follow-up responses with peers. Four elementary-aged students participated in the study; three males and one female. One student had an ASD diagnosis while the others were diagnosed with Asperger's. The intervention consisted of reading Social Stories focused on entering conversations, answering questions, and fostering relationships with peers during the lunch break. Subjects answered comprehension questions based on the story. Instruction (reading the Social Story) was administered four times per week, within 15 minutes of the students' lunch period. Data was collected for the target behaviors (initiation and subsequent responses) three times per week during lunch breaks. Six weeks after the interventions, follow-up observations were conducted for a period of one month. The results of Bray et al., (2010) suggested that the use of Social Stories as a stand-alone intervention for increasing peer communications was not effective for elementary students with ASD. The authors concluded that Social Stories would be most effective when used as part of a multi-faceted intervention package.

Academic Based-Intervention

Simpson and Bui (2016) studied the effects of an academic peer-mediated intervention on the number of initiations and responses for students with Low Functioning Autism (LFA) and their peers. Additionally, they evaluated changes in how neuro-typical peers perceived their peers with LFA as a result of participating in the intervention. The authors noted that most peer-mediated interventions typically occurred during unstructured time with little research available on interventions conducted during academic activities. Despite lack of research in this area,

Kamp et al. (2002) found that social skills gains were greater combined with an academic component than during free-play interventions.

Participants included one 2nd grade class of 24 students and a class of eight special education students ranging from kindergarten to 2nd grade who were identified as having LFA. The students were divided into eight groups, each consisting of one student with LFA and three typically developing peers. During the study quantitative data was collected for the number of initiations and responses for the targeted students and peers in four of the eight groups (Simpson and Bui, 2016).

The authors chose *Reading Buddies,* a shared reading intervention designed to support both reading and social skills by promoting interactions amongst participants around stories. Prior to the intervention, the students with LFA received all academic services in the special education classroom with limited inclusion opportunities. Students received three rules for instruction: "Stay with your buddy, read with your buddy, and talk with your buddy" (Simpson and Bui, 2016). Teachers and one researcher modeled the steps and engaged students in lessons depicting the meaning of the steps, describing the steps, and role-playing the steps. Peers reinforced appropriate behavior during the interventions; target students were rewarded by a token economy where they earned "happy faces" that could be exchanged for a reward. Typically developing peers were provided reinforcement from students with LFA via verbals, high-fives, hugs, or stickers.

Results of the study indicated no significant increase in initiations from students with LFA during the intervention phases, but there was a notable increase in initiations by peers in all groups. Significant increases in responses were recorded for three of the four students with LFA which supported a functional relationship between the intervention and responses. Limited

response increase was noted for typically developing peers. Interviews with eight typically developing peers revealed three main friendship themes that included: mutual enjoyment, helping behaviors, and developing friendships. The peers enjoyed participating in the intervention, felt that they helped and were helped by their peers with LFA, and experienced demonstrations of physical affection including hugs and hand holding from the target students. Simpson and Bui (2016) concluded that the peer-mediated shared reading intervention positively affected social responses for the students with LFA and that further research was needed to determine which characteristics influenced responses to peer-mediated interventions.

Multi-strategic Interventions

In 2014, Hundert et al. studied the effects of a stand-alone social script intervention, compared with a social script intervention combined with peer buddies, to determine the effect on interactive play within inclusive classroom settings. Participants consisted of three preschool and kindergarten students medically diagnosed with ASD and their typically developing classmates. The students with ASD attended general education classes part time while they also received home-based Early Intensive Behavior Interventions (EIBI). The focus students were selected based on deficits in peer interactions; they typically exhibited limited or no interaction during free play times, often isolated themselves from peers, and engaged in stereotypical behaviors.

Baseline data that addressed the frequency of interactive play was collected in all three classrooms during daily play sessions. Following data collection, a play script was introduced to all students in each classroom. Scripts were designed based on individual student interests, communication, and motor skills levels. The class was introduced to a new play activity that included the focus student engaged in classroom play. Instruction began with a video clip of two

children participating in the activity, followed by a request for volunteers to complete the activity with the focus student (Hundert et al., 2014).

A play leader provided prompting and praise to the focus student and peer as needed during the intervention periods. The prompting was systematically faded over time when compliance with the script was at least 70%. Each script included eight steps that targeted a play exchange. The focus student and classmate each received tokens for correctly implemented steps. When the pair accumulated 15 tokens, the tokens were exchanged for a reward (Hundert et al., 2014)

Peer buddies were introduced following the social script intervention for Participants One and Two, and prior to the social script for Participant Three. This allowed for data analysis of individual interventions and the combined effect of the social script and peer buddies. During this phase, each class was given a 20-minute presentation where the teacher and play leader modeled initiating play, accepting play invitations, and maintaining play activities. The three rules for the program were defined as “stay with,” “play with,” and “talk to your buddy”. Peer buddies were provided for all students. During training, students who followed the model were rewarded while students who did not were prompted to identify how to earn a sticker during the next session.

All three participants demonstrated significant increases in peer interactions during the training sessions for the social script intervention. These increases were not observed, however during generalized sessions without adult support or access to the script materials. Participants One and Two demonstrated similar or slightly higher gains during training sessions that included both the social script intervention and the peer buddy program. During generalization sessions both demonstrated increased peer interactions from baseline, although the increases were less

substantial than during training sessions. Participant Three increased interactions during the training sessions using the stand-alone peer buddy program and social script intervention, but the gains were absent in generalization sessions. Participant Three demonstrated gains in the combined social script and peer buddy interventions during the generalization sessions, although less significant than the stand-alone social script training (Hundert et. al., 2014).

Hundert et al. (2014) concluded that combined interventions should be considered to fully address peer interactions for students with ASD. Additionally, an initial assessment was suggested as the foundation for appropriate target skills and to determine intervention parameters.

Chapter III: Application Materials

"Listen, Care, Share" Social Skills Intervention for Students With Autism Spectrum Disorder

Students with ASD often struggle with friendship skills, particularly with showing interest in peers, engaging in communicative acts, and cooperative play. Numerous interventions are utilized by educators within a school setting for students with ASD to strengthen social or friendship skills. The interventions include Social Stories, social skills groups, and adult support to promote positive interactions within the general education environment. Even with these and other scientifically-based interventions, students with ASD struggle to generalize learned skills to unstructured activities such as lunch, recess, and free time within the classroom.

A wealth of research supports the use of peer-mediated interventions within the school setting to promote social and friendship skills between students with ASD and their neuro-typical peers. The *"*Listen, Care, Share" social skills intervention was designed to include direct social skills instruction for both the target students and their neuro-typical peers and to provide strategies and visuals for peers and interventionists that promotes generalization of skills across multiple settings.

Intervention Overview

The target demographic includes elementary-age students diagnosed or labeled with ASD who participate in the general education classroom for a minimum of 40% of the school day (Federal Settings 1 and 2). It is recommended that focus students are able to communicate verbally using a minimum of three or four word utterances; however, students who can effectively communicate their wants and needs using an augmentative communication (AAC)

device may also be considered appropriate candidates. Peers should be selected following criteria included in the "Listen, Care, Share*"* Peer Selection Checklist (**Appendix A**). The recommended frequency for intervention sessions is twice per week for 30-minute sessions. An intervention cycle will last a minimum of 9 weeks depending on student progress, with a minimum of one week to address each targeted skill. If it is determined that students need additional skill instruction the interventionist can add supplemental lessons, modeling, role-play, and practice until students are ready to proceed.

Intervention Structure and Process

Before beginning the interventions, peers will engage in two sessions without the focus students. During the first session, peers will receive information about the focus students and engage in activities that promote understanding and acceptance of individuals with developmental disabilities. A supplemental list of books recommended books during the initial sessions is included (**Appendix B**). During the second session the interventionist will explain the intervention goals and structure, model strategies to engage and prompt focal students, and provide opportunities for practice. Peers will be provided a set of visuals (**Appendix C**) that can be used to prompt the skills targeted for the focus students outside of the intervention setting.

Focus students will participate during the third session where the interventionist will begin by telling the group that they will learn about friendship and what it means to be a good friend. Next, the interventionist will introduce Skill #1, listen with ears and eyes to what your friends say and do, followed by asking students what it means to listen with their whole body. Appropriate responses will be verbally reinforced, while inappropriate responses will be addressed through re-teaching. Students will be prompted to provide a different answer or example. Following this activity, the interventionist will read a story to address the target skill

(**Appendix D**), pausing throughout the reading so students can identify *examples* and *non-examples*. Following the reading, students will be provided opportunities for role-play using the newly introduced skill.

Staff collect data twice a week during lunch and recess and once per week during each focus student's classroom activity. The interventionist will track targeted skill use and note the peer prompt. The data will determine when the students are ready to advance to the next skill, or if students need additional instruction and practice.

Target Skills

Three broad skill categories are addressed in the "Listen, Care, Share" social skills intervention; within each overarching category three specific skills will be targeted. Many of the skills align with the learning goal benchmarks from Minnesota Department of Education's Social Emotional Learning (SEL) Competencies. The competencies address relationship skills, self-awareness, self-management, social awareness, and responsible decision making. The "Listen, Care, Share" social skills intervention focuses on the following learning goals:

- Relationship Competency
    - Learning Goal 1: Demonstrates a range of communication and social skills to interact effectively.
    - Relationship Competency Learning Goal 2: Cultivates constructive relationships with others.
- Self-Awareness Competency
    - Learning Goal 2: Demonstrates awareness of personal strengths, challenges, aspirations and cultural, linguistic, and community assets.
- Social Awareness Competency

- Learning Goal 2: Demonstrates awareness and respect of groups and their cultures, languages, identities, traditions, values, and histories

The targeted skills for the Listen, Care, Share Social Skills Intervention (**Appendix E**) are listed below along with corresponding Minnesota SEL Learning Targets and Benchmarks:

Listen:

- Listen with ears and eyes to what your friends say and do *(SEL Relationship Skills Competency Learning Target 1: Demonstrates a range of communication skills to interact effectively, Benchmark: Listen to others when they are speaking.)*
- Respond to peer greetings
- Identify similarities and differences between self and peers (*Social Awareness Competency Learning Target 2, Benchmark: Describe ways that people are similar and different)*

Care:

- Pay attention to what peers say or do *(Relationship Skills Learning Target 1, Benchmark: Listen to others when they are speaking)*
- Care about thoughts and feelings of peers
- Be a good friend (*SEL Relationship Skills Competency Learning Target 2, Benchmark: Identify the qualities others, such as friends, have that you would like to see in yourself.)*

Share:

- Share toys or other items *(SEL Relationship Skills Competency Learning Target 1, Benchmark: Take turns and Share with Others)*

- Share information about yourself *(SEL Self-Awareness Learning Goal 2, Benchmark: Describe their Personal qualities, such as likes and dislikes, needs, wants, strengths, and challenges)*
- Share what you are thinking and feeling (*SEL Relationships Skills Competency Learning Goal 1, Benchmark: Use facial expressions, body language and tone to effectively communicate thoughts, feelings, emotions, and intentions.).*

Implementation

Several steps are needed to implement the "Listen, Care, Share" social skills intervention in my current setting. First, permission must be obtained from the site principal and the director of Student Support Services to use an intervention that is not currently part of our approved curriculum. Once permission is granted, a group of focus students with direct IEP minutes for social skills instruction who demonstrate the need for instruction in the targeted skills areas will be selected. Due to the complexity of building schedules, the students should be in the same grade so sessions can be conducted during the assigned flex time. After selecting a focal group, classroom teachers will receive an intervention overview and instructions to use common language across settings.

Once classroom teachers understand the goals and the intervention structure, they will assist in selecting two typically developing peers for each focal student. The "Listen, Care, Share*"* Peer Selection Checklist (**Appendix A**) will guide the selection process. Considerations for peer nomination includes: 1. Age appropriate language, social, and play skills 2. Gets along well with other students 3. History of positive interactions with focal student(s) 4. Generally follows adult directives 5. Attends to activities for an extended length of time 6. History of regular attendance 7. Willingness to participate in PMI process.

Once peers have been selected permission must be obtained from parents or guardians prior to participating in the intervention.

While the “Listen, Care, Share” social skills intervention was developed for use as a Peer Mediated Intervention, it could also be used as part of a whole class social emotional curriculum. The specific learning targets and benchmarks are appropriate for all students. By incorporating the targets and benchmarks into the general classroom schedule, educators can support all students while providing additional opportunities for students with ASD or similar social skills challenges. For whole class instruction, the teacher should introduce a new skill when 85% of the class consistently demonstrates the previous target skill. Previously learned skills should be modeled and reinforced throughout the duration of the curriculum cycle.

CHAPTER IV: DISCUSSION AND CONCLUSION

Summary of Literature

The literature review portion of this project sought to answer the following questions; How can schools facilitate friendships for students with ASD? Which PMII methods are endorsed for students with ASD? Has PMII increased social skills and connections for students with ASD? Is PMII successful as a stand-alone intervention, or are results enhanced when combined with direct instruction for students with ASD?

A review of the recent literature showed that PMII can lead to significant increases in communicative acts, including initiations and responses, and social skills for students with ASD (Owen-DeSchryver et al., 2008; Kassari et al., 2012; Banda et al., 2009; Harper et al., 2007; Brock et al., 2018; Gardener et al., 2014; Kamps et al., 2014; McFadden et al., 2014; Kamps, Thiemann-Borque, et al. 2015; Simpson and Bui, 2016; Banda et al., 2010; Hundert et. al., 2014; Mason et al., 2013). The majority of the research available focused on the use of Peer Networks and Peer Training or Pivotal Response Training. The research indicated that PMII increased social interactions for students with ASD and can increase generalization of skills across settings. Multiple studies reported increases in target skills that persisted after the use of PMII (Owen-DeSchryver et al., 2008; Kassari et al., 2012; McFadden et al., 2014; Hundert et. al., 2014; Mason et al., 2013).

Individuals with ASD demonstrate a wide variety of characteristics, but some of the most commonly noted challenges include struggles with theory of mind, face blindness, and deficits in language. Students with ASD often have difficulty with perspective taking, recognizing emotional states of others, reading facial expressions, and using and processing social language (Szumski et al., 2017; Rudy, 2020)

The studies located for this literature review primarily sought to measure changes in social language and interactions, including initiations and responses, following the completion of PMII. One study also measured changes in solitary play and included instruction for peers in conflict resolution and the identification of appropriate and inappropriate behaviors, while providing direct instruction of skills for social engagement for focal students (Kassari et al., 2012). The current research primarily focused on PMII to address deficits in language and social engagement with little or no focus on theory of mind or face blindness.

Current statistics estimate that 1 in 54 children are diagnosed with ASD (CDC, 2020, Prevalence section) with the most recent data for Minnesota indicating that 1 in 44 eight-year old children in an area of Minnesota we identified as having ASD (ADDM 2020). In order to qualify for special education services under the ASD category in Minnesota a student must exhibit impairments in social interactions, with evidence of communication impairments or restricted patterns of behavior, interests, or activities. Additionally, these impairments must inhibit student performance (Minnesota Rules, part 3525.1325 Autism Spectrum Disorders (ASD) 2019). As the prevalence of ASD continues to rise, the importance of determining effective social skills interventions for students with ASD grows.

Development of Application Materials

Considerations for developing application materials to implement a PMII intervention included: Which specific social skills increase social connections for students with ASD? How can teachers combine the Minnesota Department of Education (MDE) Social Emotional Learning Guidance learning goals and benchmarks with PMII? The structure and implementation plan for the “Listen, Care, Share” social skills intervention was based in part on several of the

studies reviewed (Mason et al., 2014; Simpson and Bui 2016; Kamps, Mason, et al., 2014; Kamps, Thieman-Borque, et al. 2015).

Target skills for the "Listen, Care, Share" social skills intervention were developed based on common deficits that are addressed through research based social skills curriculum. They were then examined for correlation with the Social Emotional Learning Guidance provided by MDE. Most of the skills were found to be related to learning goals and benchmarks provided by MDE. Two skills, respond to peer greetings and care about thoughts and feelings of others, were not found to correlate directly, but were included because they are common goals for students with ASD.

Professional Application

Autism Spectrum Disorder is the fastest growing developmental disorder currently affecting children in the United States (Ardhanareeswaran and Volkmar, 2015). It affects individuals from all ethnic, cultural, and economic backgrounds across the globe. Teachers in both general and special education will work with countless numbers of students with ASD throughout their careers. Given that the criteria for a diagnosis or educational category of ASD includes deficits in social communication and social interactions, students with ASD will typically demonstrate a need for instruction and support in social skills to promote positive peer interactions and facilitate friendships. The research supports the use of PMII to increase communication and interactions between students with ASD and their classmates. These gains can be seen across settings, and often persist following completion of the intervention. PMII most often focuses on increasing social interactions and responses, which are common challenges for individuals with ASD. Greater increases in target skills can be seen when PMII is combined with direct social skills instruction for focal students (Kassari et al., 2012). Peers who

take part in the PMII process often report satisfaction and enjoyment in their role (Gardner et al., 2014). While PMII is most often facilitated by special education teachers, general education teachers can also provide or support these interventions in the classroom. Teachers should be familiar with the process, benefits, and versatility of PMII so they can make appropriate programming decisions for students with ASD.

Limitations of Research

Much of the research found focused on using PMII to increase social communication and interactions between students with ASD and their neuro-typical peers. The studies most commonly sought to measure changes in initiations, responses, and overall interactions. While these are common challenges for students with ASD, they are not the only characteristics that affect the way individuals with ASD form meaningful social relationships. Difficulties with perspective taking, facial blindness, limited eye contact, repetitive behaviors, and perseverative interests also interfere with successful social interactions in individuals with ASD. The studies did not address these skills, possibly because they are more commonly addressed through direct instruction for students with ASD. Most of the studies had small sample sizes and were primarily focused on elementary-aged students. The majority of participants with ASD were male, which is not surprising given that males are identified with ASD at a ratio of 4:1 compared to females. However, ASD often manifests differently in females, so further research into the effects of PMII on female subjects would be beneficial. All of the studies found information reported for baseline and intervention phases, but many studies did not include follow-up information to show if social gains were generalized to other settings or if skills persisted following completion of the interventions. Finally, only one study (Simpson and Bui 2016) focused on the use of an academic based PMII for students with ASD.

Conclusion

The guiding questions for this literature review (with application materials) were; How can schools facilitate friendships for students with ASD? Which PMII methods are endorsed for students with ASD? Has PMII increased social skills and connections for students with ASD? Is PMII successful as a stand-alone intervention, or are results enhanced when combined with direct instruction for students with ASD? Which specific social skills increase social connections for students with ASD? How can teachers combine the Minnesota Department of Education Social Emotional Learning Guidance learning goals and benchmarks with PMII?

In recent years, the amount of research available on social skills instruction for individuals with ASD has increased significantly, a sign of the growing need for scientifically based interventions and instructional programs to support students with ASD. ASD is the fastest growing developmental disorder affecting children in the United States (Ardhanareeswaran and Volkmar, 2015), affecting individuals from all walks of life. Given the prevalence of this disorder, educators across the country will work with many students with ASD throughout their teaching career. The goal of this literature review (with application materials) was to research common social skills interventions for students with ASD and to determine what method of intervention has demonstrated success for increased social interactions for students with ASD and their neuro-typical peers. During the initial research stages, PMII was noted to lead to significant gains in target skills, so the studies selected for review focused largely on that topic. The research indicated that implementing PMII can lead to significant increases in communicative acts, including initiations, responses, and social skills for students with ASD (Owen-DeSchryver et al., 2008; Kassari et al., 2012; Banda et al., 2009; Harper et al., 2007; Brock et al., 2018; Gardener et al., 2014; Kamps et al., 2014; McFadden et al., 2014; Kamps,

Thiemann-Borque, et al. 2015; Simpson and Bui, 2016; Banda et al., 2010; Hundert et. al., 2014; Mason et al., 2013). Several studies also found that gains in target skills often generalized and persisted following interventions (Owen-DeSchryver et al., 2008; Kassari et al., 2012; McFadden et al., 2014; Hundert et. al., 2014; Mason et al., 2013). The information gleamed from this research was used to create an outline for a PMII that also incorporates direct social skills instruction for use in both special and general education classrooms to support students with ASD. Current research supports the use of PMII to increase social interactions between students with ASD and their neuro-typical peers.

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Appendix A

Listen, Care, Share
A Peer-Mediated Social Skills Intervention

Listen, Care, Share Peer Selection Checklist

☐ Age-Appropriate language, social, and play skills

☐ Gets along well with other students

☐ History of positive interactions with focal student(s)

☐ Generally follows adult directives

☐ Attends to activities for an extended length of time (10 minutes or more)

☐ History of regular attendance

☐ Willingness to participate in the PMII process

Appendix B

Listen, Care, Share

A Peer-Mediated Social Skills Intervention

Listen, Care, Share Supplemental Book List

Book List for Peer-Mediated Instruction and Intervention Training
Books to share with peers during training sessions. These are more specifically related to Autism Spectrum Disorder.

Elementary
A Friend Like Simon by Kate Gaynor
Andy and His Yellow Frisbee by Mary Thompson
Captain Tommy by Abby Ward Messner
Ian's Walk by Laurie Lears
Looking After Louis by Lesley Ely
My Best Friend Will by Jamie Lowell and Tara Tuchel
My Brother Charlie by Holly Robinson Peete and Ryan Elizabeth Peete
Noah Chases the Wind by Michelle Worthington
Slug Days by Sara Leach
Why Does Izzy Cover Her Ears? By Jennifer Veenendall

Elementary; Middle School
Can I Tell You About Asperger's Syndrome? By Jude Welton
The Reason I Jump by Naoki Higashida

Middle School (These are longer and can be read over a series of trainings or assigned for independent reading)
Rain Reign by Ann M. Martin
Remember Dippy by Shirley Reva Vernick
Rules by Cynthia Lord
The Curious Incident of the Dog in The Night-time by Mark Haddon

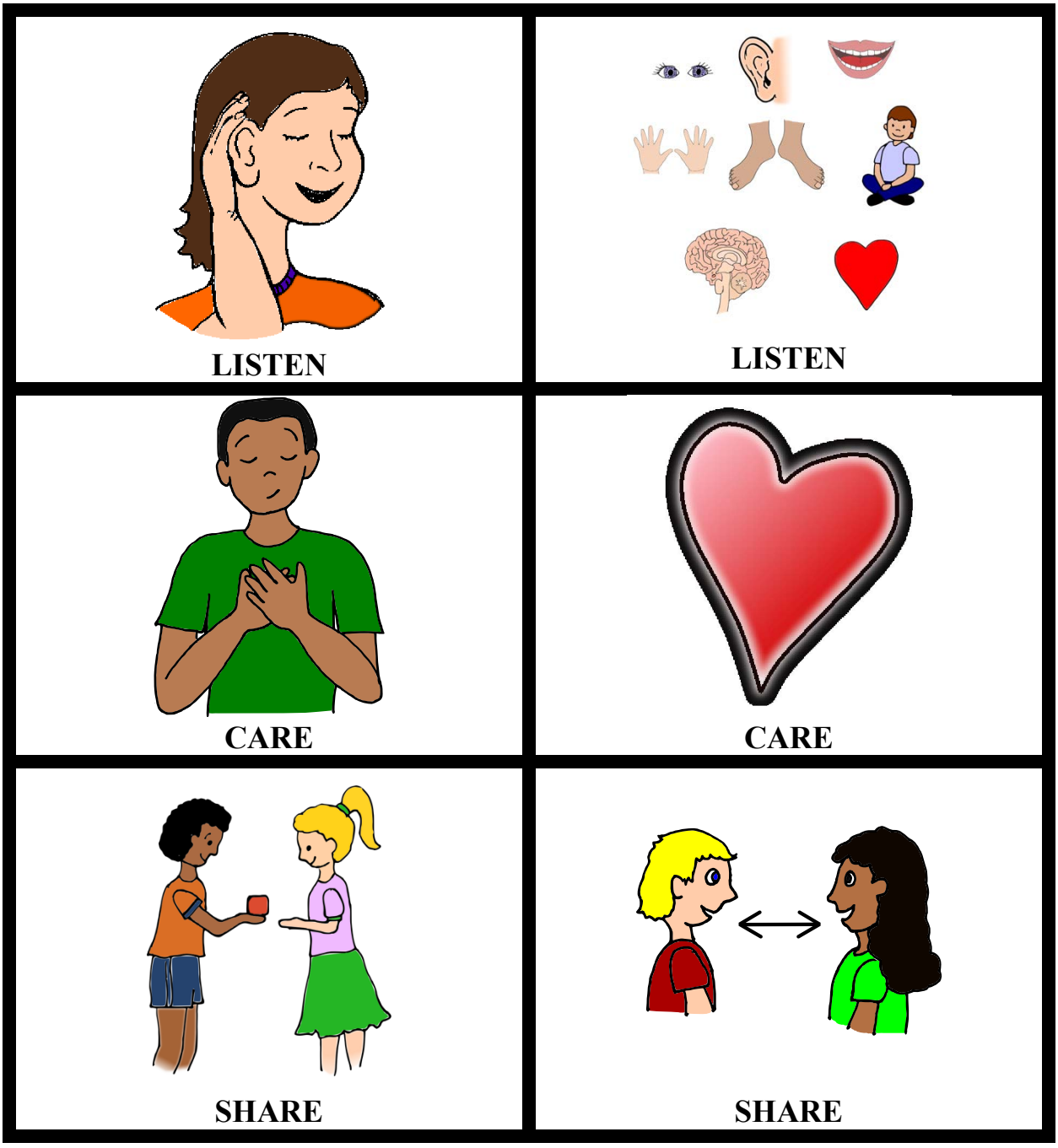
Books for General Education Class to Promote Acceptance
The Sneetches by Dr. Seuess
Susan Laughs by Jeanne Willis
Accept and Value Each Person by Cheri J. Meiners, M.Ed.

Appendix C

Listen, Care, Share

A Peer-Mediated Social Skills Intervention

Listen, Care, Share Visual Prompt Cards



LessonPix Custom Learning Materials

Appendix D

Listen, Care, Share

A Peer-Mediated Social Skills Intervention

Listen, Care, Share Target Skills Book Suggestions

Listen:

- *Whole Body Listening Larry at* School by Elizabeth Sautter and Kristen Wilson
- *Howard B. Wigglebottom Learns to Listen* by Howard Binknow
- *I'm Like You, You're Like Me* by Cindy Gainer
- *The World Needs More Purple People* by Kristen Bell and Benjamin Hart
- *Same Same but Different* by Jenny Sue Kostecki-Shaw

Care:

- *Yes I Can Listen* by Steve Metzger
- *How do I Show I Care* by Rory McCallum
- *Understand and Care by Cheri Meiners*
- *How to Be a Friend: A Guide to Making Friends and Keeping Them* by Laurie Krasny Brown and Marc Brown

Listen, Care, Share Target Skills Book Suggestions

Share:

- *Share and Take Turn*s by Cheri Meiners
- *The Rainbow Fish* by Marcus Pfister
- *The Way I Feel by* Janan Cain
- *In My Heart*: *A Book of Feelings* by Jo Witek
- *Today I Feel* by Madelena Moniz

Appendix E

Listen, Care, Share

A Peer-Mediated Social Skills Intervention

Listen, Care, Share Target Skills

Listen:

- Listen with ears and eyes to what peers say and do.
- Respond to peer greetings.
- Identify similarities and differences between self and peers.

Care:

- Pay attention to what peers say or do.
- Care about thoughts and feelings of peers.
- Be a good friend.

Share:

- Share toys or other items.
- Share information about yourself.
- Share what you are thinking and feeling.