PEER-MEDIATED PIVOTAL RESPONSE TREATMENT FOR YOUNG CHILDREN WITH AUTISM SPECTRUM DISORDER: EVALUATING A TRAIN-THE-TRAINER PROCESS

by

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TABLE OF CONTENTS

LIST OF TABLES

ABSTRACT

Children with Autism Spectrum Disorder (ASD) are known to have difficulties with social communication. These difficulties often become more evident entering school. Peer-mediated (PM) interventions that are developed from Pivotal Response Treatment (PRT) are an effective way of teaching children with ASD these skills, as they are able to learn from peers in a natural environment. Implementation of PM-PRT interventions can be difficult at times, often as a result of low feasibility in schools. The current study evaluated a Train-the-Trainer (TTT) model by training educators, specifically Learning Centre Teachers, to implement an evidence-based PM-PRT intervention. Three educator-trainers were trained in PM-PRT strategies, which they then taught to three typically developing children, known as peer coaches. Once peer coaches were taught the strategies, each interacted with a classmate with ASD, initially being prompted by the educator-trainer. Educator-trainer participants were provided with both in vivo and written feedback by research staff throughout their training. In order for this PM-PRT intervention to become more feasible in schools, future research should examine modifications, such as reducing the number of sessions.

Introduction

School can be challenging for children with Autism Spectrum Disorder (ASD). This is partly due to their generalization difficulties, such as applying previously learned skills to new circumstances (Bass & Mulick, 2007; Harris & Handleman, 2000; Rosenkoetter, Hains, & Fowler, 1994). These difficulties are then exacerbated by new settings and routines, social interactions, and academic expectations (Anderson, Jacobs, Schramm, & Splittgerber, 2000), which can be overwhelming. Social interactions are an area of difficulty for children with ASD, therefore social skills interventions are seen as valuable and inclusive ways of teaching students with ASD (Wang, Cui, & Parrila, 2011). While teaching students however, it is important that interventions being implemented are consistent with evidence-based practices (EBPs). For example, there are many evidence-based practices, such as certain social skills interventions, that offer support particularly for children with ASD (Wong et al., 2014). Implementing these social skills EBPs in schools provides individuals with important life skills early on in their education.

Knowing the importance of implementing social skills interventions in school, research has begun to evaluate interventions for children with ASD through what is referred to as peer mediation (Goldstein, Kaczmarek, Pennington, & Shafer, 1992; Wang et al., 2011; DiSalvo & Oswald, 2002). Peer-mediated interventions allow for children with ASD to generalize social skills more easily to their peers, compared to learning from adult-mediated interventions (DiSalvo & Oswald, 2002). Children with ASD are able to learn and model behaviour from their own classmates through providing opportunities to interact with peers during these interventions. For example, results of peer-mediated interventions demonstrate increased social communication and interactions between

children with and without disabilities, specifically children with ASD (Goldstein et al., 1992). This ultimately reduces demands on classroom teachers, as there are more intervention agents to assist children with ASD in generalizing their social skills (Chan, Lang, Rispoli, O'Reilly, Sigafoos, & Cole, 2009). Peer-mediated interventions targeting children with ASD have demonstrated inclusion among students within school settings. It is for this reason that peer-mediated interventions have become recommended practice for children with ASD (DiSalvo & Oswald, 2002).

One intervention that has been beneficial for children with ASD in schools is Pivotal Response Treatment (PRT; Koegel & Koegel, 2006). PRT is a "naturalistic" intervention in that teaching takes place within children's usual routines and in typical settings, rather than in contrived explicit teaching trials. PRT is an established intervention, according to systematic reviews by the National Autism Center (NAC, 2009, 2015) and the National Professional Development Center (Wong et al., 2014). As such, PRT has strong evidence ratings in terms of quality, quantity and consistency of research findings for individuals with ASD.

PRT is based on Applied Behavioural Analysis (ABA), an umbrella term for the science of behaviour change based on systematic application of the principles of learning theory to address real-world behavioural problems. In Nova Scotia, a province-wide community-based early intervention program for preschool-aged children with ASD incorporates PRT. This PRT-based early intervention program is implemented by both parents and therapists, and produces improvements in functional communication as the priority outcome, as well as other skills (Bryson et al., 2007; Smith, Flanagan, Garon, & Bryson, 2015). Although this program is providing early intervention to children with

ASD in Nova Scotia, the impact of this program on children's real-world peer interactions and ability to make friends through their development of social skills has not yet been explored. This is especially important for children with ASD once they are attending school in order to identify what skills are being transferred from early intervention to everyday settings for children, such as a classroom.

Through Nova Scotia's Early Intensive Behavioural Intervention (EIBI) program, PRT is known to be successful for preschool-aged children with ASD when implemented by parents and therapists. PRT is also known to be successful when implemented in natural environments. Considering this, PRT makes an appropriate intervention to be implemented by educators for children with ASD within school classrooms, as children spend the majority of their days in school (Suhrheinrich, 2011). There are few studies however, which have actually examined PRT in schools. An exception to this is a program of whole-class academic instruction delivered by teachers (Stahmer, Suhrheinrich, Schreibman, & Bolduc, 2011). PRT that focuses on peer interaction skills has good potential for delivery in schools (Boudreau, Corkum, & Smith, 2015) but more research is needed on models of delivery for such interventions. Peer-implemented intervention is a delivery model that is beneficial for children with ASD as it removes a step in adult-implemented therapy, that is, transfers learning from adult to peers (Rogers, 2000). This allows for a more natural context for children to interact and acquire social skills.

Currently, a small literature base shows that the general form of peer-mediated interventions may be more beneficial for younger children compared to older children, demonstrating the importance of early intervention for children with ASD (Wang, Cui, &

Parrila, 2011). For example, Boudreau, Corkum, Lucyshyn, Meko and Smith (2016) have demonstrated in a single-subject research design (SSRD; Barlow, Nock, & Herson, 2009) that typically developing (TD) children in Grade Primary (age 5-6 years) can be taught to use Peer Mediated-Pivotal Response Treatment (PM-PRT) strategies. Moreover, after experience playing with these trained peer "coaches", classmates with ASD showed more social engagement not only with the trained coach, but also with an *untrained* classmate. In addition, results from this study also showed a trend toward classmates with ASD initiating more social interactions; however, this finding did not meet SSRD criteria for a reliable effect. With this particular intervention's promising findings of the benefits of PM-PRT for Grade Primary students with ASD (Boudreau et al., 2016), further research in this area is warranted. Specifically, further research should examine how to train educators to implement this type of intervention in order for it to be carried out feasibly within schools.

In order to deliver this type of intervention within schools, educators must be trained in PM-PRT strategies. A small literature base investigates educators' learning of evidence-based practices (EBPs) for children with ASD (Suhrheinrich, 2011). Despite knowing that learning new EBPs is beneficial for school systems, as it broadens teaching methods and knowledge surrounding best practices, educators are often not provided with proper training in EBPs (Koffel & Reidt, 2015). With this being said, it is important to recognize how best to transition these interventions into school systems in order for them to be implemented with fidelity, as most research to date has focused on implementation by researchers (Robinson, 2007).

Individuals working within school systems are often introduced to EBPs during professional development days. However, in order for educators to be trained most effectively and reach a level of mastery in implementing EBPs, training must go beyond one-day workshops and include hands-on training as well as feedback (Suhrheinrich, 2011; Stahmer et al., 2015; Robinson, 2007; Scheuermann, Webber, Boutot, & Goodwin, 2003). For example, despite receiving special education training and certification, educators may lack skills specific to teaching children with ASD unless they participate in a program explicitly focusing on ASD (Scheuermann et al., 2003). In addition, it is recommended that the person delivering feedback to individuals being trained in EBPs must have expert knowledge in the area of practice in order for implementation to be effective (Hall, Grundon, Pope, & Romero, 2009).

Research has demonstrated the train-the-trainer (TTT) model as an effective way of teaching educators evidence-based interventions, as well as being an effective model for moving interventions from research to practice. The TTT model consists of training one or multiple individuals with specific strategies to then train other individuals (Suhrheinrich, 2014). The TTT model also allows for interventions for children with ASD to be implemented both cost-effectively and sustainably, which is promising as this is a relatively new area of research (Shire & Kasari, 2014). Results of Suhrheinrich's (2014) work indicated that the TTT model was effective in teaching PRT strategies. School district individuals such as Autism Specialists or Behaviour Specialists were able to train classroom teachers successfully to use PRT after being trained themselves by research staff through didactic instruction, modeling, feedback, and ongoing support in order to achieve mastery over a 10-15 hour training period.

Hall et al. (2009) also demonstrated success of a TTT model through a study showing that although paraprofessionals implemented behavioural strategies for students with ASD during a one-day workshop, they had difficulty transferring and generalizing these skills to other environments. When a training model was introduced in which paraprofessionals received performance feedback from others, results revealed that paraprofessionals' implementation of correct strategies increased in their typical educational environment from baseline measures. These findings are promising in that they suggest that some interventions can be implemented by paraprofessionals successfully with the right support. Mannie's work (cited in Hall et al., 2009) proposes that providing feedback to educators is important for identifying areas of improvement for the educator while also motivating them to enhance their performance. Feedback also allows trained individuals to give praise and support to educators for positive implementation of an intervention.

LaVigna, Christian, and Willis (2005) completed a study in which they evaluated the TTT program developed by the Institute for Applied Behaviour Analysis (IABA) with the aim of better training Specialist Education Services (SES) staff. By training individuals at the national level to then train SES staff, researchers found this TTT model to be effective in teaching educational personnel the skills in order to implement behavioural services at a level that met standard criteria. Training procedures used in this study included lectures, Socratic discourse, modeling, individual assignments as well as practicum assignments, group work, and both individual and group feedback in written and verbal formats (LaVigna et al., 2005). These multiple aspects of feedback provide educators with a foundation of learning in order to better implement specific strategies.

In another study, Robinson (2007) provided video feedback to paraprofessionals after they implemented PRT techniques with students with ASD in school settings. Video feedback is viewed as beneficial when using a TTT model as it provides detail and replay options, as well as reflection time on their performance for those being trained. Results from this study showed that paraprofessionals were able to implement PRT strategies with fidelity through training and the use of video feedback. Research is consistent in that with more feedback and support, paraprofessionals are better able to learn and implement interventions targeting children with ASD with a level of mastery.

The current study examined whether educators could be trained in PM-PRT using strategies such as a didactic workshop, use of a manual, and hands-on experience as well as ongoing feedback. Specifically, educators were taught how to teach and implement a subset of PRT strategies through peer mediation. PM-PRT strategies used in the current study were adapted from Pierce & Schreibman's (1995) manual, including Paying Attention, Child Choice, Encouraging Conversation, Taking Turns, Reward/Reinforcing Attempts, and Narrating Play (Appendix H). Learning Centre Teachers as well as Speech Language Pathologists were chosen for participation in this study by school board collaborators due to their increased familiarity and exposure to children with ASD. During this study, educators taught PM-PRT strategies to TD children ("peer coaches") with an intention to replicate the peer coaches' effectiveness in helping children with ASD to improve their social interaction skills, as seen in the Boudreau et al. (2016) study.

By training educators (rather than health care team members) to carry out the selection and training of TD children, the eventual goal is to allow for a more cost-effective means of extending and sustaining PM-PRT interventions in schools. By virtue

of this intervention, children with ASD ideally will improve their social interaction skills through exposure of interacting with peers, which in turn provides opportunities to make friends early on in their education. The TTT model has shown to be both an effective and cost-efficient way for implementing interventions within school systems (Suhrheinrich, 2014).

Method

Participants

Participants in the current study were Learning Centre Teachers (LCTs) and Speech-Language Pathologists (SLPs), children with ASD, and TD children. Information gathered with respect to child-focused data is included in Appendix A.

Educator-trainers Educator-trainer participants (i.e., LCTs and SLPs) were educators working in a local school board who had participating grade Primary children with ASD on their caseloads. Although the initial intent was to include SLPs in the PM-PRT training, their work schedules did not permit this level of involvement. Therefore, LCTs became the primary educator-trainer participants in the study, although SLPs observed sessions when they were at the schools. As well, SLPs participated in discussions with researchers and LCTs for sessions they observed.

Children with ASD Participants were three Grade Primary boys aged 4-6 years who had been previously diagnosed with ASD. Participants were recruited based on their previous participation in Nova Scotia's EIBI program, which uses PRT as the primary treatment method (Bryson et al., 2007). Children with ASD were required to have some verbal language (i.e., phrase speech), as well as parents who were able to understand/read English at a level appropriate for the consent process in order to participate in the study.

Children with externalizing behaviours that were judged to interfere with participation, as reported by EIBI clinicians, were excluded.

Children were previously diagnosed with ASD by a local tertiary-level clinical teams, using Autism Diagnostic Observation Schedule (ADOS) (Lord et al., 2005), Autism Diagnostic Interview-Revised (ADI-R) (Lord, Rutter, & Le Couteur, 1994), and a best-estimate clinical diagnostic procedure (APA, 2013). Specific schools and children with ASD involved were based on recommendations from school board Student Services and EIBI care providers.

Typically developing children Participants were six Grade Primary TD children aged 4-6 years (3 males and 3 females; mean age = 6.07 years; SD = 0.12). Classroom teachers nominated TD children based on specific inclusion criteria: children who were typically developing (according to parent and teacher reports), children in the same class as a selected child with ASD, children who had good attendance at school, were cooperative and friendly, and had a parent able to understand/read English at a level appropriate for the consent process. Three TD children (2 males and 1 female) were 'peer coaches' to be trained in PM-PRT techniques. The three TD children not trained in PM-PRT techniques participated as 'generalization peers' (1 male and 2 females).

Study Design

The current study was based on the TTT model. This model was used to teach educator-trainers specific PM-PRT strategies and how to use those strategies while teaching TD children in Grade Primary from a manual (Pierce & Schreibman, 1995; Appendix H). The primary objective of the current study was to evaluate educator-trainers on their adherence to the manual and ability to implement PM-PRT strategies

with fidelity while teaching TD children, after being trained by researchers. Additionally, primary objectives included receiving feedback from educator-trainer participants on their satisfaction of the program as well as their training. A secondary objective of the study, which is not the focus of this thesis, was to examine the effectiveness of the intervention targeting children with ASD. TD children each coached a child with ASD in their class to use the strategies they were taught by the educator-trainer. The SSRD methodology for evaluation of the child intervention is described in Appendix A.

Educator-Trainer Procedures

Educator-Trainer Training LCTs and SLPs took part in a group didactic training workshop on PM-PRT strategies. The workshop, led by the research team (including a Psychology doctoral candidate and two EIBI clinicians), involved a brief overview of PRT, the rationale for PM-PRT, and a review of the PM-PRT manual (Pierce & Schreibman, 1995). Video clips of PM-PRT sessions were shown, which demonstrated the strategies from the manual as implemented in Boudreau's (2016) study. After each video clip, the strategies and their use were discussed. For example, educator-trainers were invited to describe what they saw in the videos and to identify what strategies went well and what strategies did not go well as the peer coach implemented them. Questionnaires were given to educator-trainer participants asking about their experience with PRT and students with ASD on their caseloads during the workshop (Appendix C). Educator-trainers were also given a workshop evaluation questionnaire approximately 1-2 weeks after participating in the workshop (Appendix D).

Before training a TD peer, educators in training took part in a brief review session at their schools before each school began intervention (approximately 1-3 months after

the initial didactic workshop). The review session included an overview of the strategies included in the manual and examples for each one (see Table 1), as well as a review of specific guidelines for training peer coaches. These key training principles were: focusing on priority issues, focusing on positive implementation, offering specific feedback, and offering suggestive feedback (Appendix G). Sessions occurred one school at a time due to limited study equipment and research assistant time. Each educator-trainer participated in eight coaching sessions in which he or she taught a peer coach the six strategies of PM-PRT (Pierce & Schreibman, 1995). Once able to implement the strategies with fidelity (i.e., at least 75% mastery of strategies), the peer coach entered into the eight intervention sessions, during which the educator-trainer prompted the peer coach as necessary while the peer coach interacted with the child with ASD. Study session timelines for the child intervention are in Appendix A.

School A began participation in February; however, due to the child with ASD moving midway through the coaching sessions, an intervention phase did not occur at this school. School B's participation occurred in March, and School C began in May. The timeline for study sessions at each school varied due to children being out of school with illness, and school closures due to bad weather over the winter months. When training the TD peers, educator-trainers attempted to implement the six PM-PRT strategies according to the sessions listed in the manual (Pierce & Schreibman, 1995; Appendix H).

Feedback was provided to educator-trainers by the research team after each session, alternating across sessions between in vivo feedback and written feedback. In vivo feedback was delivered to educator-trainers by researchers trained in PM-PRT (i.e., EIBI clinicians, doctoral candidate researcher). This type of feedback gave educator-

trainers an opportunity to hear and respond to feedback in the moment. As well, researchers were able to support educator-trainers to prompt the peer coach, as necessary. After each session, researchers and educator-trainers discussed how the session went. The second method of providing feedback to educator-trainers was through written feedback, which was provided by a research team member trained in PM-PRT who reviewed sessions from video recordings and provided running commentary on the strengths and areas for improvement in the educator-trainer's performance within the session. Written feedback was sent electronically to educator-trainers the same day as the session in an effort to ensure time to review before the next session took place. Questions or concerns from feedback were addressed prior to the start of the next session. Educator-trainers received a follow-up questionnaire (Appendix B) approximately 1-3 months after they completed the intervention sessions to report their overall satisfaction with the process as well as impressions of effectiveness.

Coaching sessions Educators taught peer coaches over eight 20-minute sessions over approximately eight school days. A research staff member was present to video-record each session. The first session involved peer coaches being provided with an overview of why they were chosen for the study (i.e., being a good friend to others), and a manual in which each PM-PRT strategy was shown in written and picture format (Pierce & Schreibman, 1995). The strategies used from the Pierce and Schreibman (1995) manual were the most frequently cited in the existing literature (Boudreau et al., 2015a). Coaching sessions ended when the child demonstrated PRT strategies with the educator-trainer or researcher with mastery [i.e., 75% correct demonstration of skills (Koegel &

Koegel, 1995; Stahmer & Gist, 2001)] during a 10-minute probe; this was coded in vivo by the researcher, and later confirmed by video coding.

Intervention sessions After the coaching sessions in which peer coaches were trained using PM-PRT strategies by educator-trainers, each peer coach was paired with the designated child with ASD for eight 20-minute play sessions. During one 10-minute block, the educator-trainer gave the peer coach intermittent feedback as necessary; no feedback was provided in the other 10-minute blocks. The 10-minute block during which feedback was provided alternated from session to session across eight sessions, the first session always beginning with the feedback block. Feedback was also delivered to educator-trainers during the intervention sessions through both in vivo and written format.

Materials

A high-definition digital camcorder with surround-sound microphones was used to collect the video probes. Classroom size varied depending on school and space available for each session. Children were introduced to a standard set of toys comparable to those used in the literature (e.g., Pierce & Schreibman, 1997b). Toys included for the current study are listed in Appendix A. Toys were brought to each school by the research team. An implementation checklist (Appendix F) was used to code each educator-trainer's performance during the coaching sessions (whether or not core components of PM-PRT were implemented with fidelity).

Manuals Both educator-trainers and peer coach participants were provided with a manual for the current study, adapted from Pierce and Schreibman's (1995) work. The educator-trainers' manual included specific information on how to implement the peer-

mediated intervention session by session. The children's manual, provided to the peer coach, included each strategy and a picture accompanying it. As the educator-trainer taught the peer coach each strategy, s/he referred to the corresponding page in the picture manual. Both the educator-trainer manual and the peer coach manual are provided in Appendix H.

Questionnaires Before sessions began, educator-trainers completed questionnaires asking about their experience working with children with ASD as well as their experience with PRT intervention (Appendix C). After attending a didactic workshop at which educator-trainers were taught the principles of PM-PRT and introduced to the intervention, they completed a workshop evaluation questionnaire (Appendix D), on which they were asked to rate how informative and helpful the workshop was. After all sessions were completed, educator-trainers filled out a questionnaire based on their experience with receiving coaching from researchers (Appendix E). Overall satisfaction questionnaires (Appendix B) were also emailed to educator-trainers after sessions were completed; however, the school year had ended at this time and no questionnaires were returned to researchers.

Procedure

Educator-trainer participants attended a didactic workshop prior to beginning sessions at their school. Approximately 1-3 months after attending the workshop, educator-trainers participated in a brief review session, in which they and a research assistant went over the manual and strategies of PRT. Once the manual and strategies of PRT were reviewed, educator-trainers participated in eight coaching sessions, during which they taught a TD child (peer coach) PRT strategies while adhering to the manual

provided. After the coaching sessions were complete and the peer coach was able to implement strategies with at least 75% mastery, intervention sessions began. During the intervention sessions, the peer coach interacted with his or her classmate with ASD while being prompted by the educator-trainer. Members of the research team also prompted the educator-trainers as necessary throughout sessions. Educator-trainers were provided with either written or in vivo feedback for each session. Sessions took place in empty classrooms at each school. Digital video files were shared among research team members using a secure file server.

Educator-trainer fidelity A total percentage correct implementation score was calculated for each session for each educator-trainer.

Results

Learning Centre Teachers LCTs indicated Master's level education. School B's LCT had been employed in that position for 8 years, while School C's LCT had been in that position for 2 years. LCTs reported working with children with ASD through their careers and having a role specific to students with ASD. School B's LCT had frequent exposure to PRT and School C's LCT reported having occasional exposure to PRT for students with ASD. Other interventions LCTs reported familiarity with included Picture Exchange Communication System, Discrete Trial Teaching, Positive Behaviour Supports/Behaviour Plans, Exposure Therapy, Sensory Diets, and Speech Language Pathology. School B's LCT reported also being familiar with Cognitive-Behavioural Therapy techniques. With respect to ASD interventions, School C's LCT reported having less exposure to Strategies for Teaching based on Autism Research (STAR), and Treatment and Education of Autistic and Related Communication Handicapped Children

(TEACCH), but had more familiarity with Social Stories and Applied Behavioural Analysis (ABA) Based/Behavioural Therapies, whereas School B's LCT reported having much exposure to each ASD intervention. School A's LCT's background information was lost due to researcher error.

Speech Language Pathologists SLPs responded as having Master's level education. School A's SLP had been employed in that position for 35 years. B's SLP had been employed in that position for 18 years, while School C's SLP had been employed for 9 years in that position. All SLPs reported working with children with ASD throughout their careers, and Schools B and C SLPs reported having a role specific to ASD. School A's SLP indicated that she has worked with students with ASD for about 18 years. School A's SLP reported being moderately familiar with PRT, School B's SLP was very familiar with PRT, and School C's SLP reported being extremely familiar to PRT for students with ASD. SLPs also reported having more familiarity with interventions targeting children with ASD such as Picture Exchange Communication System, and Discrete Trial Teaching. School C's SLP reported having more familiarity with Positive Behaviour Support/Behaviour Plans, whereas School A's SLP had more exposure to Cognitive Behavioural Therapy techniques. Overall, SLPs reported having less familiarity with Exposure Therapy, and Sensory Diets. With respect to ASD interventions, SLPs from all schools reported having more exposure to Social Stories and ABA-Based/Behavioural Therapies. School C's SLP also reported having more exposure to TEACCH intervention, while School B's SLP reported only having moderate familiarity with TEACCH. School A's SLP reported having moderate familiarity with the STAR program.

Classroom Teachers Classroom teachers reported having a Bachelor's degree and no specific role in working with students with ASD. School B's teacher had been employed in that position for 30 years, and has worked with students with ASD for 4 years. School C's teacher had been employed in that position for 22 years, and has been working with students with ASD for approximately 2-3 years. Teachers reported having no familiarity with PRT, Picture Exchange Communication System, Discrete Trial Teaching, Exposure Therapy, Cognitive Behavioural Therapy, Sensory Diets, and Speech Language Pathology. They reported having more experience with Positive Behaviour Support/Behaviour Plans and Social Stories. School C's teacher reported having some familiarity with ASD interventions including STAR, and ABA-Based/Behaviour Therapy, whereas School B's teacher reported having no familiarity with these interventions.

Workshop Evaluation Questionnaire

Overall, individuals who attended the initial workshop on PM-PRT found that the purpose of the workshop was clearly explained. Participants also reported that they generally developed an understanding of PRT as an intervention approach and gained understanding surrounding PM-PRT strategies. In addition, individuals attending the workshop felt as though the potential benefits of PM-PRT were described clearly. With respect to intervention limitations being described clearly, participants of the workshop reported generally neutral opinions.

General comments from the workshop included positive feedback with respect to content and layout (i.e., watching video clips/discussing video content). With this being said, some comments indicated that educators felt videos were repetitive at times, and

there could have been fewer of them. Comments that suggested areas of improvement included having more information about how to select peer coaches as well as more information about time commitments and logistics of the study within the school system. Some participants also noted that it would have been beneficial for them to receive hard copies of manuals and PowerPoint presentation notes in order to gain a better understanding.

Evaluation for Coaching Questionnaire

The Evaluation for Coaching questionnaire was returned to researchers by 3 of the 6 educator-trainer participants (LCT participants). Returned questionnaires indicated that participants found the researchers' approach to coaching very positive and constructive, and that specific feedback provided by researchers was helpful. When asked how comfortable educator-trainers were when *giving feedback* on the implementation of strategies to peer coaches, two out of three participants indicated they felt very comfortable to extremely comfortable.

Two of the educator-trainers found the most helpful part of their training to be the intermittent feedback provided both during and after the sessions. Specifically, they enjoyed having EIBI clinicians' expertise, as well as the written feedback that they were able to read and refer to. The third educator-trainer found having visual cues to the peer coach helpful (i.e., picture manual). One educator-trainer reported that oral feedback was the least helpful, as s/he found it difficult to remember without the written component. On the other hand, one educator-trainer reported the written feedback to be the least helpful as s/he found it was received too late prior to the next session, and therefore felt as though s/he did not have enough time to adjust performance from session to session.

The third educator-trainer also found it difficult always to read the feedback before the next session. One educator-trainer recommended viewing children's attendance records before choosing them for the study (as the peer coach for this particular school missed time, which interfered with study sessions) and also recommended that SLPs are not a necessary player in the intervention as they were only at each school once a week.

Educator-Trainer Outcomes

Fidelity/Adherence to the Manual As the author was present during all intervention sessions, research assistants were recruited to code session data for the current study, however not all coding was completed for the submission of this thesis, and will be included as part of a larger project. A research assistant coded half of the coaching sessions (4 out of 8) for each school using an implementation checklist for the educator-trainer's performance (whether or not the educator-trainer implemented core components) and a total percentage correct score was calculated for each session. School C's educator-trainer had a fidelity score of 92.9%. School B's educator-trainer had a fidelity score of 96.2%. School A had 3 out of 4 coaching sessions coded, where the educator-trainer had a fidelity score of 97.7%. These scores indicate that each of the educator-trainers participating in this study adhered closely to the training manual (Pierce & Schreibman, 1995, 1997).

Discussion

Clinical/Educational Implications

The primary aim of the current study evaluated the TTT model using educators, specifically LCTs, as participants. LCTs were trained by researchers on how to implement a PM-PRT intervention for children with ASD by teaching peer coaches (TD

children) specific PRT strategies. While teaching peer coaches, educator-trainers were provided with detailed feedback and coaching by researchers to enhance their training. After being taught PRT strategies by the educator-trainer, peer coaches then interacted with their classmates with ASD while incorporating the strategies they were taught, while being prompted by educator-trainers throughout the sessions.

Previous research has demonstrated that the TTT model is an efficient, feasible, and cost-effective way of introducing evidence-based interventions into schools. The current study also supports this. These findings are important for both research and education policies moving forward. If educators can be trained to teach evidence-based interventions specifically for children with ASD as early as Grade Primary, children will be able to develop and build on these skills during school hours and with people, including other children, they are familiar with and work or play with on a daily basis.

Additionally, the TTT model allows for in-house expertise on evidence-based practices, creating more feasibility for implementation of these types of intervention. For example, in the current study, each educator-trainer reported valuing the skills gained by participating in this study. Educator-trainers also reported being motivated to incorporate using the PM-PRT manual within their regular caseload of students. This suggests that educator-trainers are committed to applying the skills and knowledge gained from this TTT model, which in turn benefits more students. Due to the overall satisfaction of the educator-trainers with the TTT model in this particular study, the Department of Education and Early Childhood Development, local school board and research team intend on continuing to collaborate on studying the implementation of this intervention.

Research Design Limitations

This study was a preliminary evaluation of a TTT model for building capacity to provide PM-PRT intervention targeting children with ASD. As such, there were research design limitations. Only three children with ASD were chosen for participation in the current study. This small sample size was considered appropriate at this stage of development in order to develop a feasible training model for educators to learn and implement this type of intervention with fidelity. Once the training model is in place, it is anticipated that more children will benefit from receiving this intervention consistently as more educators are trained.

Practical Limitations

Practical limitations also occurred with respect to implementing this intervention feasibly throughout schools with educators. These issues are important for consideration in future research in order to create a training model that is able to be implemented feasibly within schools. For example, educator-trainers were involved in the study based on the consent to participate offered by parents of children on their caseloads, and incentive or motivation varied among participating educator-trainers. Nonetheless, all participants indicated valuing the skills learned, and were motivated to continue using this intervention with other children on their caseloads.

There were also limitations surrounding the educator workshop, where participants received didactic instruction on PRT and peer-implemented interventions. Despite generally having positive feedback from participants, the research team did not provide educators in advance with hard copies of what was discussed in the workshop. Educator-trainer participants commented they felt as though they would have benefited

from receiving handouts as well as copies of the manuals to review prior to beginning the training sessions. Having these resources in advance to review may have increased educator-trainers' motivation and comfort levels while implementing the intervention with children. Future research should consider having more initial training in which participants are given time to become familiar with the manual and ask questions prior to sessions with the peer coach.

As this study was adapted from the Boudreau et al. (2016) study, intervention sessions followed that procedure, in which children were prompted for 10 out of the 20 minutes of each intervention session, alternating whether it was the first or second 10 minutes. This was done to enable researchers to measure improvement on target behaviours such as peer engagement and rate of initiations for children with ASD. For the current study however, it would have been beneficial for the educator to prompt for the full 20 minutes, as the primary objectives were to evaluate the educators' training process. In order for future research to fully examine the TTT model, it would be beneficial to alter this aspect of procedure to ensure educator-trainers are able to implement the intervention comfortably and with fidelity.

In addition, time commitment played a large role for the feasibility of the study. Although sessions were only 20 minutes in length, educator-trainers also took time to discuss feedback with researchers before and after the session. Therefore, educator-trainers were away from their own caseload for approximately 40 minutes each day a session took place. It would be beneficial for future research to allocate more time for each session as well as to provide support to participants' caseloads to ensure educator-

trainers are receiving feedback that is not rushed and they are able to seek clarification when necessary.

Detailed feedback was provided to educator-trainer participants for each session. When provided with written feedback however, educators were not always able to read all the feedback prior to the next session, so researchers briefly reviewed highlights of feedback prior to the following session. As well, educator-trainers had differing opinions with respect to in vivo feedback. Future research should consider providing participants with an additional workshop introducing how in vivo training will be delivered by a researcher / clinician to educators during training, as well as demonstrating key principles of in vivo coaching for both the researcher training the educators, and the educator coaching the peer coach.

As this research will be continuing within local school boards, there are suggestions for future research to consider when implementing the TTT model. For example, educator-trainer participants originally chosen for the study included both LCTs and SLPs, as their positions were believed to entail exposure to working with children with ASD. Due to SLPs only being in each school once a week, however, they could not be trained in PRT strategies using the present method and therefore did not take on a larger role in the study.

Conclusion

Despite the current study being a preliminary evaluation of a TTT model in local school boards, this study was successful in evaluating the TTT process through implementing a PM-PRT intervention for children with ASD. Strengths of this study were overall participant satisfaction with not only the training they received, but also the

advantage of having this type of intervention for their students and being able to work with their students directly. Educator-trainers also reported being motivated to continue using this intervention in the future. The current study allows for future research to build on the TTT model and how to best train individuals such as LCTs the skills necessary to implement PM-PRT interventions in schools, specifically for children with ASD.

TABLES

Table 1
PM-PRT Strategies and Examples

Strategy	Examples
Paying Attention	Eye contact, Body position, Saying friend's name, Tap friend on shoulder
Child Choice	Two choices, Hold choices at eye level, Label choices
Encourage Conversation	Encourage friend to use words, Ask what s/he wants to play with, Give toy only if s/he uses words (hold onto toy if words are not used)
Taking Turns	Encourage turn taking, Say "my turn!", offer turns to your friend
Reward/Reinforce Attempts	Help friend by acting like a coach ("good job"; "nice try, you'll get it next time", Give high fives/thumbs up
Narrate Play	Explain what you're doing while you play, Ask your friend what their doing if they play without using words ("I'm building a house with the Lego")

Table 2
Session Involvement for Participants

Session Involvement	Educator-Trainer	Peer Coach	Generalization Peer	Child with ASD
Workshop	✓			
Review Session	✓			
Baseline Sessions		✓	✓	✓
Coaching Sessions	✓	✓		
Intervention Sessions	✓	✓		✓
Post-Intervention Sessions		✓	✓	✓

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APPENDIX A

Child Intervention

Methods

A non-concurrent multiple-baseline, multiple-probe design was used across participants (Baer, Wolf, & Risley, 1968). For child participants, sessions began with four baseline sessions. Peer coaches (TD children) then moved into coaching sessions with the educator-trainer. Once coaching sessions were complete, the peer coach entered into the intervention sessions where they interacted with the student with ASD and received prompting from the educator-trainer. Children then entered into the post-intervention sessions. Session involvement for all participants (including educator-trainers) can be seen in Table 2.

Baseline sessions During school hours (decided in consultation with classroom teacher and principal), children with ASD and two of the consenting TD children (one trained as a peer coach and one as a generalization peer) were observed in an empty classroom with a standard set of toys similar to toys used in the literature (Pierce & Schreibman, 1997b). Toys for the current study included Play-Doh, board games such as Trouble, and CandyLand, balls, dolls, castles, trucks, and a toy oven with kitchen supplies (e.g., fork, knife, bread, vegetables, plates, frying pan). Baseline sessions occurred in four 10-minute intervals across approximately four school days. Other than pointing out the boundaries of the play space, no additional prompts or directions were provided by the researcher. The researcher was as unobtrusive as possible in order to cause minimal disruption to the school environment.

Coaching/Intervention Sessions Coaching and intervention sessions are described in the educator-trainer study timeline.

Post-intervention sessions After intervention sessions were completed, approximately four additional 10-minute sessions took place that followed the same procedures as the baseline sessions. One school had only two post-intervention sessions take place due to the school year ending.

Outcome Measures Outcome measures for the child intervention are described below for reader's information. Due to this aspect of the project not being a primary objective for this thesis however, results for child intervention outcomes are to be included as part of a larger project.

Outcome Measures (Children with ASD)

Social-communication Children's social-communication was measured by evaluating both percentage of peer engagement and rate of social initiations. The number of minutes of peer engagement was divided by the total recording time and multiplied by 100 to yield a percentage.

Ten-minute video segments were also coded for each independent spontaneous verbal communication that the child with ASD directed toward the peer coach. At the end of the session, the total number of tallied initiations was divided by the probe length, to yield a per-minute rate of initiations.

TD comparison data Two dyads of TD children (peer coaches and non-trained generalization peers; mean age = 6 years) provided estimates of the typically expected range for both social-communication variables. One dyad of children was lost due to the child with ASD moving midway through the intervention. TD peer dyad data were recorded in exactly the same manner as the data for the dyads of children with ASD and

peer coaches. Sessions occurred in similar classrooms with the same toy set. The same number of sessions occurred in order to establish typical comparison data.

Satisfaction Parents, classroom teachers, and children were given a questionnaire assessing their satisfaction with the intervention, created for the purpose of the current study. The parent questionnaire consisted of four statements, each rated on 5-point Likert-type scale ranging from 'do not agree at all' to 'strongly agree.' The teacher questionnaire consisted of 11 items, also rated on the 5-point Likert-type scale. Teachers rated statements such as: "The program had a positive impact on ____'s social functioning" and "The research staff respected the classroom routine." Due to the end of the school year occurring before questionnaires were administered, questionnaires were not all returned by parents or teachers. The classroom teachers who did not participate in the intervention completed the child satisfaction questionnaire with each child immediately following each session. The child satisfaction form consisted of one item, "Show me how much you liked what you did today." Children were instructed to point to one of five faces (a 5-point pictorial scale ranging from a sad to a happy face) that best described their experience in the session.

Outcome Measures (Peer Coaches)

Fidelity of PM-PRT implementation Continuous 1-minute interval coding was used to measure fidelity of PRT implementation. Each interval was coded as either correct or incorrect for each of the following six strategies: Paying Attention, Child Choice, Taking Turns, Encourage Conversation, Narrate Play, and Reward/Reinforce Attempts (definitions adapted from Koegel, Schreibman, Good, Cerniglia, Murphy, &

Koegel, 1989; Koegel & Koegel, 2006; Pierce & Schreibman, 1995). The criterion for fidelity of implementation was 75% (Koegel & Koegel, 1995; Stahmer & Gist, 2001).

External validity Parents and teachers of the children with ASD independently completed the (a) *Social Skills Improvement System Rating Scales* (SSIS-RS; Gresham & Elliott, 2008; Gresham, Elliott, & Kettler, 2010), which assesses social skills, problematic behaviors and academic competence. Social skills are defined as strengths, acquisition deficits, or performance deficits, with or without competing problem behaviors. The Social Skills domain is comprised of cooperation, assertion, responsibility, empathy, engagement, self-control and communication. Due to the school year ending, not all SSIS-RS questionnaires were returned to the research team.

Video-recording A high-definition digital camcorder with surround-sound microphones was used to collect the video probes. Digital video files were shared among research team members using a secure file server.

APPENDIX B

Teacher Satisfaction of the Implementation Process of the Peer-Mediated Pivotal Response Treatment Program
Teacher Form

The information you provide is confidential.
** Please take care not to identify yourself or your child on this form.**

Please indicate how much you agree with each of the following statements based on what you learned or know about this program. Please read *all* of the statements before you begin.
1 = Do not agree at all, 5 = Strongly agree

The research staff communicated effectively.	D/K	1	2	3	4	5
The research staff respected the classroom routine.	D/K	1	2	3	4	5
Scheduling was easy to integrate with my class.	D/K	1	2	3	4	5
Delivery of this program by peer coaches at school is acceptable.	D/K	1	2	3	4	5
The program had a negative impact on my classroom	D/K	1	2	3	4	5
The program interfered with child with ASD's academic progress.	D/K	1	2	3	4	5
The program interfered with the peer coach's academic progress	D/K	1	2	3	4	5
The program a positive impact on child with ASD's social functioning.	D/K	1	2	3	4	5
The program had a negative impact on the peer coach's social functioning.	D/K	1	2	3	4	5
I would be willing for other students in my class to participate in this program again	D/K	1	2	3	4	5
I would be interested in learning the program strategies.	D/K	1	2	3	4	5

What are your general impressions of the program?

Have there been any *positive* aspects of having children in your class take part in the research study?

Have there been any *negative* aspects of having children in your class take part in the research study?

What can we do better?

Thank you for your feedback. Feel free to make other comments on the program.
PLEASE RETURN AS SOON AS YOU CAN IN THE ENVELOPE PROVIDED.

APPENDIX C

Date:_____ Participant #: _____

School Staff Member: Background Information

Age: Circle which category (years) applies

< 30 31-40 41-50 51+

Gender: M F

Ethnicity (optional): _ __ Caucasian ____ African-Canadian_____ First Nations

___ _Asian _____Other:_____

What is your highest level of education?

_____High school completion

_____Bachelor's degree (BA, BSc, BEd)

_____Master's (MA, MSc, MASP)

_____Doctoral degree (EdD, PhD, PsyD)

Occupation _____

How many years have you been employed as a *insert occupation name* ?

_____

How many years have you been employed in an educational setting?_____

Do you have a specialty educational / professional role specific to ASD (circle one)?
YES NO

Have you taught / worked with at least one child with ASD in the past 3 years (circle one)?

YES NO

If yes, answer questions below:

How many years have you worked with children with ASD in a professional capacity? _____

Rate your familiarity with the ASD interventions/educational approaches listed below:

⇐----------⇒

1	2	3	4	5
Not at all familiar	**Slightly familiar**	**Moderately familiar**	**Very familiar**	**Extremely familiar**

AND

Rate how often you use each ASD interventions/educational approaches below in your own practice with children ASD:
(Note, if you haven't taught or worked with a child who has ASD please leave 'Frequency' column blank)

⇐----------⇒

1	2	3	4	5
Never use	**Almost never**	**Occasionally or sometimes**	**Often use**	**Frequently use**

Familiarity	**Frequency**	
☐	☐	Strategies for Teaching based on Autism Research (STAR)
☐	☐	Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH)
☐	☐	Social Stories
☐	☐	Applied Behavioral Analysis (ABA) Based/Behavior Therapy

Familiarity/Frequency of specific ABA/Behavioral approach

☐☐	Picture Exchange Communication System
☐☐	Pivotal Response Treatment
☐☐	Discrete Trial Teaching
☐☐	Positive Behavior Supports/Behavior Plan
☐☐	Exposure therapy, relaxation training

Familiarity	Frequency	
☐	☐	Cognitive-Behavioral Therapy (combines cognitive and behavioral principles; e.g., challenging negative thoughts, fear hierarchy; “Face Your Fears”, “Coping Cat”)
☐	☐	Sensory Diet (i.e., various planned sensory experiences hierarchy; “Face Your Fears”, “Coping Cat”)
☐	☐	Speech-Language Pathology

Note specific approach if applicable:

_____

_____

Other ASD-related educational program / intervention approach(es) - please specify:

☐ ☐

_____

☐ ☐

_____

APPENDIX D

Peer-Mediated Pivotal Response Treatment for Young Children with Autism Spectrum Disorder: Evaluating a Train-the-Trainer Process

Evaluation - Pivotal Response Treatment
Supervisory Workshop
Halifax, Nova Scotia

1. How clearly were materials in the workshop presented?

1	2	3	4	5
Not Clear At all				Extremely Clear

2. How clear was the feedback you were given on the videotapes?

1	2	3	4	5
Not Clear At all				Extremely Clear

3. I received helpful individual attention.

1	2	3	4	5
Strongly Disagree				Strongly Agree

4. How did you feel about the number of *hours* of the workshop?

Too Few Too Many Just Right

5. How comfortable are you with implementing the following procedures ***yourself***?

	Not At All				Extremely
Clear instructions	1	2	3	4	5
Maintenance tasks	1	2	3	4	5
Shared control/Child choice	1	2	3	4	5
Responsivity to multiple cues	1	2	3	4	5
Contingent reinforcement	1	2	3	4	5
Rewarding attempts to respond	1	2	3	4	5
Natural reinforcers	1	2	3	4	5

6. How comfortable are you ***giving feedback on*** the implementation of the following procedures?

	Not At All				Extremely
Clear instructions	1	2	3	4	5
Maintenance tasks	1	2	3	4	5
Shared control/Child choice	1	2	3	4	5

Responsivity to multiple cues	1	2	3	4	5
Contingent reinforcement	1	2	3	4	5
Rewarding attempts to respond	1	2	3	4	5
Natural reinforcers	1	2	3	4	5

7. Please evaluate the following workshop components:

	Poor				Excellent
Identifying targets within session	1	2	3	4	5
Giving feedback/coaching	1	2	3	4	5
Evaluating progress	1	2	3	4	5
Feedback on videotapes	1	2	3	4	5

8. How comfortable are you with the following procedures ***after*** the workshop?

	Not At all				Extremely
Identifying targets within session	1	2	3	4	5
Giving feedback/coaching	1	2	3	4	5
Evaluating progress	1	2	3	4	5

9. Please evaluate the following general components:

	Poor				Excellent
Parent/Professional model	1	2	3	4	5
Creating videotapes	1	2	3	4	5
Workshop presenter	1	2	3	4	5
Overall workshop	1	2	3	4	5

10. What was the *most* helpful part of the workshop?

11. What was the *least* helpful part of the workshop?

12. What recommendations would you make for future workshops of this kind?

APPENDIX E

Educator-Trainer Evaluation for Coaching by Researchers

1. The trainer's approach was positive and constructive.

1	2	3	4	5
Not clear at all				Extremely clear

2. I received specific helpful feedback on my coaching.

1	2	3	4	5
Not clear at all				Extremely clear

3. How comfortable are you ***giving feedback on*** the implementation of the following procedures?

	Not At All				Extremely
Paying Attention	1	2	3	4	5
Child Choice	1	2	3	4	5
Taking Turns	1	2	3	4	5
Encourage Conversation	1	2	3	4	5
Narrate Play	1	2	3	4	5
Reward Attempts	1	2	3	4	5

4. What was the *most* helpful part of the coaching?

5. What was the *least* helpful part of the coaching?

6. What recommendations would you make for future training of this kind?

APPENDIX F

Implementation Checklist

Session 1: Therapist Checklist

Component	**Present (√) or Absent (X)**
Introduction to peer training	
Provide peer coach manual	
Explanation of the manual	
Review strategy: ***Paying Attention***	
Ask question re strategy	
Review strategy***: Give Choices***	
Ask question re strategy	
Review strategy: ***Ask Your Friend to Talk***	
Ask question re strategy	

Other: Therapist

Component	**Present (√) or Absent (X)**
Therapist provides positive reinforcement (e.g., 'good job', high-fives)	
Developmentally appropriate language	
Rapport appears comfortable/positive	

Other: TD Peer

Component	**Present (√) or Absent (X)**
Appears attentive/engaged	
Displays positive affect	
Appears to enjoy the interaction	

APPENDIX G

Peer-Mediated PRT: Guidelines for Training Peer Coach

1. **Focus on Priority Issues**

   Trainer focuses their feedback to the peer coach on priority area(s) that will best support the peer coach's PRT skill development at a particular moment. The priority focus will change over time, as the peer coach develops skills and play activities change.

2. **Focus on Positive Implementation**

   Trainer's feedback is focused on peer coach's success in implementing the peer-mediated PRT procedures with the child with ASD.

3. **Specific Feedback**

   Trainer provides detailed and specific feedback to peer coach about his or her behavior demonstrating the peer-mediated PRT procedures (e.g., "You are doing a great job taking turns – he is playing with the ball and then you are having a turn with the ball").

4. **Suggestive Feedback (more directive when required):**

   Trainer provides feedback to peer coach using suggestive, rather than directive language (e.g., "Why don't you try…" – and hold up picture of strategy"). Move to more directive language if needed.
   It is important give peer coach *immediate, positive and specific feedback* when he or she tries what was suggested / directed.

APPENDIX H

Kids Helping Kids

Teaching Typical Children to Enhance the Play and Social Skills of their Friends with Autism and Other PDDs: A Manual

by Karen Pierce, Ph.D. & Laura Schreibman, Ph.D. Illustrations by Chris Robertson

* Please distribute this manual to anyone who might benefit from using it. Please notify Dr. Pierce as a courtesy:

Karen Pierce, Ph.D. University of California, San Diego Department of Neurosciences kpierce@ucsd.edu (858) 551 7930

Note: Peer-PRT training procedure based on Koegel, Schreibman, Good, Cerniglia, Murphy & Koegel (1989). How to Teach Pivotal Behaviors to Children with Autism: A Training Manual.

Note: The number of peer-PRT strategies was decreased from 8 to 6 for the current doctoral dissertation. The rational for the change was to be more consistent with the empirical literature and developmental level of the children in the current study (i.e., 4 to 6 year-olds).

WE WELCOME AND ENCOURAGE IMPROVEMENTS!! For example, we often augment the procedure with video modeling...have you found anything else that is helpful to enhance social behavior? Please send suggestions for improvements to the manual to Karen Pierce at: kpierce@ucsd.edu

TABLE OF CONTENTS

TABLE OF CONTENTS

INTRODUCTION

Teaching social interaction skills to children with autism is perhaps the most critical, and often most difficult, aspect of treatment programming. Because the development of sophisticated social skills relies on attention to subtle social cues, timing of social response, and maintenance of attention on the activities of others, abnormalities in basic attentional processes in most children with autism are among the first challenges that a social skills trainer often encounters. Pivotal Response Training (PRT), the teaching paradigm utilized in this manual, targets ameliorating attentional abnormalities as a mechanism to enhance normal social responsivity. Other strategies, such as enhancing motivation, modeling appropriate play behavior and reinforcement of appropriate play behavior are additional components of this approach.

There are also many strengths in the learning styles of children with autism that allow us to develop effective social skills interventions. Among them are success with predictability, visual instruction, and response to motivational techniques. Strategies such as peer implemented PRT, which target ameliorating deficits, while working with the learning strengths in autism afford teachers, practitioners, and parents with a mechanism for teaching this important skill.

The authors of this manual have spent the past decade researching how to most effectively teach language and social skills to children with autism (see (Laski et al 1988; Pierce and Schreibman 1995; Pierce and Schreibman 1997b; Sherer et al 2001; Stahmer 1995). Converging evidence from our laboratory as well as others suggests that using typical children (often called “peer trainers”) as teachers is a highly efficacious treatment alternative. Typical children are in abundance in the home and school setting and provide developmentally appropriate examples of play and social behavior.

In essence, the social skills strategies described in this manual are derived from a naturalistic teaching strategy called Pivotal Response Training (PRT; see manual by (Koegel et al 1989). Pivotal Response Training is a group of behavioral teaching strategies designed to increase motivation such that the child with autism wants to engage in a particular task (e.g., language) while concomitantly orienting attention to relevant aspects of the environment.

The overall goal of the manual is to give teachers and parents treatment strategies that they, in turn, can teach normal children to use with their friends, classmates or siblings with autism and other pervasive developmental disorders. Throughout the manual the term “target child” will refer to the child with autism or other pervasive developmental disorder, and the term “peer” will refer to the typical child serving as a peer trainer. Although not necessary, it is often helpful if the adult in charge of the peer training is trained in PRT (or at least somewhat

familiar with it).

The enclosed picture manual "How to be a Great Friend" is a visual guide that should be given to peers during their training. The peer trainer should also review this picture book prior to each play session. This will serve to remind them of the 8 specific play rules. Before you begin, a few decisions should be made to ensure the success of your peer-PRT program including: ***Determining child readiness; Selecting peer trainers; Choosing a location for training; Selecting appropriate toys; Deciding treatment frequency and duration.***

GETTING READY

Before beginning any social skills training program, several considerations should be addressed:

STEP 1: DETERMINING CHILD READINESS AND APPROPRIATE ACTIVITES

Peer mediated PRT interventions have been shown to be effective with children of all abilities (see (Pierce and Schreibman 1995; Pierce and Schreibman 1997a; Pierce and Schreibman 1997b), although research suggests that this procedure may be more effective with children who have *some* verbal ability (e.g., single words or speech approximations). The somewhat greater success of peer PRT approaches with children with some language ability might be a function of the level of reinforcement received by the peer trainer during interactions. That is, a peer trainer might feel more comfortable, and his/her attempts at interaction might be reinforced more by the target child if the target child makes a communicative response to initiations than if the target child does not. Pre-verbal or non-verbal children with autism can also benefit from peer-implemented PRT, however, the procedure is implemented slightly differently for a child with little or no verbal skills. The adult in charge of the peer training should take this into consideration when instructing peer trainers on specific strategies. In short, the age and ability level of the target child should be taken into consideration when deciding what skills to emphasize during the training. There are several different types of social interaction activities that vary in the level of involvement between individuals, language and cognitive demands. Listed below are some of the main categories of play, ordered from simple to most complex:

Physical play. Outdoor games such as tag, catch, ring around the rosie, duck-duck-goose are usually successful social interaction activities for children of all abilities. These activities have few rules, rely on minimal language ability and are enjoyable for all participants. In large groups, however, some children with autism may still avoid physical play with others. Decreasing group size, to include only 2 or 3 typical children and one target child will usually facilitate successful physical play activities.

Parallel play. This type of play can be defined as any instance where the target child and peer are engaged in the same activity (e.g., building with blocks), but they are not interacting during this activity. Parallel play is typically the dominant form of peer play for typical children until the age of 4. Although interactive play is the ultimate goal, beginning with parallel play is often an ideal starting point for young or pre-verbal children. Encourage parallel play by having two sets of most activities, and placing them next to each other.

Simple Interactive. Simple interactive play can be defined as any play activity that does not rely on complex verbal interaction, but rather, on turn taking with toys. For example, pushing cars back and forth, rolling balls back and forth or taking turns with a push toy. This level of interaction is an excellent starting place for preverbal children along with physical and parallel play.

Complex Interactive. Complex interactive play is similar to interactive play, except that verbalizations may take place between play partners. Further, complex interactive play may make use of board games or other advanced forms of interactive play items. Even if a child is verbally competent, it is common to start at the level of simple interactive and progress towards complex interactive with successful interactions.

Symbolic Play. Symbolic play involves using objects for things other than what they were intended to be. For example, using a pen as car, or a baby's bottle as an airplane are both examples of symbolic play. Research suggests that this advanced type of play is correlated with language, in that children with more language are more likely to engage in this type of play. Given this, symbolic play is a great way to enhance creativity in children with autism who have some verbal ability.

Verbal Play. Verbal play is the most complex form of play because it relies predominantly on the participants' ability, and willingness, to verbally interact. This form of play may readily occur during sociodramatic type games. For example, children might discuss what types of shoes their mother has during a dress up, or what types of clothes they want to buy in the store, or what they want to be for Halloween next year. Verbal interactive play is the ultimate goal for a peer training intervention with verbal children, however, it is often common, and necessary, to progress through earlier stages of play before sophisticated verbal play can ensue.

STEP 2: DETERMINING WHO WILL BE THE BEST PEER TRAINER

Selecting an appropriate peer trainer is essential. While many young children have wonderful intentions, not every typical child will be a suitable peer trainer for every child with autism. There are several important factors to consider when

choosing a peer trainer including: **age, personality, availability, and consistency**.

Age. The skill of a peer trainer increases with age, in that an eight-year-old child typically is a more proficient peer trainer than a five-year-old child. It is important, however that the peer trainer and child with autism be of similar age in order to maximize the potential for the development of friendships as well as provide developmentally appropriate exemplars of play.

Personality. The emotional disposition and social tone of the peer trainer is an important variable that affects treatment efficacy. Traits such as patience, maturity, and persistence are important, however, the best judge of personality compatibility will be the child with autism. Like adults, children's preferences for friends are difficult to target, therefore, the best test of personality compatibility is to observe the dyad playing together. Things to look for:

Does the peer trainer seem interested in the target child, or does he/she wait for your instruction? Does the target child actively run away from the peer trainer? Does the target child allow the peer trainer to remain in proximity? Does the target child appear more anxious in the presence of the peer trainer?

Availability/Consistency. Children with autism typically thrive under conditions of consistency, therefore, it is important to choose peer trainers that are available on a regular basis.

Number of peer trainers. There is little empirical evidence that systematically evaluates the impact of few versus many peer trainers. In theory, multiple peer trainers should serve to enhance generalization of treatment effects. Further, multiple peer trainers provide diverse examples of play for the target child.

By multiple peer trainers, we mean different peer trainers on different days (e.g., Peer Trainer 1 on Monday and Wed, Peer Trainer 2 on Tuesday and Thursday).

STEP 3: DETERMINING THE BEST PLACE FOR PEER-PRT TRAINING

During our typical program, training initially takes place in a location free of distractions. Gradually, the complexity of the environment increases. For example, during the first few weeks of training, the target child and peer trainer might play together inside a classroom a during recess period when other children are outside. After successful interactions of this type, more children should be introduced into the training environment to mimic naturalistic situations. It is important to note, that the concepts addressed in this manual (e.g., reward attempts at social behavior, model appropriate play, orient appropriate attention) should, and can, be implemented in ANY setting: during

outdoor or indoor recess, at lunch time, class outings or even at the dinner table. Once peers are trained on the basic concepts of this approach, they should be instructed to attempt these strategies in any setting they feel comfortable.

STEP 4: SELECTION OF APPROPRIATE TOYS

It is important to choose toys that will enhance motivation of target child. Toys also should be rotated frequently to enhance motivation as well as provide new exemplars for learning. Further, toys should be chosen that facilitate interaction, such as board games or a ball while toys that are difficult to share, such as books, should be avoided.

Note: Some children have abnormal preoccupations with certain objects (e.g., letters). Under most situations, toys of this type should be eliminated from the training setting. Sometimes, however, toys that are preoccupations may be the most successful way to begin an interaction between the target child and peer trainer. For example, a child with autism that is preoccupied with dinosaurs may approach a peer trainer or allow a minimal interaction in order to gain access to those dinosaurs.

STEP 5: DECIDE THE FREQUENCY AND DURATION OF TRAINING

Social development is a cascade of events beginning in infancy and extending throughout adulthood therefore, training should begin as early as possible and as frequently as possible. As mentioned above, however, a specific time and place to implement a peer training strategy is not always necessary: once the peer trainer reaches a high proficiency level and has developed a positive relationship with the target child, training can take place at any time, anywhere.

OVERALL GUIDELINES FOR TRAINING PEERS

Research regarding this method [Pierce, 1995 #2833] suggests that most typical peers can learn the basics of this method in about 3 or 4 1/2 hours of didactic sessions. If multiple peer trainers will be used, it is usually best to train all of the children simultaneously. Training peers together will not only give them a sense that they are engaging in an activity similar to their peers, but also, they can practice the strategies they have learned on each other! The peer training sessions can be broken down as follows:

SESSION 1: EXPLANATION

Introduce the concept of "peer training", explain to the children that they will be helping a child with special needs to learn how to play and make friends. Next, give peer trainers a manual and tell them that they will be learning many different strategies for helping the target child. Begin explaining each strategy verbally,

having children follow along in their manual. After you have explained each strategy, ask questions to each peer to see if they understand the concepts.

SESSION 2: **ROLE PLAYING** Continue until you have finished explaining the 8th strategy (i.e., "Tell what you are doing"). Begin role playing. *Role Playing*. With another adult, role play each strategy, using toys and other stimuli that will be available to the peers. Provide a both a *good* and *poor* example of implementing each strategy and ask the peer to comment after each. Providing both accurate and inaccurate implementations of each strategy will provide the typical children with many examples of what they should, as well as should not, be doing. Asking lots of questions after role playing each strategy will help the peer trainers understand the critical elements of each strategy.

An example of role playing 'Paying Attention' (strategy #1) where one adult acts as the target child and the other adult as a peer trainer might be as follows:

Poor Example of 'Paying Attention' Adult 1 (acting as target child): Looks up at lights on the ceiling as he is repetitively moving an object.

Adult 2 (acting as peer trainer): Sits next to adult 1 and says "do you want to play ball?" Questions to ask peer trainers: Was that a good or bad example of getting your friend's attention? Why or why not? What other things could you have done to get attention? In the above example, Adult 2 did not attempt to orient the target child's attention to any meaningful object and did not position his/her body in such a way as to elicit a response from the target child.

Good Example of 'Paying Attention' Adult 1 (acting as target child): Looks up at lights on the ceiling as he is repetitively moving a car in the air.

Adult 2 (acting as peer trainer): Sits in front of target child and places a ball in front of the moving car. Once the target child either makes eye contact with adult 2, or looks at the new object (i.e., the ball), adult 2 then asks "do you want to play ball, or car?"

In this example, adult 2 gets the attention of the target child by moving to the front of the child and placing an object which blocks the target child's current focus of attention (the car). Once sure that the attention of the target child is either on the adult or the new object, adult 2 delivers the prompt "do you want to play ball or car?"

SESSION 3: **MORE ROLE PLAYING** Continue role playing until you have provided good and poor examples of each strategy begun in session 2. Next, instruct the peer (s) to show you how to implement each of the strategies. That is, the peer trainers will be involved in the role playing. As the teacher, you will

pretend to be the target child, and ask the peer trainer to show you how to implement each strategy (e.g., "show me how you would give choices."), providing good and poor examples of each. Usually the peer trainers will simply repeat the examples given to them in session 2. Initially this is acceptable, however, after the peer trainer has repeated things shown to them in session 2, request that they provide an original example.

SESSION 4: **ROLE PLAYING AND QUESTIONS** Finish role playing each of the strategies above and follow through on any unanswered questions. Further, if training multiple peers, it is a good idea to have the peers role play and provide feedback to each other. The peer must be able to implement each strategy accurately before continuing in the program, this is imperative! If a peer trainer fails to reach over 75% accuracy during role playing and question answering periods, then he/she must redo the entire training procedure. Allowing a peer trainer to begin working with a target child before he/she is ready will only serve to frustrate both participants and should be avoided.

SESSION 5: Introduce the peer trainer to the child with autism (i.e., the target child) and tell the peer trainer to use the strategies he/she has learned. As the adult, you will provide feedback and suggestions to the peer when necessary. You do not directly intervene with the target child. All feedback goes directly to the peer trainer. Regardless of the level of success of the interaction, verbally praise the peer trainer for their attempts, providing tangible rewards (e.g., prizes) if necessary.

PEER PRT STRATEGIES

In essence, the social skills strategies described in this manual are derived from a naturalistic teaching strategy called Pivotal Response Training (PRT), developed by Koegel, Schreibman, Good, Cerniglia, Murphy and Koegel (1989). If possible, it is best to have the adult implementing the program be as familiar as possible with PRT. The following section will offer guidance regarding specific teaching strategies for each PRT component. The overall philosophy of peer implemented PRT revolves around altering two pivotal mechanisms: **Motivation and Attention.** In the context of social interaction, motivation can be described as a child's desire to *want* to interact or play with another child. Several strategies described in the following section were designed to enhance the motivation of the target child to engage in social activities including: **child's choice, turn taking, and reinforcement of appropriate social activities.** The other critical component of this treatment, altering attention, is targeted by the following strategies: **orient attention** and **describe play actions.**

Each of the following strategies is depicted in the peer training manual.
STRATEGY 1: ORIENT ATTENTION: *Paying Attention*

Children with autism are faced with myriad attention difficulties including abnormalities in shifting attention during joint attention (Dawson et al 2004) integrating multiple cues (Pierce et al 1997) and orienting attention (Townsend et al 1996). Thus, teaching the peer trainer to correctly orient the attention of their playmate is usually the first, and perhaps the most important, strategy taught.

Think of a typical child sitting in front of the television watching his favorite show. If that child is asked a question from across the room, the probability is high that he will not answer you. However, if you walk across the room, and stand in front of the television, the child will more than likely answer you. You have, in essence, oriented the child's attention by blocking their current focus of attention. This is the concept that is addressed in this strategy.

Peer **DO's** for orienting attention of their friend with autism: 1. Orient body position so that they are directly in front of, and at eye level with target child. 2. Hold preferred toy near eyes, this will orient the target child's attention to the peer trainers' face. 3. Tap lightly on the shoulder, this will alert the target child 4. Say the name of the child, this will alert the target child 5. If reasonable, holding a hand over the toy the child with autism is currently engaged with will also serve to orient attention.

Peer **Dont's**: 1. Try to get attention from behind the target child. Always address the child from the front. 2. Ask a question or deliver a prompt from far away. 3. Raise voice to excessive levels in an effort to get attention (although slight elevation may be necessary at times).

STRATEGY 2: ENHANCE MOTIVATION BY OFFERING CHOICES: *Give Choices*

The overall goal of this strategy is to enhance motivation to *want* to interact. Motivation is increased by allowing him/her to have a large role in choosing the game to be played or the topic of conversation. Just as any of us would be more motivated or interested in engaging in an activity that we enjoy than one that we do not. Whenever possible, the peer trainer should be taught to engage in whatever activity appears to be fun for the target child. The main components of enhancing motivation are: offering choices and following the lead of the target child. For example, assume that a child with autism is playing with a car. A peer trainer might then ask, do you want to play with cars, or blocks? In this example, the target child is likely to say "cars" because he is already motivated to engage in that activity. If the peer trainer instead said " do you want to play with blocks or dolls?", the target child is likely to ignore this prompt because blocks or dolls may not be an obvious motivating activity for the target child.

When offering choices it is important that the peer trainer HOLD the OBJECT(S)

in CLEAR VIEW for the target child to see. Having a visual representation of the choices is preferred over simply saying what the choices are. So, in the aforementioned example, the peer trainer would have held up blocks in one hand and a doll in the other.

Peer **DO's**: 1. Give 2 choices when the target child seems not to have any obvious interests. For example, “Do you want the blocks, or the doll?” 2. If the target child appears to already have an interest in a toy, one of the choices should be either what the target child is already playing with or a toy that he/she is looking at. For example, if the target child is looking across the room at a book, the peer should pick up the bookandpromptthetargetchildfortheitem. Inthiscasethepeerdoesnotneedtogive2choices because it is obvious what the target child wants.

Peer **DON’TS** 1. Choose a toy that he/she wants to play with. Explain to the peer that they will be able to help the target child better if they chose what he/she is interested in. That is, the peer should not give choices of things that the target child does not appear interested in.

STRATEGY 3: ENCOURAGING CONVERSATION*: Ask Your Friend to Talk*

Encouraging conversation is an important element to any social interaction. This strategy should be used, however, only when working with target children that have some speech approximations (e.g., sounds or single words).

Before teaching this strategy, tell the peer that it is very important that they try to facilitate speech. Essentially, they should try to get the target child to talk for any toy that they want to play with and once they get the toy, they should talk about aspects of the toy.

For example if the target child is looking at a toy truck, the peer trainer should give the target child the choice of having the truck or an additional item and require that the target child say “truck” before receiving the item.

Peer **DO's**: 1. Encourage conversation as frequently as possible. Usually a good time to ask your friend to talk is during a turn taking activity. When the peer trainer has finished his/her turn, he/she can ask the target child for the toy back so that they may take their turn. Therefore, it is important that the peer encourage language after every turn is taken. 2. Expect that the target child will emit a verbalization when offered a choice. For example, if the peer trainer asks “do you want to play Chutes and Ladders or Colorforms?”, he/she should expect the target child to emit some verbal response before giving him/her the toy.

Peer **Don’ts** 1. If the target child appears frustrated with frequent requests for

verbalizations, the peer trainer should decrease his/her prompts. Once the target child is more successful and is not emitting signs of frustration, then the number of requests for language can be increased.

2. Accidentally reinforce poor or no language by giving the target child a preferred activity after the target child has behaved inappropriately or ignored the peer's request. For example, if a peer trainer had just asked Johhny, a child with autism, "do you want to play with Play-Doh or cars?, and Johnny does not answer but simply tries to grab the car, the peer trainer should not relinquish the car to Johnny without his attempt at appropriate communication.

STRATEGY 4: TEACHING TURN TAKING: *Take Turns*

Taking turns is an important play milestone that every child must learn. Both typical children and children with autism will more than likely have difficulty with this skill at some point early in development. Given the importance of this skill, peer trainers are taught to emphasize turn taking during play. Turn taking is also beneficial because it provides the peer trainer an opportunity to model appropriate play.

Finally, turn taking is a key component to enhancing the motivation of the target child to continue interactions: if child is motivated for a particular toy, he/she will want his turn back and will usually observe the peer trainer in an effort to receive the coveted article. In so doing, the target child is exposed to multitude of examples of appropriate play and social skills displayed by the peer trainer.

When teaching the peers about turn taking, make sure to convey the following points:

1. Taking turns is important because it gives them a chance to show the child with autism how to play, talk etc. 2. It is also important to teach sharing. 3. Finally, it is important because it gives the target child another opportunity to talk for his/her turn back.

Peer DON'TS

1. Allow the target child to play with a toy exclusively by him or herself without allowing the peer trainer to have a turn.

STRATEGY 5: REINFORCING APPROPRIATE SOCIAL BEHAVIOR *Good, Nice Try*

Peers were taught to enthusiastically praise the child with autism for any attempt at functional play. This strategy was designed to not only to encourage the peer trainer to verbally reinforce the target child for a job well done, but also to

maintain high levels of positive affect during the training. Quite often peer trainers are so preoccupied with doing a good job that they forget to have fun themselves. This strategy was designed to ensure enjoyment for *both* participants.

When teaching peer trainers strategy #5, simply remind them to have fun, use lots of positive language and remember to laugh! Further, whenever they see the target child having fun or engaging in appropriate social behavior, they should tell their friend that they are doing an excellent job.

For example, the peer trainer should encourage the target child's play behavior (i.e. ''great dribbling,'' ''give me five'').

STRATEGY 6 - INCREASING OBSERVATIONAL LEARNING: *Tell What You are Doing*

Quite often, children with autism may fail to learn from their environment, simply because they may be orienting their attention to the wrong place (e.g., the ceiling) at the wrong time (e.g., during play interactions) and thus miss important opportunities for social learning. This strategy was designed to increase observational learning in autistic children by orienting their attention to critical play skills. During this strategy, the peer trainer is required to verbally describe what they are doing.

For example: "I am driving the car to the gas station" " The cake is going in the oven"

Peer Do's:

1. Describe *most* play actions with short sentences. Not every play action, however, needs to be narrated. An overabundance of narrations may only serve to confuse or frustrate the target child. As with all mentioned strategies, the speed and complexity of the peer trainers narrations should progress according to the needs and developmental level of the target child.

Peer Don'ts: 1. Do not forget to narrate play. It is common for peers to play for several minutes at a time without describing their activities. Failures to narrate play will result in many missed learning opportunities for the target child.

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How to be a Great friend

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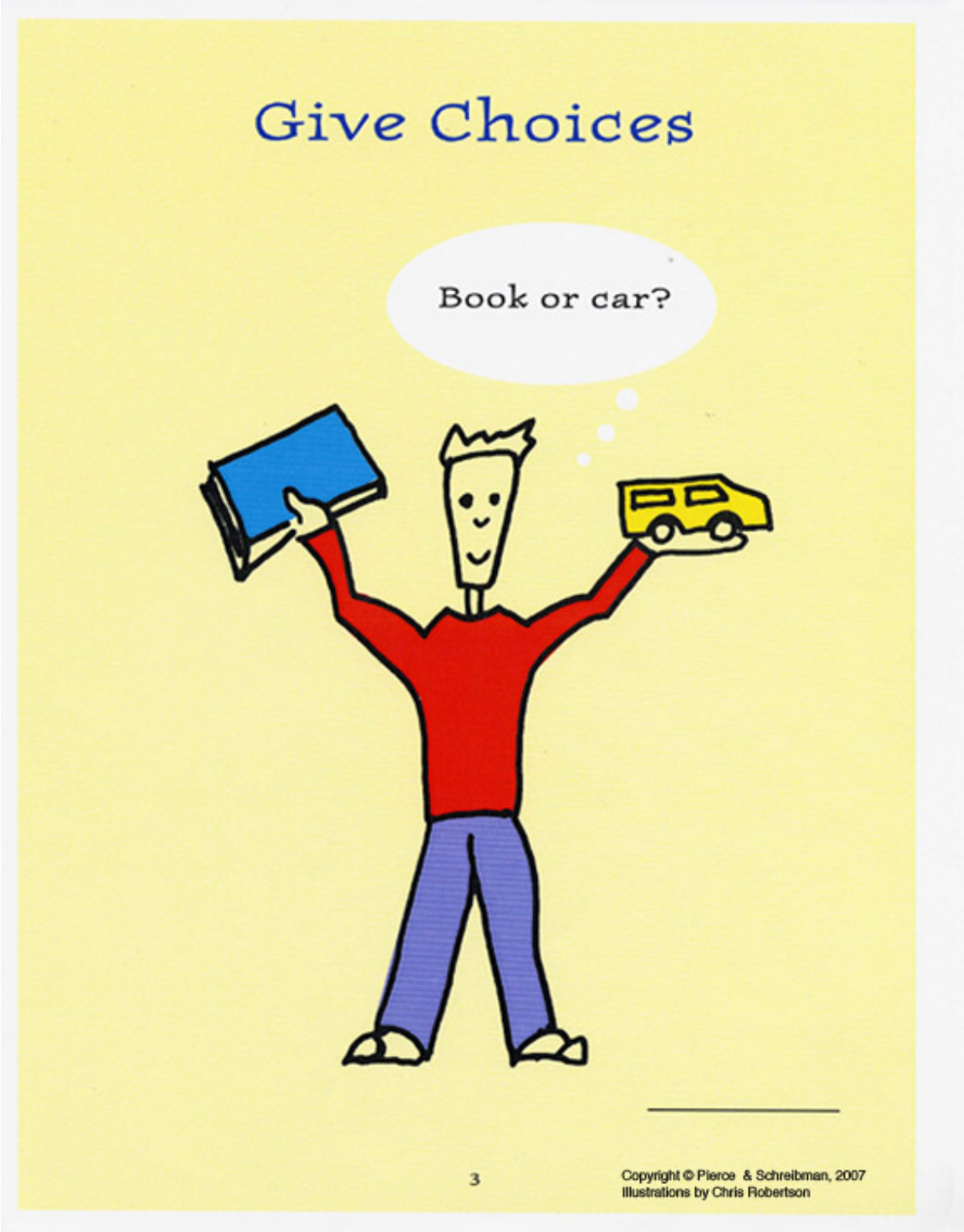
Name: _____

Paying Attention


Give Choices
Book or car?
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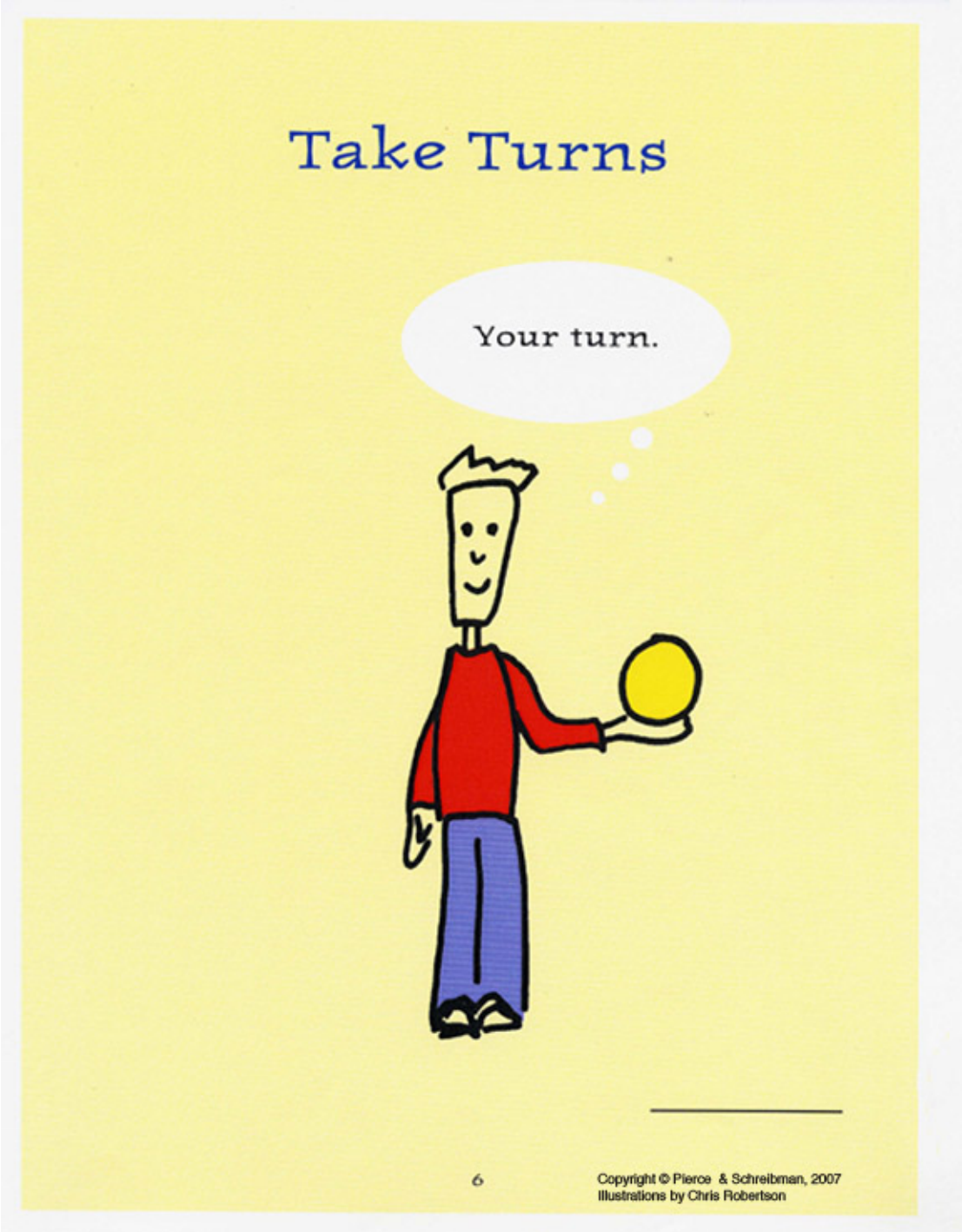
Ask Your Friend To Talk


Take Turns
Your turn.
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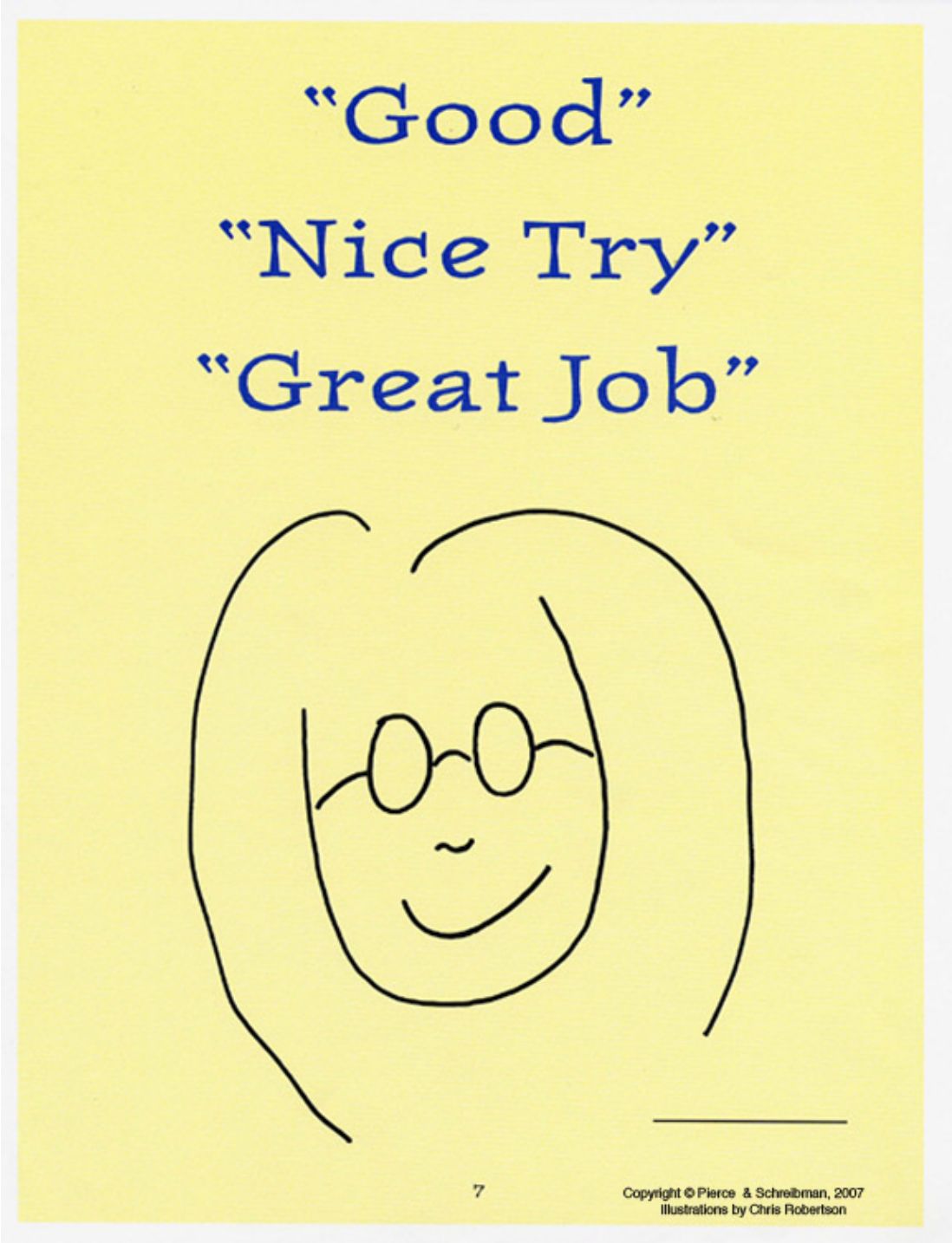
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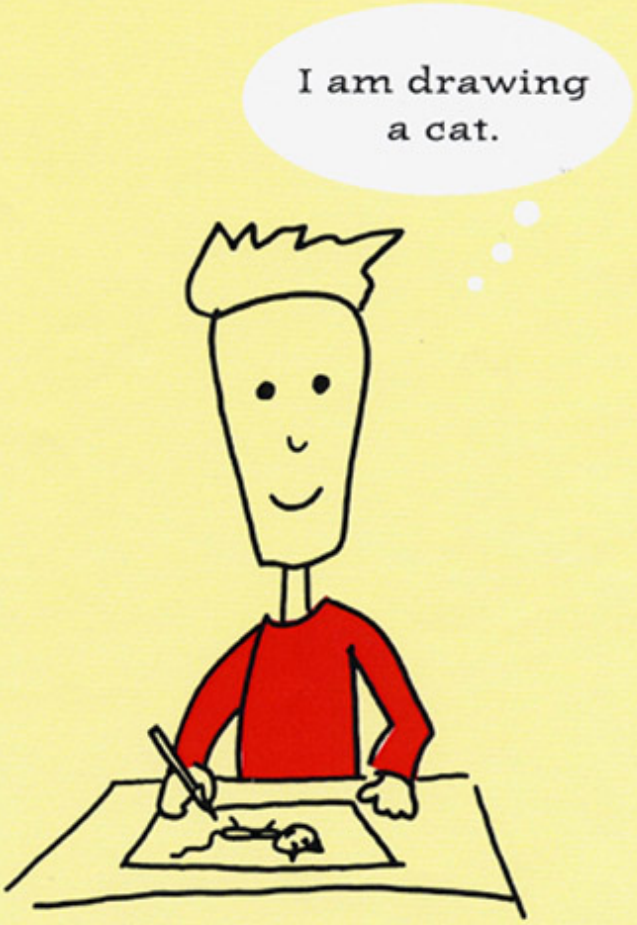
Tell What You Are Doing



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