

Development and Testing of a Primary Tier Social Skills Program:
Effects for Children with Exceptionalities

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Abstract

School-wide positive behavior support (SWPBS), a tiered prevention model targeted at making educational environments safe and effective, is swiftly gaining popularity in the United States (Brandt, Chitiyo, & May, 2012). This model aims to teach prosocial behavior through positively stated rules and expectations; however, there is little research examining social skills instruction using a tiered model (Schoenfield, Rutherford, Gable, & Rock, 2008). This is of considerable concern for children with autism spectrum (ASD) and related social disorders as educators attempt to address the social needs of these students within a SWPBS framework (Sansoti, 2010). The current study aimed to begin exploration into the topic of a tiered social skills training framework for children with autism spectrum and related social/behavioral disorders and their typically developing peers by initial implementation and testing of a primary tier social skills program through the use of a mixed model research design. The program was implemented in two classrooms (1 preschool and 1 kindergarten) in southwest Virginia. A mixed-method research study was conducted to determine whether the program leads to improved classroom environment, improved social functioning for children with ASD or social difficulties ($n=8$), what qualities of children, teachers, and classrooms affect implementation and results, and what additional changes or elements need to be provided to implement the program without the aid of a researcher. While quantitative results failed to yield significant findings, qualitative results partially supported the use of the program. While the initial results were small to insignificant, they point to important considerations for further refinement of the program.

Dedication

This dissertation is dedicated to my wonderful, supportive family including my husband, Jim, little man, James, parents, siblings, and in-laws. Finishing my PhD without your constant support and help would have been a far more difficult feat without you! This is also for and all the children and families I've had the privilege to work with in the past and present who inspire me every day.

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Introduction

With the advent of Individuals with Disabilities Education Improvement Act (IDEA, 2004) and No Child Left Behind (NCLB, 2002), schools are being pressured to provide evidence-based services to improve the educational outcomes of students served in the public education system, especially those with disabilities. In order to provide effective education in core curriculum areas (i.e. math, science, reading, writing), the educational environment needs to be safe and effective in that it is relatively distraction free, teachers have ample time to spend teaching core curriculum, and children feel safe and secure (Warren et al., 2006). Logically, the first step to effective education is to manage the environment, which can be done through school wide positive behavior support (SWPBS). SWPBS systems aim to proactively address the barriers to a quality education by actively teaching children prosocial behaviors, creating a system that supports and influences appropriate child behavior, and increases general quality of life for children in the educational system (Carr et al., 2002). SWPBS is not a manualized intervention; rather it is a systems approach, or framework, used to improve academic, social skills, and lifestyle skill competencies while managing disruptive behaviors (Sugai et al., 2005). This framework emphasizes that individual students are embedded in a system including their classroom, school, district, and state.

Four perspectives are emphasized in a SWPBS framework. The first perspective is an emphasis of a three-tiered model that addresses the social development and behavioral management of children across the entire school. These tiers include the primary tier which encompasses all children in the school, a secondary tier which includes children who are at risk

for social and behavioral problems and is implemented on a small group level, and the tertiary tier which focuses on the management of children with special needs and current social and behavioral problems at an individual level (Walker et al., 1996). It is believed that about 80% of children in the school system respond to primary tier interventions when a SWPBS system is implemented with fidelity (Debman, Pas, & Bradshaw, 2012).

The second perspective is a focus on social skill instruction and teaching functional alternatives to problem behaviors (Sugai et al., 2005). Using a SWPBS framework involves teaching the same social and behavioral expectations across the entire school through clearly defining, teaching, and rewarding behaviors associated with these expectations. Core skills are a focus and taught to students on the secondary tier through the use of small groups and pre-defined strategies to manage behavior. Students with tertiary skill deficits are taught social skills that are identified using structured assessment procedures such as functional behavior assessment (Sugai et al., 2005). The third perspective is related to the second in that factors that maintain problem behaviors are addressed using a function-based approach through behavior assessment, environmental arrangement to prevent problem behaviors, and a focus on teaching alternative (i.e. prosocial) behaviors (Horner, 1994).

Finally, emphasis is placed on sustainability of a SWPBS system. Any system implemented must be sustainable after researchers and consultants leave and must include on-going data collection to inform programming, affect change, and effectively distribute resources (Bambara, Nonnemacher, & Kern, 2009). This is achieved by establishing a visible and effective team within the school, collaborating with stakeholders, specifying evidence-based practices and measures, and providing supports to ensure accurate sustained adoption and implementation of the program (Warren et al., 2003).

Gaps in the SWPBS Literature

When using a SWPBS model, teachers and staff are expected to define, teach and reward prosocial behaviors, help develop peer support systems, and provide clear consequences to deter inappropriate behavior (Taylor-Greene et al., 1997). While the research in this area is very promising in regards to improving academic achievement and decreasing disciplinary problems (Horner et al., 2004), there is limited evidence SWPBS programs lead to the development of social skills in TD or special needs children; a concern considering that this is often cited as one of the main goals within this framework (Warren et al., 2006).

A SWPBS framework focuses on teaching and rewarding the same social and behavioral expectations across the whole school (Debman et al., 2012). Expectations are standards of conduct that convey characteristics (i.e. be respectful of others), which can be vague, un-measurable, and subject to interpretation. For this reason, it is important to teach developmentally appropriate rules, or observable, measureable, and specific behaviors that conform to school-wide expectations (Newcomer, 2009). While all school staff are expected to recognize and reward school-wide expectations, home-room teachers are expected to teach and reward prosocial behaviors on a developmentally appropriate level; however, primary supports at the classroom level have received very little attention in the SWPBS literature and present with the greatest inconsistencies in implementation (Newcomer, 2009).

While SWPBS emphasizes teaching social skills or prosocial behaviors, there are relatively few studies that measure skill acquisition directly. In fact, the most common measurement of effectiveness of SWPBS programs are the absence of problem behaviors through tallying the number of office referrals, suspensions, detentions, or referrals to school-based teams or out-of-school services (Brandt, Chitiyo, & May, 2012). These measures have

been shown to be correlated with overall school climate (Irvin, Tobin, Sprague, Sugai, & Vincent, 2004), but are not necessarily linked with an increase in prosocial behavior (Lassen, Steele, & Sailor, 2006; Warren et al., 2006). Some studies have attempted to examine increases in social skills and prosocial behaviors indirectly by assessing social knowledge (Shapiro, Burgoon, Welker, & Clough, 2002; Sprague et al., 2001), number of tokens given in the school (Lane, Kalberg, Bruhn, Mahoney, & Driscoll, 2008), surveys and interviews measuring school climate (Bradshaw, Koth, Bevans, Ialongo, & Leaf, 2008), or academic achievement (Muscott, Mann, & LeBrun, 2008). Even these measures are inadequate when examining whether there is an increase in skill usage. Knowledge of appropriate social skills does not necessarily translate into their use (Lerner, White, & MacPartland, 2011; McMahon, Washburn, Felix, Yakin, & Childrey, 2000). Awarding tokens as part of a group-oriented contingency system may not be a result of improved social skills as teachers may just be better at recognizing the prosocial behaviors already occurring, and children who are most at risk of social and behavioral problems are less likely to earn rewards than their peers (Lane et al., 2008). A more positive school climate and higher academic achievement do not necessarily equate to an increase in direct social skills usage either (Brandt et al., 2012).

A SWPBS framework identifies school climate and peer interactions as integral components to the support of appropriate social behaviors. Specifically, it is believed that if all children are presented with the same expectations, they are more likely to prompt and support appropriate behavior in their peers while still accepting differences (Horner et al., 2004). While this assumption is made, there is no direct evidence to support that this is the case. Some studies have shown that implementing a SWPBS system in the school can decrease the number of reports of student harassment and aggression while increasing positive peer interactions (Sprague

et al., 2001; Stevens, Bourdeaudhuij, & Oost, 2000), but a positive school climate does not necessarily lead to peer prompting and support of appropriate peer behaviors. For example, in an observation of children with autism spectrum disorders (ASD) in an elementary school, it was observed that TD peers were very accepting of children with ASD and engaged in several positive interactions together; yet, they often, inadvertently reinforced inappropriate social and disruptive behaviors (Ostmeyer & Scarpa, 2012).

Importance of Social Skills in the Classroom

As previously stated, a SWPBS focuses on teaching appropriate prosocial behaviors, or social skills, as part of a proactive approach to creating a safe, effective educational environment. While many students acquire the skills necessary to meet classroom expectations without formal instruction (Skiba & Peterson, 2003), others may not develop the skills so easily and will need direct, systematic social skills instruction (Schoenfeld, Rutherford, Gable, & Rock, 2008). This is especially true for children with autism spectrum disorders (ASD) and other high-incidence disabilities such as those with emotional or behavioral disorders, specific learning disabilities, and mental retardation (Gresham, Sugai, & Horner, 2001).

A connection between social functioning and academic success has been seen in both typically developing (TD) and ASD children (Chitiyo et al., 2011; Estes, Rivera, Bryan, Cali, & Dawson, 2011; Jones et al., 2009; Tutt, Powell, & Thornton, 2006; Welsh, Parke, Widaman, & O'Neil, 2001) in that children with lower scores of social competency tend to perform more poorly in one or more academic domain than their peers. For example, 70-90% of children with ASD have been found to under-perform in math, reading, or spelling despite average or above average intelligence (Estes et al., 2011; Jones et al., 2009). Furthermore, children with ASD that

score higher on a measure of social skills at the age of six were found to have significantly better academic performance at the age of nine (Estes et al.,2011).

The link between social functioning and academic performance is likely linked to the structure of most general education classrooms as classroom learning can be described as a social event (Tutt et al., 2006). Consistent with this viewpoint, a survey of teachers identified ten social and behavioral skills that were considered imperative to classroom success. These skills, which included listening to others, following steps, following rules, ignoring distractions, taking turns, asking for help, getting along with others, staying calm, taking responsibility for one's own behavior, and doing nice things for others were identified as the ten most important skills in two cohorts of teachers that were surveyed ten years apart (Elliott & Gresham, 2008). This is true for TD children as well as those diagnosed with ASD and other disorders linked with social deficits.

Behavioral issues have long been connected with difficulties in academic achievement in children (Levy & Chard, 2001; Reid, Gonzalez, Nordness, Trout, & Epstein, 2004) and have been linked to a risk of dropping out of school early (Reid et al., 2004). An estimated 13-30% of children with ASD are believed to engage in problem behaviors that require intervention and children who have difficulties with social interaction and communication are particularly at risk (Horner, Carr, Strain, Todd, & Reed, 2002). These problem behaviors which include, but are not limited to, self-injury, property destruction, stereotypic behaviors, defiance, and tantrums (Horner, Diemer, & Brazeau, 1992) can interfere with learning in several ways. They can disrupt the learning environment for all children in the class, may distract the child engaging in problem behaviors from material that is being taught, or may lead to removal from the learning environment (Brosnan & Healy, 2011; Horner et al., 2002; Lewis & Sugai, 1999). Furthermore, these behavioral issues can become a functional part of a child's behavioral repertoire and serve

the functions of escape, attention, or a request for help (Meyer, 1999) when children lack or are not fluent in more appropriate functional alternatives. If children had improved social skills, they may be able to communicate their wants and desires more appropriately and the learning environment may be less aversive, leading to a decrease in problem behaviors. This viewpoint is consistent with current best practices where children are taught functional alternatives (i.e. social skills) to take the place of inappropriate problem behaviors (Sugai et al., 2000).

Social and behavioral difficulties are linked to more than academic performance; emotional well-being may also be affected. Children with social and behavioral difficulties are more likely to be rejected, teased, and bullied by peers (Attwood, 2000; Fox & Bolton, 2005). Engaging in disruptive or odd behaviors may also lead to peer rejection and ridicule (Taylor, 1989). Negative interactions with others as a result of awkwardness and behaviors can cause children to feel unsupported and lonely (Jones, Hobbs, & Hockenbury, 1982). These interactions may also highlight a child's self-perceived difficulties and lead to or increase feelings of anxiety and/or depression (Barnhill, 2001; White & Roberson-Nay, 2009). Since children spend a majority of their time in the classroom, fitting in and getting along with their peers may be especially important.

Social Skills Training within a SWPBS Framework

According to the CDC (2012), the prevalence of ASD is increasing with current estimates indicating that 1 in 88 individuals qualify for a diagnosis of ASD in the United States. Similarly, the prevalence of children with emotional and behavioral disorders (EBD) is also increasing (Brauner & Stephens, 2006). Many of these children are likely to be seen in the mainstream classroom with the push towards full-inclusion (Simpson, de Boer-Ott, & Smith-Myles, 2003). There is currently no research evidence that links the application of a SWPBS framework across

three-tiers to social or educational functioning for children with ASD; however, the logic is similar to many of the promising treatment strategies used to encourage prosocial and manage problem behaviors seen in the ASD literature (Crosland & Dunlap, 2012) which occur on the tertiary level of support. Specifically, they both focus on antecedent control strategies including teaching appropriate expectations through direct instruction in the natural setting, prompting, development of peer networks, and consequent control strategies in an effort to teach functional skills. What is less understood is how the needs of students with ASD can best be met using a SWPBS framework in a cost effective, feasible, and replicable way (Crosland & Dunlap, 2012). On the other hand, early evidence suggests that a SWPBS framework leads to improvements in behavioral and academic functioning and maintenance of those changes for children with EBD (Nelson et al., 2009), but this literature is in its infancy and requires closer inspection and replication (Lewis, Jones, Horner, & Sugai, 2010).

Given the unique social and behavioral needs many children with ASD and/or EBD exhibit, educators may immediately look to the secondary or tertiary tiers of intervention in order to address the social and behavioral difficulties exhibited. This is problematic in that recent findings suggest that there are currently limited resources to provide individualized education planning for children with special needs (Brownell, Hirsch, & Seo, 2004), especially for those with adequate knowledge about ASD (Simpson, Mundschenk, & Heflin, 2011), making this option infeasible and cost-prohibitive in many schools. These supports may also fail to take into account the need of a supportive environment to encourage the use of these target behaviors for generalization and maintenance (Lewis et al., 2010; Nelson et al., 2009). The answer may be to focus on how to make more cost effective and feasible secondary and primary tier interventions work for some of the social and behavioral difficulties faced by children with ASD.

Providing more effective primary tier services can help free up intensive support services in two ways. Effective implementation of SWPBS should result in fewer students needing intensive, individualized planning which can increase the resources available to children who need these supports the most (Luiselli, Putnam, Handler, & Feinber, 2005). Secondly, if children with social deficits respond to primary tier interventions targeted towards some of the basic social and behavioral expectations set forth in the classroom, then more time can be spent on other, more complex skills. Learning appropriate social skills and rules in the same way as their classmates in the natural environment can also help included children appear more normal to their peers and help with generalization of skills (Gresham et al., 2001). Therefore, class-wide social skills training targeting rules and skills consistent with the school's behavioral expectations may be beneficial to children with ASD and EBD.

School-Based Social Skills Training for Children with ASD

Benefits of School-Based Social Skills Training

There may be some unique benefits to teaching social skills to children with ASD in schools. As previously stated, children with ASD may be at increased risk of emotional problems and peer rejection due, in part, to social and behavioral difficulties (Attwood, 2000). They may also be at risk of underperforming academically and vocationally as they get older (Estes et al., 2011; Hendricks, 2010; Jones et al., 2009). By incorporating social skill instruction into their everyday curriculum, many of these skills can be directly targeted in the natural environment. This is especially important when considering the difficulties that children with ASD have with generalization of skills to other environments and situations (Roeyers, 1996), so skills learned in an outpatient setting or during pull-out time may not be used in the classroom where they spend a majority of their time. If children with ASD are not using these skills in the

classroom, they may disrupt the learning environment for themselves and their peers (Horner et al., 2002) and may look odd or unusual leading to negative peer judgments and rejection (Attwood, 2000).

Targeting social skills in the mainstream classroom also allows for educators to teach skills that are necessary for classroom success as these may be different than those needed to interact informally with a group of friends (Elliott & Gresham, 2008). For example, it is important to be able to find and share common interests with somebody who you spend time with outside of the classroom; however, it would be inappropriate to discuss outside interests when you are expected to be working on a group assignment. Both settings require the child to engage in back-and-forth commentary and cooperation, but the subject matter, goals, and expectancies of the interaction differ.

Another benefit of teaching social skills in the context of the classroom is the availability of appropriate peer models/tutors. These children have access to knowledge such as what classroom expectations and current age and location appropriate interests are; a knowledge that an interventionist outside of this community may not fully comprehend. This can be very important as expectations can vary across classrooms and interests vary across geographic locations. In fact, peer models and tutors are often an integral part to school-based interventions to improve social and academic functioning for both children with and without ASD (Banda, Hart, & Liu-Gitz, 2010; Kamps et al., 2002).

Barriers to Social Skill Instruction in Schools

Despite the inherent benefits of providing social skills training in schools, few children with ASD receive adequate social skills training in this setting (Bellini, Peters, Benner & Hopf, 2007) regardless of whether an SWPBS framework is used in the school or not. The most

common reason for this finding is that, at this time, the evidence supporting social skills training programs for children with ASD in the school setting is mixed and contradictory. For example, several review articles and meta-analyses indicate that many strategies garnered from the educational, applied behavior analysis (ABA), and cognitive behavioral therapy (CBT) literature can be successfully used to teach children with ASD social skills (Matson, Matson, & Rivet, 2007; Wang, Cui, & Parrila, 2011) while other meta-analyses and review articles indicate that school-based social skills programs are minimally-effective with little evidence for generalization and maintenance of skills (Bellini et al., 2007). There are several reasons for these contradictory findings. These include disagreement about how to best conduct a meta-analysis with a literature rife with single-subject research design (Wang et al., 2011), variability in the definition of social skills and how to best measure it (Gresham et al., 2001), what types of research designs provide evidence for empirically-based practices (Wang et al., 2011), and a lack of research examining generalization and maintenance of treatment effects (Bellini et al., 2007).

Even more disagreement arises when the terms social skills and social competence are used interchangeably. According to Gresham et al., (2001), social competence refers to the evaluations of a third party of an individual's performance on a social task. Judgments of competence can be based on the opinions of a person observing or interacting with the target individual, comparison to specific criteria, comparison to normative samples, or outcomes of performance. Social skills are behaviors that are objectively observable and must be taught and learned. Therefore, the focus on social skills training should be on teaching directly observable behaviors that can be performed in a variety of contexts. The aforementioned barriers make it difficult to accurately interpret the effects of social skill instruction programs in schools; however, the consensus is that there are several strategies, that when used individually or in

tandem, show promise in the social skill instruction for children with ASD (Matson et al., 2007; Rogers, 2000; Williams, Johnson, & Sukhodolsky, 2005).

Promising Social Skills Training Methods

Video Modeling.

The use of technology and video modeling are currently popular objects of study in the instruction of children with ASD. The rise of technology in treating the symptoms of ASD may be linked to the belief that technology can deliver active instruction while interventionists engage in other tasks or work with other children (DiGennero Reed, Hyman, & Hirst, 2011), provides an avenue for effective intervention to children in remote areas (Moore, Cheng, McGrath, & Powell, 2005), reduces the cost of intervention (DiGennero Reed et al., 2011), ensures generalization and maintenance of skills in the natural environment (Shukla-Mehta, Miller, & Callahan, 2010), and may be more effective than live-modeling (Charlop-Christy, Le, and Freeman, 2000). The success of video modeling techniques are often attributed to the aptitude for visual learning that many children with ASD exhibit (Bellini & Akullian, 2007; Buggey, 1995; Nikopoulos & Keenan, 2006) and may improve stimulus control and attention for children with ASD (Sturmey, 2003).

Three types of video models have been used to teach social skills to children with ASD: video models watching another person, video self-modeling where the individual watches ideal examples of him/herself performing the action, and point-of-view modeling which is shot from the first person point of view (Shukla-Mehta et al., 2010). All three types of video modeling have been used to improve social/communication skills (Charlop, Dennix, Carpenter, & Greenberg, 2010; Shukla-Mehta et al., 2010) and problem behaviors (Schreibman, Whalen, & Stahmer, 2000). Meta-analyses and reviews are unanimous in the conclusion that video

modeling leads to successful skill instruction and problem behavior reduction for most individuals with ASD (Reyner, Denholm, & Sigafos, 2009). However, even within these three different types of video modeling, there is much variability in how the video models are presented. For example, most video models may be presented showing the whole behavior (Gena, Couloura, & Kymissis, 2005) or break down the modeled behavior into smaller steps (Nikopoulos & Keenan, 2003). Sometimes voice-over instructions are included (Lowy Apple, Billingsley, & Schwartz, 2005), models are exaggerated (Charlop-Christy et al., 2000), or footage is zoomed in (LeBlanc et al., 2003) to cue pertinent stimuli or actions.

There is also a great amount of variability in how video models are incorporated into an intervention package. Some studies have used video modeling alone to prime students to reduce problem behaviors (Schreibman et al., 2000) or teach specific skills (Charlop-Christy et al., 2000); however, most studies have examined video modeling as part of a larger treatment package; including prompting (Kroeger, Schultz, & Newsom, 2007), reinforcement (Gena et al., 2005; LeBlanc et al., 2003), Social Stories™, (Scattone, 2008), and/or self-management (Lowy Apple et al., 2005). The fact that most studies incorporate video modeling as part of a larger treatment package may confound the positive results found in several meta-analyses and review articles, thus requiring more research before qualifying video modeling as an evidence-based practice for children with ASD (McCoy & Hermansen, 2007). Other issues arise when examining the video modeling literature. While several studies report on demographics and prerequisite skills of participants, there is currently no empirical research examining what participant qualities predict success using video modeling (Mechling, 2005); a concerning finding given that not all children respond equally as well to this type of intervention (Apple, Billingsley, & Schwartz, 2005; Charlop-Christy & Daneshvar, 2003; D'Ateno, Mangiapanello,

& Talyor, 2003; Nikopoulos & Keenan, 2003; Sherer et al., 2001; Taylor, Levin, & Jasper, 1999). In conclusion, video modeling aimed at increasing social and communication skills and reduction of problem behaviors show promise, but there is little evidence that they are effective when presented alone. There is also little research examining what participant characteristics predict effective outcomes using this instructional method.

Direct Instruction.

Theoretically, many of the social deficits children with ASD exhibit are due to a lack of awareness of the appropriate social response given the context (Lerner et al., 2011). For this reason, many social skills interventions incorporate training targeted towards increasing social knowledge through providing skills lessons incorporating teaching social scripts or rules, rationale for using the skill, modeling, role play, and feedback (Rao, Beidel, & Murray, 2008). These lessons are often administered through pull-out with or without generalization training (Gresham et al., 2001; Rao et al., 2008) or are integrated into a social skills lesson in the natural environment with or without TD peers (Rogers, 2000).

The model with the least support, but unfortunately used most often in a school setting, is direct instruction without generalization (Battalio & Stephens, 2005). Direct instruction is often provided either in a group of children with ASD, a group of children without ASD but exhibiting social difficulties, or in a 1:1 setting with an adult or TD peer; however, the use of a social skills curricula in a small group setting is most commonly used (Gresham et al., 2001). Even when children show an increase in social knowledge, or the ability to state or show what they should do given a specific scenario or role play, the results rarely generalize to the natural environment such as the classroom or playground (Gresham et al., 2001).

The lack of generalization is not surprising as it is an often-cited issue for learning skills, social or otherwise, for children with ASD (Ploog, 2010; Rao et al., 2008). Issues with generalization can be further complicated when considering the complexity of social interaction and rules and following a learned script can be advantageous in one situation and problematic in another (Myles & Simpson, 2001); therefore, teaching a social skill outside the context of the social situation may be contrived and not lend itself well to generalization (Haring, 1992). Furthermore, when providing instruction in a group, children with ASD may not receive instruction in the target behaviors most important to their social repertoire, at their level of functioning, or for their type of skill deficit (Bellini et al., 2008; Quinn, Kavale, Mathur, Rutherford, & Forness, 1999).

The aforementioned training scenarios can be improved by adding generalization training to encourage skill use in the natural environment and there is widespread agreement in the field of behavior analysis that, unless there are specific procedures in place to promote generalization, children are unlikely to transfer skills learned in a highly controlled learning setting to the natural environment (Gresham et al., 2001). This can be done by incorporating adult prompts to engage in a specific social behavior such as peer initiations and maintaining peer interactions (Rogers, 2000), incorporating visual prompts through textual cues or signs (Dettmer, Simpson, Myles, and Ganz, 2000), or training peers to prompt appropriate responses (Koegel & Koegel, 2006). In addition to antecedent prompts, reinforcement of independent and prompted responses should be programmed through the use of training natural reinforcers (Cowan & Allen, 2007), group-oriented contingencies (Kohler, Strain, Maretsky, & Decesare 1990; Koehler et al., 1995), or individual reinforcement systems (Chandler, Lubeck, & Fowler, 1992). While adding plans for generalization greatly increases the likelihood of children with ASD moving social skills from

the training context to the natural environment, it opens up the question of the utility of direct instruction. For example, Kasari et al. (2012) found that the addition of direct instruction was no more effective than peer-mediated training alone in increasing social standing, social competence, and increased social interaction in a randomized control trial of peer-mediated versus child-centered social skills instruction.

Direct instruction in the natural environment can also be embedded into the classroom routine for structured and unstructured activities; in fact, direct instruction is often a primary part of many peer-mediated social skills interventions (Kamps et al., 2002; Kohler et al., 1990).

Direct instruction allows implementers to teach both children with ASD and their TD peers the behavioral expectations during the activity, the social interaction goals, and provide instruction for peers to prompt appropriate behaviors (Kohler et al., 1995). The activity occurring in the natural environment then provides a perfect opportunity for practicing the skill with peer and adult direction and feedback. Since the activity involves naturally occurring social opportunities (i.e. group work, play), the context of the social interaction can be taken into account. Programs that incorporate direct instruction into a peer-mediated activity consistently show increases in peer interaction (a measure of social competence); however, some studies show evidence of generalization to untrained activities (Kamps et al., 2002) while others do not (Kohler et al., 1995).

Peer-Mediated Approaches.

Peer-mediated social skills training arose in reaction to two findings: that adult-mediated approaches are unlikely to result in social skills that generalize to the natural environment and that children with ASD and their TD peers do not tend to interact in integrated settings without additional training (Bass & Mulick, 2007). Peer-mediated approaches use TD peers who act as

the interventionist by helping facilitate and/or prompt social interactions (Chan et al., 2009). Peers can be included in the intervention in many ways such as teaching peers to initiate and maintain social interactions (Owen-Deschryver et al., 2008; Thiemann & Goldstein, 2004), respond to initiations by peers with ASD (Zanolli, Daggett, & Adams, 1996), and prompt or reinforce appropriate behaviors (Haring and Breen, 1992).

Peer-mediated interventions have several notable strengths. First of all, appropriate peer models are often plentiful in the mainstream educational setting (Chan et al., 2009), making them a convenient method of instruction. Peer-mediated interventions may also lead to greater generalization and maintenance of social skills than adult-mediated interventions as they provide greater opportunity to practice social skills with several individuals in a wide array of environments (Williams et al., 2005). Peer-mediated interventions have also been found to be more effective than social-skills training alone. Kasari et al. (2012) found that children in peer-mediated conditions had higher levels of peer engagement on the playground, more friendship nominations, and higher scores on a measure of teacher perceived social skills than did children in a control or skills training condition.

The benefits of peer-mediated interventions extend beyond those seen for children with ASD. The use of peers also has the potential to reduce the demands on teachers and other interventionists as children with ASD would require fewer direct intervention hours (Chan et al., 2009) and these programs are deemed realistic, manageable, and acceptable for implementation in the classroom (Gonzalez-Lopez & Kamps, 1997; Laushey & Heflin, 2000). Furthermore, peers who act as intervention agents often show improved academic performance, social skills, and behavioral management (Gonzalez-Lopez & Kamps, 1997; Kamps et al., 1994). Most importantly, peer-mediated interventions are considered to be one of the most effective social

skill instruction methods for children with ASD in an educational setting (Chan et al., 2009; Wang et al., 2011).

Overall peer-mediated interventions are generally found to be effective (Chan et al., 2009) and have many strengths, yet there are still several issues that remain when considering their evidence-base. The majority of peer-mediated social skills training has been implemented in the context of play groups or activities and unstructured interaction times (Banda et al., 2010) with a focus on increasing interaction between children with ASD and the TD peers, especially preschool and kindergarten age children (Kamps et al., 2002). The interaction skills peers and children with ASD learned during unstructured playtime activities may not successfully generalize to academic or more structured activities (Elliott & Gresham, 2008).

While peer-mediated, these programs required constant adult supervision to ensure that TD peers implemented the program with fidelity (Kohler et al., 1995). Even if students implement with fidelity, it is likely that group-oriented contingency systems need to be integrated into the program to encourage TD peers to engage peers with ASD, especially when working with younger children (Kamps et al., 2002; Kohler et al., 1995). In fact, when the group-oriented contingency and adult prompting are not in place, the levels of skill use and peer interactions tend to become more variable and decrease in frequency (Kohler et al., 1990; Kohler et al., 1995).

The literature examining the use of peer-mediated social skill interventions during academic activities, such as cooperative learning groups and peer-tutoring (Kamps et al., 1994; Kamps, Dugan, Potucek, & Collins, 1999; Kamps et al., 2002) tend to focus on teaching social behaviors and improving academic performance to elementary-aged children with ASD through structured academic tasks and skill instruction. Interventions with same-aged peers tend to lead

to increases in peer interaction duration and academic performance in the given task (Kamps et al. 1994; Kamps et al., 1999; Kamps et al., 2002). Furthermore, children who participated in cooperative learning groups and social skills training had higher levels of generalization to unstructured activities in the special education classroom (Kamps et al., 2002). In another study, students with ASD who tutored younger children exhibited higher levels of free time social interaction with same-aged peers after tutoring younger children (Kamps et al., 1999). These studies are very promising; however, none of them examine whether appropriate social skills and behaviors occur in less structured group academic activities or other classroom activities such as lecture or independent work when the social rules may be different and the interactions that do occur with peers are more sporadic. They also fail to measure whether children comply with other social expectations when peers are not an integral part of the interaction, such as during classroom lectures or independent work time.

One final issue with several peer-mediated treatments is the issue of peer training. While some studies provide skills training and treatment to the whole class (Kamps et al., 2002; Kohler et al., 1995), others require the training of socially-competent peers outside of the intervention environment (Kasari et al., 2012). Removal from the educational environment should not be done without parental permission, and some of the best peer-mentoring candidates may not receive parental permission to participate in the program. Additionally, some schools may be resistant to removing any child from the classroom regardless of whether they have support from parents or not (Ostmeyer & Scarpa, 2012).

Visual Supports.

Much like video modeling, visual supports capitalize on the visual strengths that many children with ASD possess (Mayes & Calhoun, 2003). Visual supports encompass strategies to

help provide unobtrusive prompt and prompt fading when teaching new skills (Rao & Gagie, 2006), provide structure and predictability to the child's environment (Lequia, Machalicek, & Rispoli, 2012), promote independent responding (Sainato, BenChaaban, & Endo, 2002), or remind children of a specific rule (Savner & Myles, 2000). While visual supports are rarely used on their own, they are often incorporated into behavioral and social skill interventions for children with ASD (McClannahan & Krantz, 1999). Strategies defined as visual supports include Social Stories™, visual prompts, and visual schedules.

Social Stories™ (Gray and Garand, 1993) are individualized stories that describe a situation, skill, or concept with an emphasis on the relevant cues, perspective, and expected responses. Social Stories™ can include visual representations of each step by using photographs, drawings, or videos (Bledsoe, Myles, & Simpson, 2003; Norris & Dattilo, 1999; Thiemann & Goldstein, 2001) to help improve understanding in young or low-functioning children. They can be read independently by the child, read to the child by an adult or peer, or delivered electronically (Charlop & Milstein, 1989).

Social stories are often used to help increase social understanding in clinical and educational settings; however, there is little evidence to support their use (Sansosti, Powell-Smith, & Kincaid, 2004). Very few studies have examined the use of Social Stories™ independent of other behavioral strategies as most studies use reinforcement and response cost (Agosta, Graetz, Mastropieri, & Scruggs, 2004; Burke, Kunn, & Peterson, 2004; Bernard-Ripolli, 2007), prompting (Barry & Burlew, 2004; Crozier & Tincani, 2007), role play (Chan & O'Reilly, 2008), video feedback, (Thiemann & Goldstein, 2001) or other visual cues (Kuoch & Miranda, 2003), in conjunction with Social Stories™. Most studies examining the use of social stories in isolation or with other procedures utilize poor experimental design, making it difficult

to rule-out confounding variables (Test, Richter, Knight, & Spooner, 2011). While the literature as a whole does not provide support for Social Stories™ as an evidence-based treatment, some well-controlled studies suggest that they may be a promising approach to teaching social skills such as sitting appropriately and engaging appropriately with peers (Crozier & Tincani, 2007; Delano & Snell, 2006; Sansosti & Powell-Smith, 2006 ; Scattone, Tingstrom, & Wilczynski, 2006); however, they may be most effective when combined with other behavioral interventions such as reinforcement (Iskander & Rosales, 2013).

Visual schedules are a visual task analysis of a complex behavior or sequence of events that can presented in pictorial form (Lequia et al., 2012). They have been used to help reduce problem behaviors and increase appropriate behaviors such as being on-task (Bryan & Gast, 2000; Massey and Wheeler 2000), social initiations (Kimball, Kinney, Taylor, & Stromer, 2004), and following directions in a timely manner (Dettmer et al., 2000). Visual schedules fulfill two purposes, to help increase predictability in a social world where the rules and routines often change and to prompt children to follow a sequence of behaviors independently (Buschbacher, Fox, & Clarke, 2004). Visual schedules are tailored to the developmental level of the individual and setting; therefore, they can be used across a large age range, functioning levels, and settings (Bopp, Brown, & Mirenda, 2004). When reported, teachers who incorporated visual schedules for their students with ASD gave high ratings of social validity (Koyama & Wang, 2011).

While the effects of visual schedules tend to be rapid and substantial (Bopp et al., 2004), they are rarely used in isolation. When used within a SWPBS framework, they are deemed most effective when used with functional assessment of problem behaviors and skill deficits.

Functional assessments help implementers identify the type of schedule needed and how best to teach the replacement behaviors or social skills (Waters, Lerman, & Hovanetz, 2009). Other

behavior change procedures that focused on using visual schedules as a way to increase appropriate prosocial behaviors while decreasing problem behaviors included prompting (Cihak & Ayres, 2010; Dettmer et al., 2000), extinction (Waters et al., 2009), use of a timer (Dettmer et al., 2000), and reinforcement (Waters et al., 2009). Furthermore, they may be less effective in mainstream classrooms than segregated settings (Lequia et al., 2012).

Other visual supports encompass a wide array of strategies used to remind children about rules and expectations or to prompt social skills in the acquisition phase. A prompt is an antecedent stimulus that reliably evokes a behavior (Cooper, Heron, & Heward, 2007). A prompt can be paired with another antecedent stimulus and faded until the behavior comes under the control of the intended stimulus (Cooper et al., 2007). Visual supports are a type of prompt that can be implemented without the aid of another individual and can be easily incorporated into self-management programs or visual schedules. For example, prompts to engage in interactions with peers can be embedded into a daily schedule to increase the opportunities to practice social initiations (Krantz & McClannahan, 1998) and script or rule cards can be used to unobtrusively prompt play or appropriate social behaviors (Ganz & Flores, 2008; Ganz, Kaylor, Bourgeois, & Hadden, 2008). Posting rules or visual cues in the classroom can be used to alert children with ASD and their peers to changing social rules (Skinner, Scala, Dendas, & Lents, 2007) or remind them of the behavioral expectations in the classroom (Ganz & Flores, 2008). Overall, visual strategies are an effective tool that can attract attention, allow students to focus on the message, or make abstract concepts more concrete (Rao & Gagie, 2006) and provide a teaching method that reduces the amount of adult support needed in a given situation (Morrison, Sainato, Benchaaban, & Endo, 2002). At the same time, there is little evidence to support their use in

isolation. Even if a visual support alone lead to improved behaviors, the effects may be enhanced by including other teaching strategies (Iskander & Rosales, 2013).

At this time, conclusive support of any one social skill training strategy does not exist, and it is unlikely that any one of these strategies, when used in isolation, would be effective for most children with ASD, especially when examining social competence. However, the use of several strategies in tandem often leads to improvement on one or more social skills; therefore, interventions incorporating video modeling, direct instruction, peer mediation, and visual supports are likely to be effective in increasing target social skills while their effects on social competence are less well-known.

School-Based Social Skills Training for Children with EBD

State of the Literature

Like children with ASD, deficits in social competence are often considered characteristic of children with EBD (Kaufman, 2005) and these deficits can lead to an increased risk of behavioral problems, rejection, academic failure, and future vocational issues (Maag, 2006). Targeting social skills deficits in the school setting may also have many of the same aforementioned benefits listed for children with ASD including increased generalization (Gresham, et al., 2001), teaching skills unique to the educational setting (Elliott & Gresham, 2008), and the availability of peer models and tutors which are often included in social skills interventions (Maag, 2006).

A plethora of studies examining social skills training in a school setting for children with EBD have been conducted over the last several decades making it difficult to review the entire literature base which, much like the literature for children with ASD, contains mixed and contradictory results. For this reason, many researchers have taken to reviewing the reviews and

meta-analyses conducted with this population (Maag, 2006). Additional difficulties arise in attempting to review the literature on school-based social-skills training for children with EBD for several reasons. For example, the inclusion criteria vary greatly between studies, many of the outcome measures lack social validity, few studies adequately measure generalization and maintenance of skills, and a paucity measure fidelity of implementation (Gresham, Cook, Crews, & Kern, 2004; Maag, 2005; Maag, 2006). While many of the same methodological issues can be seen in research examining social skills training implemented in other settings, the outcomes tend to be more consistent and positive (Gresham, et al., 2004) when used to *augment* other treatments targeting a child's specific needs. An encouraging account of the literature is that many researchers agree on the components and future directions of the literature for this diverse population which can lead to improved social skills outcomes.

Effective Social Skills Training Components

Social skills training models that target the individual functional deficits of children with EBD have been shown to be more effective than pre-packaged interventions without a functional component. According to Gresham (1998), social skills training has four primary objectives: skill acquisition, enhancing skill performance, eliminating competing behaviors, and ensuring generalization and maintenance. Pre-treatment assessments can be used to examine whether a student is failing to use effective, socially acceptable skills because they lack the social knowledge of what to do (acquisition deficit), because they lack the fluency to perform the behavior at a sufficient level to be effective (enhancing skill performance), and whether competing contingencies encourage the use of a problematic behavior over the appropriate social skill (eliminating competing behaviors). Furthermore, the context in which social skills will be used needs to be taken into account when training. A child may be able to perform the skill in

decontextualized, pull-out settings, but may not generalize the skill to the natural environment and use the skill long-term (generalization and maintenance) because of lack of the three former components in the natural setting.

Acquisition deficits occur when a child lacks the knowledge of how to perform a social skill or knowledge of which social skill to use in a specific environment (Gresham, 1981). A myriad of strategies have been used to teach children with acquisition deficits the social skills needed to be successful in an integrated classroom, including modeling, coaching, and behavioral rehearsal or role play (Gresham, Van, & Cook, 2006). Modeling includes developing a task analysis of the targeted skill and performing the behavior for the target child(ren) (Gresham, 1981). Modeling can be done through video (Baker, Lang, & O'Reilly 2009) or in vivo in the natural environment or contrived settings (Gresham, 1981), or using self-modeling (Dowrick, 1999).

Coaching involves discussing the rules and standards for behavior, behavioral rehearsal, and feedback (Gresham, 1981). Coaching can be done both in isolation and in the natural environment (Gresham, 1981); however, including relevant peers in coaching may lead to higher levels of skill use and peer acceptance (Bierman & Furman, 1984). Role play and behavioral rehearsal where a child practices using the identified skill can be embedded in coaching or be used in isolation. Videos of the child performing a target skill during the behavioral rehearsal phase can be taken so the child may review the tape and identify and evaluate appropriate and inappropriate skill usage, learn to self-monitor behaviors, and reinforce himself for correct skill usage (Embregts, 2000). Even when a child does present with acquisition deficits, treating the deficit alone is rarely enough to encourage skill use in the natural setting. Acquisition is just the first stage of skill learning; therefore, children must naturally progress to the next stages of social

skill training to be able to use those skills flexibly in many environments, with changing contingencies, and fluency (Skinner, Neddenerip, Robinson, Ervin, & Jones, 2002). A functional approach should be used to determine factors that may serve as barriers to skill use in the natural environment. Barriers to skill use include a lack of fluency, competing contingencies, and poor plans for generalization and maintenance.

Improving Fluency and Generalization

Coaching and role play can help a child acquire a new social skill; however, generalizing the skill to the natural environment may be very difficult for children with EBD (Gresham et al., 2001). For many children, opportunities to utilize skills may not occur naturally due to a history of social rejection or being neglected (Ladd, Price, and Hart, 1990). Without opportunities to practice social skills, children with EBD may never develop the ability to fluidly apply social skills in natural settings. Practicing skills in natural settings is required for children to identify the subtle cues that signal whether a particular social skill will be reinforced or punished (Skinner et al., 2002).

Opportunities to practice skills with peers in training settings may help with the generalization of skills to the natural setting (Gresham, et al., 2001). TD peers can serve as role models for appropriate behaviors and serve as a co-therapist to teach and reinforce skill use (Ang & Hughes, 2002). Additionally, the natural environments may need to be set up so peers are encouraged to interact with children with EBD. This can be done by setting up opportunities to interact in controlled settings where peer support and appropriate behaviors are reinforced for both parties (DuPaul & Weyandt, 2006; Skinner et al., 2002).

Eliminating Competing Behaviors and Maintenance

Even when children with EBD respond to social skills interventions, they often fail to maintain these gains (Skinner et al., 2002). This may occur when problem behaviors compete with socially desirable behaviors (Gresham, et al., 2001). Competing behaviors may include both externalizing behaviors such as impulsivity, aggression, and hyperactivity or internalizing factors such as social withdrawal, anxiety, or depression (Achenbach & McConaughy, 1987). Competing behaviors may including functionally equivalent behaviors that serve the same function as the new social behaviors (Maag, 2005). For example, acting out in class may gain access to peer attention as well or better than asking them to play later in the day. This can provide more immediate reinforcement and may be easier to do since the problem behavior is performed more fluidly and easily than the competing behavior. Strategies where social skill use is differentially reinforced over problem behaviors can lead to decreased occurrences of problem behaviors and increased occurrences of socially-skilled behaviors. This can be done through the use of group-oriented contingency systems, adult-managed differential reinforcement, or self-management strategies (DuPaul & Weyandt, 2006). Additionally, the use of cognitive-behavioral strategies to teach self-control can be used to help children learn to control and mediate competing responses. This can help children identify and consider the situation and behavior prior to acting out (Gresham, 1981).

The Proposed Project

While SWPBS is rapidly gaining popularity and governmental support (Warren et al., 2006), several questions still remain, including how to best provide primary supports at the classroom level and how beneficial a SWPBS initiative is for children with ASD. Direct social skills instruction is considered to be an integral part to the SWPBS framework (Sugai et al., 2005), but there is little empirical research examining the efficacy of a multi-tiered social skills

approach in inclusive schools (Sansosti, 2010). Examining how primary tier social skill training in the classroom can be used to address the needs of all children in the classroom, especially those with ASD, is a logical first step to address these holes in the literature.

Study Design

According to the model proposed by the NIMH working group for designing research studies of psychosocial interventions for individuals with ASD (Smith et al., 2007), the first step to systematically validating and disseminating interventions is to perform a series of efficacy studies to provide “proof of concept.” While this can be done by informally applying new techniques and using clinical judgment to evaluate the results, experimental research design using single-subject methodologies provide more support of efficacy (Smith et al., 2007). The second step in the process is to manualize the procedures and treatment to provide a standardized intervention point. The manual should explain how the intervention works, provide step-by-step instructions for the intervention, and list common problems and solutions encountered in the intervention (Hibbs et al., 1997). Once the manual has been finalized, randomized control trials can be conducted to test the treatment efficacy, and once efficacy has been established, community effectiveness studies can be conducted to examine the treatment program in real-world settings.

When providing intervention within the school system (i.e. a real world setting), modifications must be made to this research plan. The social skills literature shows that children with ASD have difficulty generalizing treatment gains from highly controlled research settings to the natural environment (Bellini et al., 2007). This is especially difficult considering that current social skills instruction standards in mainstream education promote social skill instruction embedded within the daily routine (Schoenfeld et al., 2008). From a practical standpoint,

mainstream educators will have to apply part or all of the treatment. The difficulty involved with this level of collaboration may be part of the reason that very few studies have been conducted examining social skills programs embedded within the daily classroom routine (Crosland & Dunlap, 2012).

Participatory Action Research (PAR) is an applied research methodology that takes into account the ideas, perceptions, and needs of the population of interest to develop an intervention (Lofman, Pelkonen, & Pietila, 2004; Nastasi et al., 1998). PAR incorporates stakeholders in every part of the research process including design, implementation, and evaluation by obtaining continual feedback on the program's effectiveness, critical components, and needed modifications (Penuel & Freeman, 1997; Nastasi et al., 1998). This is done through focus groups, individual meetings, and questionnaires. As changes are made to the program, researchers and stakeholders can perform steps simultaneously and/or go back-and-forth between steps (Nastasi et al., 1998).

Many of the values in PAR are contrary to those seen in more traditional social science research including the assumption of the researcher as the expert. When using a PAR framework, the researcher becomes part of the participant group; sharing input and knowledge and seeking the expertise of the participants and stakeholders through-out the process (Herr & Anderson, 2008). By doing this, PAR openly acknowledges the subjectivity of the researcher and research process (Ladkin, 2005) and rejects the notion that researchers should be objective outsiders (Herr & Anderson, 2008). While this framework encourages collaboration and may lead to meaningful outcomes for the target site, the results may be unlikely to generalize.

Integrating the collaborative nature of PAR and the more objective methods suggested by the NIMH and traditional social science research can be done through the use of a multi-level

mixed methods design (Tashakkori & Teddlie, 2009); a pragmatic design where qualitative (i.e. participant perception, changes identified to improve implementation and effectiveness of the intervention) and quantitative (i.e. observational and questionnaire measures) data are interdependent. Data taken at each level of the system (i.e. students, teachers, classrooms) can include both qualitative and quantitative components and influence the collection and interpretation of each other. This can help reduce the bias that occurs as a result of the collaboration of PAR while still providing the level of support, communication, and flexibility with implementers/participants that needs to occur for successful research in an applied setting. Furthermore, this type of methodology is consistent with the first stage of development recommended by the NIMH working group (Smith et al., 2007) which includes the use of both experimental research design using single-subject methodology and clinical judgment.

The purpose of this study was to examine the basic structure of a primary tier social skills program that is a downward extension of a previously piloted social skills program for first and second grade students. This was done by converging quantitative observation or predefined target behaviors, sociometric, and questionnaire data with qualitative open-ended interview questions and observation. Observational, sociometric, and questionnaire data were used to measure the relationship between implementation of the intervention and social outcomes for target children and the students in the class as a whole. At the same time, the feasibility, needed modifications to the intervention, and training needs were explored using observation of and open-ended interview questions with the teachers implementing the program. Strands of qualitative and quantitative data were analyzed separately. Then, mixing occurred by comparing and relating both strands of data and interpretation. This allowed for a more complete

understanding of how the program works and corroborate results from the different methods (Tashakkori & Teddlie, 2009).

Research Questions

Quantitative research questions.

1. Does a class-wide social skills program targeting basic classroom social skills and peer prompting behaviors lead to improved social and behavioral outcomes for children with ASD and other educational diagnoses associated with social deficits?
2. Does a class-wide social skills program targeting basic classroom social skills and peer prompting behaviors benefit TD children by improving overall classroom environment?

Qualitative research questions.

3. What, if any, modifications need to be made to the basic program structure to allow teachers to implement without the aid of a researcher and maintain treatment fidelity?
4. What type of knowledge, training, and feedback will need to be included in addition to manualization in order for teachers to effectively implement the program?

Mixed research question.

5. What student, teacher, and classroom qualities affect the results of a primary tier social skills intervention?

Methods

Participants and Setting

Participants were 2 female teachers and 8 students (4-6 years old, 5 male, 7 Caucasian, 1 of Middle-Eastern descent) in two classrooms (4 in preschool and 4 in kindergarten) at a local elementary school who agreed to implementation of the social skills program. The preschool classroom was part of the Virginia Preschool Initiative (VPI); a state funded program that provides funding to provide quality preschool programs for at-risk four-year old children that are not served by Head Start. The kindergarten classroom was a mainstream public school classroom. The teachers in the classrooms acted as primary interventionists, reported on classroom environment, and provided feedback regarding the perceived effectiveness and feasibility of the program.

All children in each class participated in the program and completed sociometric measures. Four children in each classroom were targeted because they had an educational diagnosis of ASD, developmental delay, or had an educational provision associated with social delay or difficulty. All target children had parental consent to participate as target children for this study. These children were chosen as children with ASD and other educational diagnoses associated with social difficulties are those that are most likely to be targeted for secondary and tertiary tier interventions. They are also the children who are the primary targets of primary tier interventions (Schoenfeld et al., 2008). Targeted measures of social and behavioral functioning (below) were collected on all four identified children in each class to determine if primary tier services provide benefit for children with ASD and/or other diagnoses associated with social deficits.

There were no exclusionary criteria as the program was in the development stage. School staff and parents were not asked to refrain from other social skill or problem behavior programs or treatments as this program is not meant to take the place of secondary or tertiary tier interventions. All additional interventions provided in the school setting were tracked as potential confounds and are discussed below.

Teachers.

Teacher 1 was a female preschool teacher for the Virginia Preschool Initiative (VPI) program. This was her first teaching job after completing her BA in Education, with an emphasis in special education and English. She reported that she had worked with children with special needs in her educational program and had a large number of special needs children in her classroom due to the nature of the VPI program. She stated that she had always wanted to be a teacher and she began teaching preschool because it was an open position in the local community when she applied for a job. While she did not originally envision herself teaching preschoolers, she stated that she enjoys working with this age of children. Overall, she is satisfied with her job, despite there being a high-level of individualization and needs in the classroom. Her motivation for volunteering for the current project was that one of the autism specialists for the district recommended that she participate and that it would be helpful for her students with ASD and classroom overall.

Teacher 2 was a female kindergarten teacher. She had been teaching at this level for two of the last eight years of her career. She had a BS in Education and had worked with children with autism in both the inclusive school setting as well as 1:1 in a home-based setting. Most of her experience working with children with special needs was in the inclusive, school-based setting. She became a teacher because she enjoys being crafty, kids, helping others, singing, and

dancing and thought this was a career which allowed her to, “Connect *her* passion with *her* paycheck.” She chose early childhood because it fit best with her personality and hands-on approach to teaching and fit her interests. When asked about satisfaction with her current teaching job, she stated that there are things that are sometimes out of her control, but she looks forward to coming to work and seeing her students every day. She agreed to join this project after it was “enthusiastically suggested” by someone in the special education department. She stated she is always interested in enhancing the education of her students and believes that social skills training is especially important at this early age.

Target children.

Child 11 was a five-year old, Caucasian male with a community diagnosis of Asperger’s Disorder in the preschool classroom. His diagnosis was the reason he qualified for a placement in the preschool program. He obtained a t-score of 66 on the teacher-reported Social Skills Responsiveness Scale, second edition (SRS-2; Constantino & Gruber, 2012), indicating a moderate level of social-communication and behavioral symptoms associated with ASD. He evidenced at-risk levels for internalizing behaviors as reported by his teacher on the Teacher Report Form (TRF; Achenbach, 1991) (t-score=66), but not externalizing symptoms (t-score=62). He received 30 minutes of pull-out services for social skills training during the school day in addition to speech and occupational therapy. Parents did not complete questionnaires including the SRS-2, Child Behavior Checklist (CBCL; Achenbach, 1991), or demographic questionnaires.

Child 12 was a five-year old, Caucasian female with a community diagnosis of Autism in the preschool classroom. Her diagnosis was the reason she qualified for a placement in the preschool program. She obtained a t-score of 69 on the teacher-reported SRS-2; indicating a

moderate level of social-communication and behavioral symptoms associated with ASD. She evidenced at-risk levels for internalizing behaviors as reported by her teacher on the CBCL (t-score=67) but not externalizing symptoms (t-score=59). She received 30 minutes of pull-out services for social skills training during the school day in addition to speech and occupational therapy. Parents did not complete questionnaires, including the SRS-2, CBCL, or demographic questionnaires.

Child 13 was a five-year old, Caucasian female with a speech/communication disorder which allowed her to qualify for a placement in the preschool program. She obtained t-scores of 40 on the teacher-reported and 42 on the parent-reported SRS-2, indicating little to no ASD symptomology. Her teacher reported no elevations on the TRF for internalizing (t-score=34) or externalizing (t-score=47) symptoms. This was consistent with parent-reported internalizing (t-score=41) and externalizing (t-score=43) symptoms on the CBCL. She lived with her mother (40) and father (39) and three siblings (8 year-old male, 3 year-old male, 5 month-old female). She was receiving speech services outside of the school-setting, but no pull-out services in the school setting. Parents reported that her sister being born was the only major change for Child 13 in the last year.

Child 14 was a five-year old, Caucasian female with a speech/communication disorder which allowed her to qualify for a placement in the preschool program. She obtained a t-score of 40 on the teacher-reported SRS-2 indicating little to no ASD symptomology. Her parents did not complete the SRS-2. Her teacher reported no elevations on the TRF for internalizing (t-score=44) or externalizing (t-score=44) symptoms. This was consistent with parent-reported internalizing (t-score=37) and externalizing (t-score=37) symptoms on the CBCL. She lived with her mother (age 36) and father (age 35) and two siblings (8 year-old male, 1 year-old sister).

She was receiving speech services outside of the school-setting, but no pull-out services in the school setting. Parents reported that the birth of her sister was the only major change in the last year.

Child 21 was a six-year old, Caucasian male in the kindergarten classroom with a community diagnosis of autism and cerebral palsy. He obtained a t-score of 58 on the teacher-reported SRS-2 indicating little to no ASD symptomology and a t-score of 84 on the parent-reported SRS-2, indicating severe ASD symptomology. His teacher reported no elevations on the TRF for internalizing (t-score=50) or externalizing (t-score=56) symptoms. This was consistent with parent-reported internalizing (t-score=63) and externalizing (t-score=54) symptoms on the CBCL. He lived with his father (age 38), mother (age 39), and brother (age 7). Prior to kindergarten, he engaged in the VPI preschool program, 5 days/week. He received speech therapy, occupational therapy, and physical therapy in both the private and school settings. He also received music therapy in the school setting. No family changes or transitions in the prior year were reported.

Child 22 was a five-year old, male of middle-eastern descent in the kindergarten classroom with a community diagnosis of ADHD and suspected ASD. He obtained a t-score of 63 on the teacher-reported SRS-2, indicating mild-moderate impairment in social interaction. His teacher reported no elevations on the TRF for internalizing (t-score=58) or externalizing (t-score=56) symptoms. He received no pull-out or paraprofessional-support services in the school setting. Parents did not complete questionnaires including the SRS-2, CBCL, or demographic questionnaires.

Child 23 was a five-year old, Caucasian male in the kindergarten classroom with a community diagnosis of ADHD. He obtained a t-score of 46 on the teacher-reported SRS-2,

indicating little to no ASD symptomology. His teacher reported no elevations on the TRF for internalizing (t-score=44) or externalizing (t-score=46) symptoms. He received no pull-out or paraprofessional-support services in the school setting. Parents did not complete questionnaires including the SRS-2, CBCL, or demographic questionnaires.

Child 24 was a five-year old, Caucasian male in the kindergarten classroom with a community diagnosis of cerebral palsy. He obtained a t-score of 49 on the teacher-reported SRS-2, indicating little to no ASD symptomology. His parents did not complete the SRS-2. His teacher reported no elevations on the TRF for internalizing (t-score=34) or externalizing (t-score=56) symptoms. This was consistent with parent-reported internalizing (t-score=45) and externalizing (t-score=37) symptoms on the CBCL. He lived with his father (age 37), mother (age 36), and brother (age 2). Prior to kindergarten, he attended a preschool program at the local university, 5 days/week. He received speech therapy, occupational therapy, and physical therapy in both the private and school settings. He also received music therapy in the school setting. No family changes or transitions in the prior year were reported.

Numerous attempts were made to obtain missing demographic and questionnaire data from parents prior to and during the project. This was conducted by teacher-directed requests during drop-off and pick-up and notes sent home from the teacher. Direct requests were made by email and/or phone by the researcher based on preferred contact listed by the parent. Teachers and researchers agreed to move forward with implementation of the program despite missing data from parents as further delaying implementation of the program would not allow sufficient time to implement prior to the end of the school year.

Program Structure

The structure and phases of the program coincide with primary tier intervention recommendations and current educational practice by including direct instruction on classroom routine and rules, a formalized classroom management system, and incidental teaching methods to help children apply skills learned in the program and participate fully in the classroom (Magyar, 2011). At the same time, several promising social skills training techniques and supports for children with ASD were embedded within the program. The program aimed to provide a positive learning environment while supporting social skill acquisition and use for all children in the classroom, with a special focus on those with ASD and other social issues. This program consists of three major components: 1) social skills instruction through didactic lessons; 2) practicing and encouraging skill use in the natural environment; and 3) development and support of relationships among children in the classroom. Direct social skill instruction was conducted through weekly lesson plans lasting 20-45 minutes each. The first lesson introduced the program and an interdependent group-oriented contingency system (Litoe & Pumroy, 1975) that the teacher developed with the aide of the researcher taking into account classroom environment, teacher desires and needs, the developmental level of children in the classroom, and child preferences for rewards (Appendix A). Subsequent lessons taught a target skill using video modeling, in-vivo modeling, and behavioral rehearsal. The first three lessons (Appendix A) were required lessons as they introduced the program to students and aimed to create a positive classroom environment where children were taught to recognize positive behaviors and attributes in each other. After the first three lessons were introduced, teachers chose up to three target skills they believed students in their class needed additional practice on and taught those using the same format as lessons two and three.

The literature examining the use of didactic instruction alone shows that social skill instruction alone rarely leads to skill use or fluency for children with ASD and other high-incidence disabilities (Gresham et al., 2001). Children were encouraged to use the target social skills with a group-oriented contingency system (Litoe & Pumroy, 1975), natural training opportunities with adult guidance, and peer prompting. An interdependent group-oriented contingency system developed with the teacher was used to help reward skill usage. The researcher worked with teachers to recognize and utilize natural teaching opportunities. A peer-mediated component was incorporated into the program to teach peers to prompt/help those that were struggling to use the target skill as peer-mediated interventions have been shown to help children with and without ASD meet academic, social, and behavioral (Kamps et al., 1994, Kamps et al. 2002; Kasari et al., 2012) goals when provided in isolation and as part of a larger program. Training in peer prompting for specific target skills was included in each social skill lesson.

All components of the program were aimed at developing and supporting relationships among children in the classroom. Learning appropriate classroom social skills can help children with ASD and other behavioral or social issues blend into the classroom, thus reducing their likelihood of being a target for teasing and bullying (Taylor, 1989). Children were taught to modify and prompt behaviors in a non-confrontational way in an attempt to create a more positive environment. Finally, children were separated into cooperative base groups that worked together on the social skills lessons. Base groups are long-term heterogeneous groups that are relatively permanent and are meant to provide long-term caring peer relationships (Johnson & Johnson, 2009). This can be especially important for children with ASD or EBD, as being a member or a cooperative learning group with trained peers leads to higher levels of social skill

usage than those in social skills groups alone or in a cooperative learning group with untrained peers (Kamps et al., 2002).

Quantitative Measures

Child Screening Measures.

Two measures of behavioral and ASD symptomology were collected for target children as descriptors in addition to parent-completed demographic information. The Social Responsiveness Scale, second edition (SRS-2; Constantino & Gruber, 2012) was used to measure autism symptomology. The SRS-2 is a quantitative measure of interpersonal, communicative, and behavioral functioning of children with ASD with forms extending from 2.5 years to adulthood. The school-aged form which ranges from 4-18 years old was utilized in this study. Scores on the SRS-2 are converted to t-scores which provide a description of ASD symptomology. T-scores of 76 or higher are indicative of severe symptomology, 66-75 with moderate symptoms, 60-65 mild symptoms, and 59 and below are considered to be within the normal range and are generally not associated with a diagnosis of ASD. Both a teacher and a parent report of symptomology were requested as descriptors for this study. A teacher-rating was obtained for all children and a parent rating was obtained for 50% of the children.

The Child Behavior Checklist (CBCL; Achenbach, 1991), a parent-report measure of child behavioral and emotional problems, was used to measure internalizing (i.e. anxiety, depression) and externalizing (i.e. aggressive, hyperactive, inattention) symptoms in children between the ages of 4 and 18 as reported by parents. The Teacher Report Form (TRF; Achenbach, 1991), the teacher companion form of the CBCL was used to measure internalizing and externalizing symptoms in the classroom setting. The CBCL and TRF yield t-scores,

measuring symptomology in both internalizing and externalizing domains with scores between 65-70 indicating children are in the at-risk range and scores over 70 as clinically significant.

Multiple-baseline across behaviors observation.

Four target children identified by the teacher were observed in each classroom ($n=8$) for one hour three times/week. Multiple-baseline design allows for the researcher to show experimental control within a single-subject methodology without requiring a reversal of treatment. This can be preferable when working in an applied setting where stakeholders may be resistant to reversing to baseline if they believe that a program is working or when effects are irreversible (Cooper et al., 2007). Prior to the intervention, two weeks of baseline data collection (six observations) were conducted with data collection taken on target behaviors chosen by the teacher. Each week, a new behavior was targeted denoting a change in phase.

Data were collected on target social behaviors engaged in or directed towards the target children using time-sample, rate, and per opportunity recording. Time sample recording was conducted by dividing the observation period into 15 second intervals and marking the occurrence of the behavior at the end of the interval using the *Time Sample Recording Sheet* (Appendix B). Children were observed in one minute cycles (i.e. four 15 second intervals). For example, child one was observed for the first minute (four 15 second intervals), child two was observed for the second minute, and so on. This cycle continued until the end of the observation period. Behaviors coded using time sample recording included behaviors such as peer interaction, keeping hands to self, and staying on task based on upon behavioral definitions provided by the researcher (Appendix D).

A second observer collected data on the rate of prompting behaviors directed towards and done by the target children and any other target behaviors better accounted for by rate than time-

sample data as they occur at a much lower frequency. For example, behaviors such as giving compliments or praise to peers were included in this category. That observer took per opportunity recording on behaviors that require a specific discriminative stimulus prior to the behavior, such as following directions. All data were collected based on behavioral definitions provided by the researcher (Appendix D). The second observer observed on the same interval cycle as the first observer, but collected data through-out the interval, so data on child 1 were collected during the first 15 seconds, child 2 during the second 15 seconds, and so on. Data were collected using the *Rate/Opportunity Recording Sheet* (Appendix C).

All observations were conducted by trained undergraduate research assistants. Reliability coding was conducted, on average, once/week. A reliability coder double coded with the first observer for the first 30 minutes of the observation and the second observer for the second 30 minutes of the observation. Inter-rater reliability was determined by dividing the number of intervals of agreement that the target behavior did or did not occur divided by the total number of intervals for time sample recording of each target behavior. Reliability for rate and per opportunity recording was determined by dividing the number of intervals where the observers agreed on the number of occurrences of behavior divided by total number of intervals.

Social Skills Rating System – teacher form (SRSS-T).

The Social Skills Rating System – Teacher Form (SSRS-T; Elliot & Gresham, 1990) is a norm-referenced rating scale that is used to measure social skills in the classroom environment. There are three versions of the form (pre-school, elementary, secondary) that match the developmental level of children from 3-18 years. The preschool version of the SRSS-T includes 40 items rated on a 3-point Likert scale (0=Never, 1=Sometimes, 2=Very Often) in regards to an individual student's behavior. The preschool version of the SSRS-T produces two scales: Social

Skills and Problem Behaviors. The Social Skills scale has three subscales including Cooperation, Assertion and Self-Control while the Problem Behaviors scale includes two subscales including Externalizing and Internalizing. The elementary school version (for grades K-6) of the SSRS-T is comprised of 57 items and produces three scales: Social Skills, Problem Behaviors, and Academic Competence. The Social Skills scale includes the same subscales as the preschool version while the Problem Behaviors scale includes an additional subscale measuring Hyperactivity. All raw scores are transformed into standard scores ($M=100$, $SD=15$) so that the measure can be compared across different forms. The SSRS-T has good validity and reliability with Cronbach's $\alpha=.94$ /test-retest $=.85$ for the Social Skills scale and Cronbach's $\alpha=.82$ /test-retest $=.84$ for the Problem Behaviors scale.

Social preference.

Two measures of social preference were conducted. The Coi and Dodge (1983) method of sociometric measurement was used to determine the social status of target children in the classroom. Children in participating classrooms were individually asked the following two questions, "What three children in your classroom do you like the most?" and "What three children in your classroom do you like the least?" Children were presented with pictures of all the children in their classroom and verbally asked each question. Children were asked to select three pictures for each question and researchers recorded the responses on a separate sheet of paper. Social preference scores were computed by subtracting the number of times they are nominated as "liked the least" from the number of times they are nominated as "liked the most" and transforming the resulting score into a z-score (Jiang & Cillessen, 2005).

A rating-scale measure of social preference was also conducted. Children were asked how much they liked to play with each of their classmates. For each classmate, they were asked to

assign one of three faces to that person including a happy face, neutral face, and sad face. Each face was assigned a value with a happy face=3, neutral face=2, and sad face=1 and used to determine an average rating for each child (Asher, Singleton, Tinsley, & Hymel, 1979).

My Class Inventory-Short Form teacher report (MCI-SFT).

The teacher form of the My Class Inventory - Short Form (MCI-SFT; Sink & Spencer, 2007) is a 24 item report measuring teacher-perceived positive classroom environment. Teachers rate statements such as "The students enjoy their schoolwork in class" in regards to their classroom using the following scale: strongly disagree, disagree, neutral, agree, and strongly agree. The MCI-SFT is brief, easy to understand, and simple to administer and hand score. The measure provides five subscales including teachers' perception of student classroom satisfaction, competitiveness, difficulty of classroom, school counselor classroom impact scale, and peer relations. The subscales have adequate reliability (Cronbach's alphas .66-.87) and good construct validity.

Fidelity and teacher behavior measurement.

Instructions to implement the social skills program were clearly explained for each lesson with a list of materials needed, activities to complete before implementation, and verbal and behavioral scripts to help ensure reliable implementation. The researcher met with the teacher prior to introducing the lesson to his/her class to determine if the lesson and tasks within the lesson were clear and answer any questions the teacher had. The option to have the researcher model implementation of one or more social skills lessons was offered to the teacher if he/she felt more comfortable having a model. Teacher 1 chose to have researchers implement the first social skill lesson, team-teach the second social skill lesson, and independently administer the

remaining social skill lessons in her class. Teacher 2 chose to team teach the first social skills lesson and independently implemented the remaining social skill lessons in her class.

Teachers were observed while administering the social skills lesson and data regarding whether teachers implemented each major component of the social skills lesson were recorded using the Fidelity Rating Form (Appendix E). Teachers were also observed in the classroom once/week and data were taken on praise/reprimand ratio and rate of reinforcement using group-oriented contingency system. Finally, teachers were asked to indicate the frequency with which rewards were given as part of the group-oriented contingency systems.

Qualitative Measures

Teacher interview form.

Teachers were interviewed weekly using a series of open-ended questions (Appendix F) inquiring what did and did not go well when teaching the weekly social skill, changes that need to be made to the program, how the qualities of their class affected instruction of the lesson, ease of use, and what needs to be added to the lesson to implement without the aid of an outside researcher. If the teacher would be more comfortable completing the form independently and sending it to the researcher, she was allowed to do so. Both teachers opted to complete feedback forms in this manner. If suggested modifications were related to future lesson plans, these were incorporated prior to teaching.

Observational data.

Qualitative observations were taken on the teacher's behaviors when collecting quantitative data on the praise/reprimand ratio. Specifically, observations focused on the amount of attention given to problem behaviors, whether teachers attend to use of target or problem behaviors, and whether teachers take advantage of naturalistic teaching opportunities. Narrative

data focused on nonverbal and verbal behaviors of the teacher that may contribute to the use of a target social skill or problem behavior by children in her classroom, whether the teacher takes advantage of natural teaching opportunities for the target behaviors, and whether peers are given the opportunity to appropriately prompt peers to use the target skills. Observations also examined whether any unintended consequences occurred in the context of the classroom. Notable observations or suggestions to improve the acquisition of target skills based on observation were shared with the teacher weekly and incorporated into the program when necessary.

Analytic Plan

Quantitative Analyses.

The question of whether class-wide social skills programming leads to improved social and behavioral outcomes for children with ASD and other educational diagnoses were examined using multiple-baseline data of target children, pre/post test scores on the SSRS-T, and change in social status determined by sociometric measurement. Overall changes in classroom climate were observed using pre/post test scores on pertinent subscales of the MCI-SFT.

Multiple-baseline across behaviors observation.

Multiple-baseline data for individual participants and the group were analyzed using the approach proposed by Parker and Hagan-Burke (2007). This approach equates a single-data point to a patient in a medical trial. Data for each individual and each target behavior were sorted from highest-to-lowest for behaviors targeted for decrease and from lowest-to-highest for behaviors targeted for increase. Data points that show improvement over baseline in the treatment phase for each behavior are considered “successful” while those that do not as “unsuccessful.” The success-rate difference can be determined by subtracting the percentage of

unsuccessful data points from the percentage of successful data points and interpreted as the treatment group as being XX percentage more successful than the control group.

Social competency & problem behaviors

Changes in social competency and problem behaviors, as measured by the social skills and problem behaviors subscales of the SRSS-T (Elliott & Gresham, 2008), were examined using the Wilcoxon Paired Signed-Rank Test. The Wilcoxon Paired Signed-Rank Test is a nonparametric statistical test that can be used to compare repeated measures in a sample. It is appropriate for use with non-normal data, a common finding in small sample sizes. The Wilcoxon Paired Signed-Rank Test is even more sensitive than the paired-samples t-test when used in small samples (Corder, 2009).

Change in social preference.

Changes in social preference as measured by peer nomination sociometric measure (Coi & Dodge, 1983) were transformed into z-scores to standardize the social preference measure in order to include all target children in the analyses despite differences in class size. The Wilcoxon Paired Signed-Rank Test was used to compare pre and post-intervention social preference scores for target children on each measure of social preference. The average rating for each child on the Likert sociometric measure were compared pre and post intervention using the Wilcoxon Paired Signed-Rank Test.

Classroom Climate.

Data from the teacher version of the MCI-SF (Sink & Spencer, 2007) were reported to show improvement in overall classroom climate from pre to post-intervention. Given the small number of classrooms ($n=2$), pre/post measures of teacher-reported classroom environment using the MCI-SFT (Sink & Spencer, 2007) were reported individually using a bar graph. This

measure is considered more descriptive at this point in the project, and will be explored more fully in future waves of data collection with a more complete manual.

Qualitative analysis.

All narrative data obtained through the open-ended teacher questionnaire, qualitative observational data, and weekly social skills lesson discussion were analyzed using an interpretive description framework (Thorne, Kirkham, & O'Flynn-Maggee, 2008). Interpretive description is a qualitative methodology drawn from nursing that aims to provide direction in small-scale qualitative research to find themes in subjective perceptions and develop reasoning that can be applied to real-world settings.

All data from observations were typed out. Both teachers in the study chose to complete the interview forms independently. These forms were also typed with their corresponding questions. Qualitative data on observations was recorded by the observers (the researcher and an undergraduate research assistant familiar with the project) briefly reporting on general impressions about the observation in regards to program implementation and classroom management. These impressions were typed and consisted of 2-5 qualitative observations per session. Two independent coders unaffiliated with the project were asked to analyze the qualitative data using the guidelines set forth by Taylor-Powell and Renner (2003). Data were analyzed by reviewing the data, focusing the analysis on the qualitative research questions presented above, organizing and labeling the data, identifying themes and patterns within and between categories, and bringing it all together. Coders included a special education teacher with a master's degree in curriculum development and the other coder was an individual completing her supervision experience to obtain her behavior analyst certification. Both coders had experience in conducting qualitative research. Coders sent the themes garnered from the

data to the author. The two coders and the author met to review agreements and disagreements through discussion and to obtain consensus on all themes; however, meeting revealed that all coders produced the same themes independently.

Mixed analysis.

The results from both the quantitative and qualitative strands of data were examined to compare and relate results. Data were examined for discrepant and mutual findings and these were integrated in the interpretation of what program components and training are necessary for the reliable implementation of an effective primary tier social skills program and help examine the observed or reported qualities that affect results. For example, if children in one classroom appeared to make more gains than children in the other classroom, qualitative data were examined to determine if there are classroom or teacher characteristics and attitudes that can help explain the differences. Additionally, qualitative data can help identify the characteristics of target children that tend to respond best to a primary tier social skills interventions. These interpretations were closely examined and discussed.

Results

Quantitative Results

Fidelity and teacher behavior measurement.

Both teachers and the researcher implemented all lesson plans with 100% fidelity as measured by the Fidelity Rating Form (Appendix E). Teacher 1 implemented an interdependent reinforcement system in the form of a bear jar. When a child in the class utilized a target skill, he or she was allowed to move a plastic counting bear from a plastic container to a large jar. When the jar was filled, the entire class earned extra play time. The class earned this privilege one time during the course of the study. She also planned to praise students using an independent system to help promote appropriate behaviors targeted and not-targeted by the program.

Teacher 2 implemented a mixed (interdependent and independent) reinforcement system. She had a clip chart with five colors ranging from red (doing poorly) to green (exceptional). Ratings in the top three colors were considered acceptable, and students that were in the top color at the end of the day earned a prize from the prize box. If all students were in the top two colors at the end of the day, they would receive a party. Clips with the children's names were moved up for appropriate behaviors and down for inappropriate behaviors. The teacher also utilized class cheers to give individualized attention to children when utilizing target skills. Teacher 2 failed to take data on the number of children who earned prizes at the end of the day, but the teacher reported that children never earned the interdependent reward.

Each week, a one-hour teacher observation was conducted during the same time that child observational data was collected. Data were collected on the number of times that teachers rewarded target behaviors using the formal reward system and praise as well as reprimands.

Data on the average rate of reinforcement for each target behavior, rate of reprimands, and praise to reprimand ratio are reported in table 5. Teacher 1 averaged .59 praise statements to 1 reprimand while Teacher 2 averaged .74 praise statements to 1 reprimand; indicating that both teachers used reprimands more often than praise statements in their classrooms during observations.

Research question 1: Child social and behavioral outcomes.

Multiple-baseline across behaviors observation.

Multiple-baseline data for each child are presented in figures 1-8. Reliability of observational data were determined by comparing agreement on the occurrence/nonoccurrence of target behaviors during each interval for behavior rated using momentary time sampling and per opportunity recording. Reliability of observational data for behaviors tracked using rate were determined by comparing agreement on the frequency of target behaviors during each interval. Reliability for all target behaviors was in the acceptable range (Table 1).

Visual inspection of data showed no obvious effects of treatment for any of the participants based on observational data. None of the success rate differences were significant for individual target children; neither were there success-rate differences for each classroom (Table 2).

Social Skills Rating System – teacher form (SRSS-T).

Children 13 and 14 scored at the top of the SSRS-T social skills scale (t-score=130); therefore, were removed from pre-post analyses for this measure to control for ceiling effects. Pre/post scores for individual students for both the social skills scale and problem behavior scale are reported on Table 3. Analyses with the remaining participants using a Wilcoxon signed-rank test showed that there was no significant differences in teacher-rated social competence ($Z = 1.787, p = .074$) nor problem behaviors ($Z = 1.892, p = .058$).

Social preference.

Both peer nomination and Likert-rating measures of peer social liking were taken. One peer in the preschool classroom moved during the study; therefore, her ratings on the sociometric measures were removed from the analyses. Four children (20% of class) in the kindergarten classroom chose not to participate in the sociometric ratings of classmates. Current standards state that ratings of 50% or more of children in the classroom are needed to get an accurate measure of peer liking on sociometric measures (Cairns & Cairns, 1994). Pre/post scores for target students for both sociometric measures are reported on Table 4. Analyses with the remaining participants using a Wilcoxon signed-rank test showed that there was no significant differences in peer liking as measured by peer nomination ($Z = 0.4201, p = .674$) nor Likert rating ($Z = .981, p = .326$).

Research question 2: Effects on classroom environment

My Class Inventory-Short Form teacher report (MCI-SFT).

Scores on the classroom satisfaction and peer relations subscales of the MCI-SFT are reported. These results are descriptive at this time, and no statistical analyses were conducted due to the small sample size ($n=2$). Both teachers reported increases in peer relations and Teacher 2 reported increases in overall classroom satisfaction, while Teacher 1 indicated that classroom satisfaction remained steady. Individual and mean changes on subscales are reported in figure 9.

Qualitative Measures

Research question 3: Needed modifications for independent implementation.

Overall, teachers reported that the basic program structure was easy to use and they had few specific recommendations for additions or exclusions. Observations of teachers

implementing the social skills lesson indicated that teachers were able to implement with fidelity; however, teachers reported concerns that their students did not always seem to understand the social skills lesson or began to lose interest in the lesson. They recommended including more engagement through-out the lesson plan rather than just in the end during the activity and/or to shorten the length of the social skills lesson to help increase child attention. In addition, some specific options were recommended to address these issues including adding a character to increase engagement and interest (Paity the Pairs Parrot), option for cartoon and live-action videos, and the option to teach the social skills lesson in small groups versus the whole class. While these recommendations do not relate directly to the research question about helping teachers implement with fidelity, child inattention or lack of understanding could affect the effectiveness of the program. Additionally, this could lead to children behavior problems that affect fidelity of implementation for social skills lessons.

Teachers tended to only report on implementation of the social skills lesson on the teacher feedback form. Observations indicated that teachers consistently posted visuals provided in the classroom; although teachers expressed some difficulty utilizing a color wheel (introduced in the staying on task and talking at appropriate times) since it was located in a centralized location in the room. Teacher 2 recommended adding measures to increase portability of the color-wheel to increase consistency of implementation and making it more visible for students.

It was observed that Teacher 2 tended to use more antecedent behavior control strategies in classroom management. She utilized transition warnings and precorrects to help prevent problem behaviors and encourage the use of target social skills through-out the day. This teacher also utilized differential attention where she praised children who were utilizing target behaviors when other children were misbehaving. Teacher 1 did not utilize many antecedent strategies or

differential attention and tended to use reprimands to manage problem behaviors. While both teachers attempted to use reinforcement and reprimands to manage the behaviors of children directly, neither were observed to prompt peers to encourage target skills; a primary target of the PAIRS program.

Research question 4: Needed teacher qualifications and training.

Teachers reported that having time to adequately prepare for lessons would be helpful, and they often implemented the lessons without looking them over. Teachers reported that this was an issue as implementation occurred at the end of the year when they were engaged in standardized testing and end-of-the year goals; however, this concern was reported at a higher rate for Teacher 1 than Teacher 2. Additional training and strategies to implement and encourage skill use and instruction for children after the social skills lesson is presented needs to be included in the program. Teachers thought that showing the videos several times through the week could help prompt skill use. They also requested activities they could implement to reinforce skill use through the week. Finally, teachers may benefit from training in basic positive behavior support strategies; including strategies to improve praise to reprimand ratio, antecedent-based strategies such as preteaching and transition warnings, and environmental strategies such as placing visuals in an easy to see location, and instruction on how to encourage peer-peer prompting.

Mixed Analysis and Discussion

Overall effectiveness.

In order to discuss factors that affect treatment effectiveness, one must first discuss the effectiveness of the program itself. None of the quantitative data supported the hypothesis that a primary tier social skills program led to improved social outcomes for target children.

Specifically, there was no change in observed use of target social skills after lessons and no changes in peer acceptance and liking. While teacher-reported measures of social competence and problem behaviors moved in the right direction, changes were not significant. Additionally, observational data did not show an increase in peer prompting behavior; however, both teachers reported improvements in perceived classroom satisfaction and peer relations. In light of these findings, the following interpretation should be reviewed with caution.

While quantitative data did not support hypothesis of program effectiveness, teacher's reported several positive changes and benefits of the program. Even when teachers reported that children in the class seemed to struggle with a lesson, they saw that many children in the class were using the skill by the end of the week. Teacher 1 reported that the program did not seem to help children with ASD; however, she saw that highly socially-skilled peers picked up on skills and expectations quickly and helped their peers utilize the skills targeted in the lesson.

Furthermore, she stated that children in the low-mid range of social functioning appeared to benefit from the peer prompting and social skill instruction inherent in the program. Children 33 and 34 were members of these two groups, yet no change in observed behavior was detected for either child. Teacher 2 frequently reported that she saw improvements in skill use through-out the program for target and non-target children.

There are several possible explanations for the discrepancy in these findings. First of all, there may have been inherent issues in the data collection and statistics. Observational data were taken over three, one-hour observations per week. Furthermore, each child was only observed for ¼ of that time, and that is assuming that the child was in the room the entire observation (which was often not the case). This equates to 45 minutes or less of observation/child/week. While observations were scheduled to occur at a time when teachers and researchers anticipated the most opportunity for skill use, this may not have been the case. These factors may have led to observations that did not truly capture the change reported by teachers.

Methodological issues in baseline data collection also existed. Phase changes were planned based on the structure of the social skills program (new social skills lesson presented each week). Since the program occurred at the level of the entire class, not the individual, it was not possible to plan data-driven phase changes. This was combined with ceiling effects for several target skills (i.e. following directions). Ceiling effects may have existed because of actual skill use or because of how and when data were collected. For example, few opportunities to follow directions were actually presented during observational times in classroom 1. When instructions were given, they tended to be short instructions related to regular routines (i.e. transition between circle time and centers) or directly related to a small group instruction activity. These routine and simple instructions may be related to higher levels of correct responding while students may struggle with more complex, multi-step instructions or instructions given outside of routine situations.

Finally, there may have been several additional environmental contingencies affecting child behavior. Several unusual events occurred over the course of this study that likely had a major effect on the target skills of children. Children missed several days of school due to

weather and planned vacations (i.e. Spring Break). Standardized tests were also occurring at the end of the school year, which led to changes in schedules and routines, expectations for children to be quieter than usual, and children being pulled in and out of the room. The excitement of the end of the school year and the impending summer break may have also greatly affected child behavior and skill use. Additionally, teachers reported that the demands of the end of the school year affected the amount of time they had to adequately prepare for lessons and focus on skill use and acquisition.

While changes in teacher-reported social competence and problem behaviors showed movement in the right direction (i.e. increases in social competence and decreases in problem behavior), these were non-significant. Despite this finding, it is interesting to note the magnitude of the change in children in classroom 2 in regards to social skills. It is unusual to see this degree of change on paper-and-pencil measures with obviously null results in observational measures. This combined with the qualitative report suggesting good outcomes brings into question the validity of teacher-reported data. Qualitative data from Teacher 2 was overall more positive than Teacher 1. Teacher 1 oftentimes reported surprise when she saw improvement in skill use by children in the class. Teacher buy-in and bias or placebo effects may have led to differences in teacher perception of program effectiveness. Moreover, teachers worked directly with the researcher through-out the process. This relationship between the researcher and the teachers may have led to elevated reports of program effectiveness.

Child Factors Influencing Effectiveness

While Teacher 1 reported that the program did not seem to be effective for target children with ASD, she did report that the program helped encourage skill use for the other children in her classroom. She reported that high socially-skilled peers seemed to master the skills presented

each week and then assisted low-moderate socially-skilled peers utilize the skills. She reported that overall, highly skilled peers mastered the skills and low-moderate socially-skilled peers were learning the skills. On the other hand, Teacher 2 reported that all children in her class benefitted from the program including the child with diagnosed ASD (Child 11) and the child with suspected ASD (Child 12). Given these discrepant reports, no consistent child factor seemed to significantly influence the effectiveness of the program, but rather teacher and classroom factors seemed to have more of an effect on teacher-perceived effectiveness.

Teacher Factors Influencing Effectiveness

As previously mentioned, Teacher 1 often seemed surprised when children in her class showed improvements in skill use while Teacher 2 consistently reported positive results. It is important to remember, however, no quantitative measure supported effectiveness of the program. It is unclear if this discrepancy in teacher reported effectiveness was due to differences in true improvement not captured by quantitative measures, perceived improvement due to placebo effects, or inaccuracy of reporting. For these reasons, the teacher factors influencing effectiveness should be interpreted with extreme caution.

Several differences were observed and reported in teacher experience with classroom management and experience with children with special needs. Teacher 2 had more experience teaching and working with children with special needs. She was observed to use more proactive, PBS strategies for behavior management and social skills teaching including pre-teaching and transition warnings and activities. She was also observed to use differential attention rather than reprimands more frequently than did Teacher 1. Her qualitative report indicated that she understood the basic concepts of reinforcement and group contingency systems. For example, she stated, "...the lessons are holding me accountable for reinforcing these skills," suggesting

that she had already been actively teaching many of these skills in the classroom. These basic strategies are an integral part of the PBS and group management literatures, which contain data supporting their use and effectiveness (Sugai et al., 2005; Sutherland, & Wehby, 2001).

On the other hand, observation of teacher behavior indicated that neither teacher implemented a core piece of the program, at least, when observers were present. Neither teacher approached recommended levels of praise/reward-to-reprimand ratios (3-4 reward: 1 reprimand: Sutherland, & Wehby, 2001). The use of a high reward-reprimand ratio leads to more positive classroom environments, increased use of desired behaviors, and less attention to problem behaviors (Gable, Hester, Rock, & Hughes, 2009; Sutherland, & Wehby, 2001) and is a cornerstone to basic PBS (Gable et al., 2009). The definition of reprimand used in this study was “telling the student to stop a behavior in the absence of defining an alternative behavior.” This definition of reprimand indicates that teachers often failed to take opportunities to prompt skill use in the natural environment.

Consistent with the aforementioned theme, teachers neglected to take advantage of natural teaching opportunities to prompt peer helping behavior to use the skills during observation. In order for teachers to reinforce peer prompting behavior, the behavior would have to occur in the first place. It is likely this behavior would need to be prompted to occur in the natural environment and prompt peers effectively with students this age (Goldstein, Kaczmarek, Pennington, & Shafer, 1992). It is interesting to note that no instances of teacher prompting or rewarding peer-to-peer helping behavior were noted. Teacher 2 did reward reports of peer helping behavior when reporting on “tootles” (Appendix 1, Lesson 2) in the class. At the same time, she reported that she failed to write “tootles” down consistently. Teacher 1 stated that she

rarely remembered to write down “tootles” in her class and often forgot to review them with the class.

Another teacher factor that likely affected effectiveness of the program is time. This includes time to plan for the social skills lesson and provide opportunities to practice the target skill in the natural environment and time to prompt and reinforce skill use. While the social skills lessons were easy to use and teachers were able to pick them up and implement with fidelity with little to no preparation, the quality and fluency of social skills lesson plan implementation may have been affected by the lack of preparation. For example, they may not have been able to attend to, prompt, correct, and reward student behavior as effectively as they were paying more attention to the teaching materials. As such, the quality of implementation may have been compromised. These factors would not have been picked up using the fidelity of implementation measure in its current form. Furthermore, the researcher provided all materials and handouts needed for lessons to help alleviate the burden of participation for teachers. Without this assistance, teachers may not have had the time necessary to prepare these materials. Implementing the program at a time in the year when teachers have adequate time to prepare and plan implementation may lead to improved outcomes.

Classroom Factors Influencing Effectiveness

Classroom 1 was a preschool classroom serving a population of at-risk and special needs children, while classroom 2 was a mainstream, public school kindergarten. Differences in developmental level due to age and population (100% at-risk/special needs versus mixture of at-risk, special needs, and typically-developing peers) may have led to differences in ability to understand social skills lessons and implement skills. Differences between these two populations may have also led to mediating effects that affected implementation. For example,

teachers providing services to a large population of children with individualized education needs could lead to reduced teacher time and increased stress. These could, in turn, affect teacher implementation of the program. As previously mentioned, several additional environmental contingencies that may have affected the children in the class could have been in place in both classrooms including weather days, Spring Break, and the impending summer break. On the other hand, both teachers consistently stated that having peers on the higher-end of the social skills spectrum was helpful. Both teachers reported that these peers modeled appropriate behaviors and prompted skill use in others. Having highly skilled peers seemed to be a classroom feature that enhanced the program in both classrooms.

Conclusions and Future Directions

While effective school-based social skills programs for children with ASD and EBD exist, social skills instruction using a multi-tiered framework (such as SWPBS) is an unexplored area (Sansoti, 2010). The current study examined the effectiveness of a primary tier social skills program implemented at the classroom level. It was predicted that the program would lead to a more positive classroom environment as measured by teacher report and improved social functioning for target children with ASD and other social difficulties. While teachers qualitatively reported overall improvements in classroom climate and some improvements in social skills use in non-target children, quantitative data indicated that the program led to few if any effects for target children. While these initial results appear disappointing, further exploration into the qualitative and quantitative data reveals promising directions for this project.

First of all, teachers repeatedly stated that the program was organized and easy to use. They were able to pick up the manual and implement the social skills lessons with ease. Observations of social skill lesson teaching supported this teacher report. At the same time, teachers seemed to struggle to implement basic PBS techniques as well as teaching and reinforcement of the target skills in the natural environment outside of the planned lesson. The school-based social skills training literature overwhelmingly states that without good generalization and maintenance procedures, social skills lessons are essentially ineffective (Gresham et al., 2001). Before any further iterations of this study are conducted, this deficiency must be addressed so that the intervention is carried into the children's day-to-day classroom activities. In other words, it may be that both the structured lesson and the carryover into the rest of the class activities (both with fidelity) are needed for this type of intervention to show change.

Teachers reported that target children may have benefitted less from this program than did typically-developing peers. Moderate and highly skilled peers were reported to acquire or show improvement in the targeted skills. Additionally, while it was not observed, teachers reported that highly-skilled peers did prompt skill use in the natural environment. Peers may have been more likely to prompt peers that responded more readily (i.e. moderately skilled peers), rather than those who were less likely to respond positively or respond at all (i.e. children with ASD or other disabilities). If the intervention was continued and monitored, there is the possibility that additional improvements may have been seen. If TD peers were using target skills more frequently and effectively, this may have led to improved outcomes over time for target children. Additionally, as peers became more adept at prompting appropriate behavior, they may have begun to shift their focus to target children. Alternatively, peer prompting and support behavior may have occurred at such a low level after the intervention that it would not be considered a meaningful change in skill use. Teachers may have observed these small behavior changes due to a placebo effect or priming. This would indicate that the intervention was ineffective as a primary tier intervention in this type of setting and/or population. Future implementations should include additional measures for TD children in classrooms in addition to strategies to increase fidelity of implementation and quality of implementation across the school day.

Finally, children with social deficits received secondary and tertiary tier interventions that were separate and focused on different goals than those targeted in the primary tier program. If primary, secondary, and tertiary tier interventions were integrated, better outcomes may be observed. Secondary and tertiary interventions could focus on barriers to accessing primary tier interventions in addition to providing additional instruction and practice of target skills. Overall,

this study served as an initial exploration into primary tier social skills intervention and its effect on children with disabilities associated with social skills deficits. It provided valuable information and future directions into the topics of supporting and training teachers to utilize primary tier social skills intervention and multi-tiered social skills intervention.

As previously stated, on the surface, the null findings of this study are disappointing, but exploration of the data reveals directions for future research. First and foremost, the issue of quality implementation with fidelity during the entire school day should be addressed. Even in the PBS literature, issues with implementation at the classroom level are noted (Benedict, Horner, & Squires, 2007; Carter & Norman, 2010). If teachers can implement basic PBS strategies with fidelity across the school day, then it may be easier for them to identify and learn to use strategies to encourage peer-support strategies and social skills training in the classroom. While exploring this topic, possible barriers and solutions to implementation can be identified and remedied. Fidelity measures for the social skills lesson may also need to be modified to help provide a better indicator of quality of implementation.

What is clear is that manualization alone is unlikely to provide the structure and support teachers need to implement more than just the social skills lesson. Once teachers are consistently implementing quality PBS strategies, researchers can explore whether the addition of this primary-tier social skills program integrated into the regular classroom curriculum leads to change above and beyond PBS strategies alone. Additionally, measures can be added to better assess change in teacher behavior in regards to social skills training, the use of social skills and peer support behaviors in TD peers, and more comprehensive measures of classroom climate and peer networks.

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Appendix A

Lesson 1 Introducing the PAIRS Program

Estimated time: 15-20 minutes, an additional 10-20 minutes for optional activity.

Do Before:

1. Read *Introduction and Reinforcement and Reward* chapters. Pay special attention to *Group Reward Systems*.
 - a. Pick whole-class or competitive system (p. 19-20)
 - b. Develop a token system or choose to use an already established school or classroom based reward system (p. 21)
 - c. Develop some back-up reward ideas and worth (p. 21-24)
2. Determine groups (p. 8) and make sure children grouped together are sitting together prior to the lesson.

Materials Needed:

1. Folders with pockets.
 - a. You may paste PAIRS sheet on front of folder or have students do this.
2. Supplies for decorating folders (optional activity).
 - a. e.g. markers, crayons, stickers, etc.
3. Positives worksheet
4. Tokens
5. Token board (method of keeping track of tokens earned)

Goals of Lesson:

1. Explain group reward system.
2. Pick back-up rewards with students and determine number of tokens needed to obtain the rewards.
3. Begin recognizing positives

Activities:

1. Explain reward system
2. Break children into groups of 3-4 (called their PAIRS group)
3. Write positives about PAIRS groups members

*Lesson (Read everything listed in **bold** aloud to the class)*

Explain PAIRS program and reinforcement system

We're going to do something new in our class. We are going to learn some new skills that will help you in the classroom and teach you how to get along with others. We are going to start a new program called the PAIRS program. Every week, we will have a lesson where we will learn a new skill. When you use these skills in the classroom, you will get along better with your classmates and learn better.

If you developed your own reward system and are NOT using random rewards, use this script.

Best of all, you all will get a chance to earn something cool! When I catch you using one of the skills we learned in our PAIRS lesson, you can earn a token (point/sticker/etc.). Show the class the token or sticker if you are using these and where the total will be displayed. Explain how you will keep track of the tokens. **It's neat to earn tokens, but it's even better when you get something for them. Today we are going to pick the item we are working for. Here are some ideas to get you started. Write down the possible rewards they can work for. **If you have other ideas, please raise your hand and let me know.** Allow students to give ideas and write down those that are appropriate and gently dismiss those that are not. **Now that we have some ideas, let's vote of the one we want to earn first.** Allow children to vote on the option they want. In the case of a tie, do a second vote between the top 2 choices. You can be the tie-breaker if needed. You decide the number of tokens needed to earn the reinforcer. **Okay, we are going to work for reward. Even if we are not working for the thing you wanted this time, we might be able to pick it next time. To earn reward you all need to earn number tokens together.** *Continue to Break into groups section.***

If you developed your own reward system and are using random rewards, use this script.

Best of all, you all will get a chance to earn something cool! When I catch you using one of the skills we learned in our PAIRS lesson, you can earn a token (point/sticker/etc.). Show the class the token or sticker if you are using these and where the total will be displayed. Explain how you will keep track of the tokens. **It's neat to earn tokens, but it's even better when you get something for them. Today we are going to pick the item we are working for. Here are some ideas to get you started. Write down the possible rewards they can work for. **If you have other ideas, please raise your hand and let me know.** Allow students to give ideas and write down those that are appropriate and gently dismiss those that are not. If you are using a multi-tiered reward system, assign rewards to small/medium/large rewards. **Okay, I am going to write down each of these rewards and put them in our reward jar(s).** Show students the reward jar(s). **When your group/class earns enough tokens, I will pick a slip of paper from the reward jar. Everyone in the group/class will earn the reward written on the slip of paper I pull out.** Inform students the number of tokens they will need to earn to get the reward. If you have a multi-tiered reward system, explain the number of tokens required to earn each level of reward. *Continue to Break into groups section.***

If using an already established classroom or school-based reward system, use this script:

Best of all, you will get the opportunity to earn school token. We are going to try something new. Instead of earning the school token by yourself, you will work together. When someone in your group/class uses the skills we learn in our lessons, then everyone gets a school token. You can choose to have students exchange tokens as a group or individually for privileges already established with the school reward system. *Continue to Break into groups section.*

Break into Groups & Recognize Positives

Now, we are going to break into groups. This group will be like your family for [specify period of time depending on how long you plan to keep groups together]. These will be your PAIRS group and you will be responsible for helping each other for [specify period of time]. I have already decided who will be in your group. You will not complain about who is in your group or ask to join another one. When you join your PAIRS groups, I want you to

write the names of your PAIRS group members on this worksheet. Think about one thing that the other people in your group do well and [write it down/draw a picture of it] under their names. Let me give you an example. Give an example of a something another teacher in the school does well. Break children into their PAIRS groups of 3-4 students (should be sitting next to/near each other in the classroom) and pass out worksheet.. After children have been grouped, give time to write positives down. **Does everyone have their good things [written down/drawn]?** Allow a small amount of extra time if needed. **Okay, who would like to share something good about a member of their group?** Allow a few children to share the positive things they wrote/drew about their group members. **Great job everyone! Now I'm going to pass out your PAIRS folders. When you get your folder, I want you to put your worksheet in the front pocket.**

--End lesson--

Note: You may end the lesson here or you may allow time to decorate PAIRS folders. You may choose to allow children to decorate folders at a later time or during free time if desired.

Lesson 2

Class-Wide Positive Peer Reporting

Estimated time: 10-15 minutes

Do Before:

1. Read about section entitled *Class-Wide Positive Peer Reporting* (p. 25)

Materials Needed:

1. Tootle Book

Goals of Lesson:

1. Explain tootling
2. Begin rewarding tootles

Activities:

1. Explain tootling
2. Model tootling
3. Practice tootling

Tootling

Protocol adapted from (Skinner et al., 2002).

Okay everyone, it's time for our first PAIRS lesson. We are going to learn how to do something called tootling, which is like tattling about good things. Can anyone tell me what tattling is? Probe students to see if they understand what tattling is. Should indicate that it is telling on someone when they do something wrong. **That's right, we tattle on somebody when they do something wrong to get them in trouble. Tootling is like tattling on people for good things. You tootle on people when they help someone else. For example, if you see student 1 help student 2 by opening the door when her hands are full, you can tell me. If you see student 3 share his crayons with student 4 because she doesn't have any you can tootle that too.**

I really like it when you tootle. I am going to use this book to help me keep track of tootles. Hold up "Tootle Book." When you see a classmate help someone else, you can come and tell me. I will write it down in the *Tootle Book*. Every day, I am going to look at the *Tootle Book*. I will read some good tootles to the class at specify time of day. You all will earn tokens for tootling about your classmates! The person who tootled will get a token and so will the person that helped. Let's practice now. Raise your hand if you can think of a time that someone in this class helped you or another students. Probe students to provide examples of helping their classmates and write these down. Have a couple of examples appropriate to your classroom ready just in case students have difficulty with this and prompt students to come up with these ideas on their own. Give a token to children who come up with a tootle and for children who are specified as the helper in the tootle. **Wow, we have a lot of good tootlers and helpers in this classroom! Does anyone have any questions?** Answer any questions the class may have. *You can allow students extra practice at this time if needed.*

--End lesson--

Lesson 3

Creating a Positive Classroom Environment

Estimated time: 15-20 minutes

Do Before:

1. Post “Giving Praise” sign in room.

Materials Needed:

1. PAIRS folders
2. Lesson 3 videos (<http://katrinaostmeyer.wix.com/pairs#!video/c1wfv>)
3. Positives worksheet (should be in children’s PAIRS folders)

Activities:

1. Watch “Complimenting others” video
2. Watch “Praising Others” video
3. PAIRS group activity: Labeling good things about each other activity.
4. Classwide activity: Telling on peers for doing something nice or helpful.

Goals of Lesson:

1. Teach children how to give positive comments
2. Teach children how to praise each other.
3. Begin rewarding students for positive comments.

Activities:

1. Watch “Reinforcing Others” video and practice skill

*Lesson (Read everything listed in **bold** aloud to the class)*

Teaching children how to praise each other

We are going to learn our first PAIRS skill today. We want our class to be a fun, safe place. We can do this by helping each other and tootling. We can also use our words to let others know when we like something. Let’s watch a video with two classmates named Steve and Susie. Watch “Complimenting others.” Steve said something really nice to Suzie. What did he say? Children should indicate that he said he liked her bow. **That’s right. He gave Suzie a compliment. That is when you tell someone that you like something about them. We are going to practice giving compliments to each other.** Pass out PAIRS folders. **In our first PAIRS lesson we drew pictures of things that our classmates do well. Please take these out of your folder. I want you to look at your pictures and take turns telling each other that you like something they do. I’ll go first.** Have a list with things that a co-teacher, teacher’s aide, or student does well and give an example with “I like how you _____.” **Okay, now you do it.** Monitor children practicing the skill and reward children individually using your chosen reward system for practicing the skill as outlined in the video. Remember, you reward the individual but give the token to the whole group/class.

Great job giving compliments everyone! There is another way to say nice things to others. Let’s watch Steve do something nice for Suzie and see what happens. Watch “Giving

Praise". **Did you all notice what Suzie did after Steve opened the door for her?** Children should indicate that she told him that: She liked what he did and it was nice. **That's right, she told him she liked how he opened the door for her. If you like what someone does, you can tell them. I want you all to think about a time when someone in your class did something nice for you or helped you. Raise your hand if you would like to tell the whole class about a time when one of your classmates did something nice for you.** Allow students to share experiences where a peer did something nice for them. Reward reporting with tokens. Ask students who are labeled as doing something nice how they feel when their peer tells the class they did something nice. **It sounds like we have a lot of nice kids in our class. Let's see if we can all remember to tell our classmates when they do nice things. When I catch you telling your classmates nice things, I will give you a token. Does anyone have any questions?** Answer any questions children in the class might have. **Great job. I want you all to put your "Ways to give praise" and "good things" sheets in your PAIRS folders.** Have students put both sheets in the PAIRS folders and pick them up.
--End Lesson--

Appendix B

| Date: _____ Initials: _____ | | | Activity | + Peer Interaction | - Peer Interaction | On Task | Touching | Notes |
|--------------------------------|-----|------|----------|--------------------|--------------------|---------|----------|-------|
| Child | Min | Sec | | | | | | |
| 1 | 0 | 0:15 | | | | | | |
| | | 0:30 | | | | | | |
| | | 0:45 | | | | | | |
| 2 | | 1:00 | | | | | | |
| | 1 | 0:15 | | | | | | |
| | | 0:30 | | | | | | |
| 3 | | 0:45 | | | | | | |
| | | 1:00 | | | | | | |
| | 2 | 0:15 | | | | | | |
| 4 | | 0:30 | | | | | | |
| | | 0:45 | | | | | | |
| | | 1:00 | | | | | | |
| 1 | 4 | 0:15 | | | | | | |
| | | 0:30 | | | | | | |
| | | 0:45 | | | | | | |
| 2 | | 1:00 | | | | | | |
| | 5 | 0:15 | | | | | | |
| | | 0:30 | | | | | | |
| 3 | | 0:45 | | | | | | |
| | | 1:00 | | | | | | |
| | 6 | 0:15 | | | | | | |
| 4 | | 0:30 | | | | | | |
| | | 0:45 | | | | | | |
| | | 1:00 | | | | | | |
| 1 | 8 | 0:15 | | | | | | |
| | | 0:30 | | | | | | |
| | | 0:45 | | | | | | |
| 2 | | 1:00 | | | | | | |
| | 9 | 0:15 | | | | | | |
| | | 0:30 | | | | | | |
| 3 | | 0:45 | | | | | | |
| | | 1:00 | | | | | | |
| | 10 | 0:15 | | | | | | |
| 3 | | 0:30 | | | | | | |
| | | 0:45 | | | | | | |
| | | 1:00 | | | | | | |

| Date: _____ Initials: _____ | | | Activity | + Peer Interaction | - Peer Interaction | On Task | Touching | Talking | Notes |
|--------------------------------|-----|------|----------|--------------------|--------------------|---------|----------|---------|-------|
| Child | Min | Sec | | | | | | | |
| 1 | 0 | 0:15 | | | | | | | |
| | | 0:30 | | | | | | | |
| | | 0:45 | | | | | | | |
| 2 | | 1:00 | | | | | | | |
| | 1 | 0:15 | | | | | | | |
| | | 0:30 | | | | | | | |
| 3 | | 0:45 | | | | | | | |
| | | 1:00 | | | | | | | |
| | 2 | 0:15 | | | | | | | |
| 4 | | 0:30 | | | | | | | |
| | | 0:45 | | | | | | | |
| | | 1:00 | | | | | | | |
| 1 | 4 | 0:15 | | | | | | | |
| | | 0:30 | | | | | | | |
| | | 0:45 | | | | | | | |
| 2 | | 1:00 | | | | | | | |
| | 5 | 0:15 | | | | | | | |
| | | 0:30 | | | | | | | |
| 3 | | 0:45 | | | | | | | |
| | | 1:00 | | | | | | | |
| | 6 | 0:15 | | | | | | | |
| 4 | | 0:30 | | | | | | | |
| | | 0:45 | | | | | | | |
| | | 1:00 | | | | | | | |
| 1 | 7 | 0:15 | | | | | | | |
| | | 0:30 | | | | | | | |
| | | 0:45 | | | | | | | |
| 2 | | 1:00 | | | | | | | |
| | 8 | 0:15 | | | | | | | |
| | | 0:30 | | | | | | | |
| 3 | | 0:45 | | | | | | | |
| | | 1:00 | | | | | | | |
| | 9 | 0:15 | | | | | | | |
| 4 | | 0:30 | | | | | | | |
| | | 0:45 | | | | | | | |
| | | 1:00 | | | | | | | |
| 1 | 10 | 0:15 | | | | | | | |
| | | 0:30 | | | | | | | |
| | | 0:45 | | | | | | | |
| 2 | | 1:00 | | | | | | | |
| | 3 | 0:15 | | | | | | | |
| | | 0:30 | | | | | | | |
| 3 | | 0:45 | | | | | | | |
| | | 1:00 | | | | | | | |
| | 10 | 0:15 | | | | | | | |
| 4 | | 0:30 | | | | | | | |
| | | 0:45 | | | | | | | |
| | | 1:00 | | | | | | | |

Appendix C

| Date: _____ | | | Initials: _____ | | | | | | | | | | Notes | |
|-------------|-----|------|-----------------|----------------------|----------------|-----------------------|--------------|--------|----------------------|------|-------|----------|-------|--|
| Child | Min | Sec | Activity | Prompt hands to self | Prompt on-task | Prompt Follow Direct. | Prompt other | Praise | Following Directions | | | | | |
| | | | | | | | | | Look | Wait | Start | Complete | GI | |
| 1 | 0 | 0:15 | | | | | | | | | | | | |
| | | 0:30 | | | | | | | | | | | | |
| | | 0:45 | | | | | | | | | | | | |
| 2 | 1 | 0:15 | | | | | | | | | | | | |
| | | 0:30 | | | | | | | | | | | | |
| | | 0:45 | | | | | | | | | | | | |
| 3 | 2 | 0:15 | | | | | | | | | | | | |
| | | 0:30 | | | | | | | | | | | | |
| | | 0:45 | | | | | | | | | | | | |
| 4 | 3 | 0:15 | | | | | | | | | | | | |
| | | 0:30 | | | | | | | | | | | | |
| | | 0:45 | | | | | | | | | | | | |
| 1 | 4 | 0:15 | | | | | | | | | | | | |
| | | 0:30 | | | | | | | | | | | | |
| | | 0:45 | | | | | | | | | | | | |
| 2 | 5 | 0:15 | | | | | | | | | | | | |
| | | 0:30 | | | | | | | | | | | | |
| | | 0:45 | | | | | | | | | | | | |
| 3 | 6 | 0:15 | | | | | | | | | | | | |
| | | 0:30 | | | | | | | | | | | | |
| | | 0:45 | | | | | | | | | | | | |
| 4 | 7 | 0:15 | | | | | | | | | | | | |
| | | 0:30 | | | | | | | | | | | | |
| | | 0:45 | | | | | | | | | | | | |
| 1 | 8 | 0:15 | | | | | | | | | | | | |
| | | 0:30 | | | | | | | | | | | | |
| | | 0:45 | | | | | | | | | | | | |
| 2 | 9 | 0:15 | | | | | | | | | | | | |
| | | 0:30 | | | | | | | | | | | | |
| | | 0:45 | | | | | | | | | | | | |
| 3 | 10 | 0:15 | | | | | | | | | | | | |
| | | 0:30 | | | | | | | | | | | | |
| | | 0:45 | | | | | | | | | | | | |
| | | 1:00 | | | | | | | | | | | | |

Appendix D

Classroom 1 Behavioral Definitions for Observation

Time-Sample Data

+ *Peer Interaction:*

The target child verbally or physically interacts with another child and it is not coded as a negative interaction. Mark in box.

- *Peer Interaction:*

The target child verbally or physically interact with another child and one or both children show annoyance, fear, anger, or sadness (exclude comforting) that is evoked by the other person. Include judgments of voice tone, word content, and nonverbal cues (such as rolling eyes). Mark in box.

On-Task:

During lecture/circle: Child is oriented toward and has eyes on the teacher or activity she is discussing/explaining.

During independent work: Child is touching materials required for the task, is oriented towards the task, or is engaging in on-topic conversation about the task.

During transition: Child is en route to the next activity.

During free time: Mark N/A

Touching:

The target child is touching another person with any part of his/her body. If the child asked permission prior to touching another (i.e. May I have a hug?), mark AP.

Rate/Per Opportunity Data

Compliment/Praise:

If the target child praises an action or attribute of a peer, mark T.

If a peer praises an action or attribute of the target child, mark P.

Examples:

I like how you..... I like your..... You are awesome/cool/neat..... You did a good job.....

Prompt Hands to Self:

If a peer prompts the target child to keep his/her hands to self (verbal or gestural), mark P.

If the target child prompts a peer to keep his/her hands to self (verbal or gestural), mark T.

Prompt On-task:

If a peer prompts the target child to stay on task (verbal or gestural), mark P.

If the target child prompts a peer to stay on task (verbal or gestural), mark T.

Prompt Follow Directions:

If a peer prompts the target child follow a direction (verbal or gestural), mark P.

If the target child prompts a peer to follow a direction (verbal or gestural), mark T.

Prompt Other:

If a peer prompts the target child to engage in other behavior (verbal or gestural), mark P.

If the target child prompts a peer to engage in other behavior (verbal or gestural), mark T.

PLEASE RECORD BEHAVIOR PROMPTED IN NOTES.

Follow Direction

Mark Y if child engaged in the step and N if the child did not complete the step when instruction given.

Looking at material or teacher:

Mark if the child is looking at the material or teacher when the instruction is given.

Waits for instruction:

Mark if the child waits until the instruction is finished before beginning.

Begins within 3 seconds:

Mark if the child begins the direction within 3 seconds of the teacher completing it.

Complete:

Mark if the child finishes all steps of the direction.

G/I:

G=Direction given to a group of children at once.

I=Directions given to the target child specifically.

Activity Acronyms:

I: Independent work

T: Teacher led group

G: Small group work

P: Partner work

L: Lecture/whole class work

F: Free time

C: Circle time

R: Transition

Classroom 2

Behavioral Definitions for Observation

Time-Sample Data

+ Peer Interaction:

The target child verbally or physically interacts with another child and it is not coded as a negative interaction. Mark in box.

- Peer Interaction:

The target child verbally or physically interact with another child and one or both children show annoyance, fear, anger, or sadness (exclude comforting) that is evoked by the other person. Include judgments of voice tone, word content, and nonverbal cues (such as rolling eyes). Mark in box.

On-Task:

During lecture/circle: Child is oriented toward and has eyes on the teacher or activity she is discussing/explaining.

During independent work: Child is touching materials required for the task, is oriented towards the task, or is engaging in on-topic conversation about the task.

During transition: Child is en route to the next activity.

During free time: Mark N/A

Touching:

The target child is touching another person with any part of his/her body. If the child asked permission prior to touching another (i.e. May I have a hug?) mark AP.

Talking:

During lecture/circle: Child is talking. Do not include if called on by the teacher or instructed to engage in group responding. Includes call-outs and peer-peer conversation.

During independent work: Child is talking. So not include if s/he is directing a question after raising his/her hand to the teacher. Includes call-outs and peer-peer conversation.

During free time: Mark N/A

Rate/Per Opportunity Data

Compliment/Praise:

If the target child praises an action or attribute of a peer, mark T.

If a peer praises an action or attribute of the target child, mark P.

Examples:

I like how you..... I like your..... You are awesome/cool/neat..... You did a good job.....

Prompt Hands to Self:

If a peer prompts the target child to keep his/her hands to self (verbal or gestural), mark P.

If the target child prompts a peer to keep his/her hands to self (verbal or gestural), mark T.

Prompt On-task:

If a peer prompts the target child to stay on task (verbal or gestural), mark P.

If the target child prompts a peer to stay on task (verbal or gestural), mark T.

Prompt Appropriate Talking:

If a peer prompts the target child to raise hand or be quiet (verbal or gestural), mark P.

If the target child prompts a peer to raise hand or be quiet (verbal or gestural), mark T.

Prompt Other Behavior:

If a peer prompts the target child to engage in other behavior (verbal or gestural), mark P.

If the target child prompts a peer to engage in other behavior (verbal or gestural), mark T.

PLEASE RECORD BEHAVIOR PROMPTED IN NOTES.

Raise Hand without Talking:

Tally the number of times the child raises his/her hand in the absences of talking.

Raise Hand while Talking:

Tally the number of times the child raises his/her hand while calling out.

Activity Acronyms:

I: Independent work

T: Teacher led group

G: Small group work

P: Partner work

L: Lecture/whole class work

F: Free time

C: Circle time

R: Transition

Appendix E

Fidelity Rating Form

| | Target | Yes | No | NA | Notes |
|----|---|------------|-----------|-----------|--------------|
| 1. | Teacher labeled skill | | | | |
| 2. | Teacher described skill | | | | |
| 3. | Teacher modeled skill | | | | |
| 4. | Teacher showed all videos | | | | |
| 5. | Children were given opportunity to practice the skill. | | | | |
| 6. | Teacher reinforced skill use during lesson. | | | | |
| 7. | Teacher corrected non-examples of skill or incorrect usage of skill | | | | |
| 8. | Teacher probed for questions | | | | |
| 9. | Teacher answered child questions | | | | |

Appendix F

Teacher Weekly Feedback Form
(to be completed at the end of each week)

When answering questions, please include feedback on all components of the treatment including the social skills lesson and reinforcement system.

Target social skill _____

1. What went well when teaching this week's social skill lesson?

2. What did not go well when teaching this week's social skill lesson?

3. What would you add to this lesson?

4. What would you remove from this lesson?

5. What specific problems, skills, knowledge, or behaviors of the children in your class *enhanced* the lesson?

6. What specific problems, skills, knowledge, or behaviors of the children in your class *detracted* from the lesson?

7. What recommendations do you have to improve this week's lesson?

8. How easy was it to understand and follow the lesson plan for this week?

9. What needs to be added to the lesson plan to be able to implement the program without the aid of the researchers?

10. How useful was the lesson plan for this week?

11. How much effort did it require to implement this week's lesson plan (i.e. teaching the social skills lesson, setting up opportunities to practice in the classroom, utilizing the reinforcement system)?

Figures and Tables

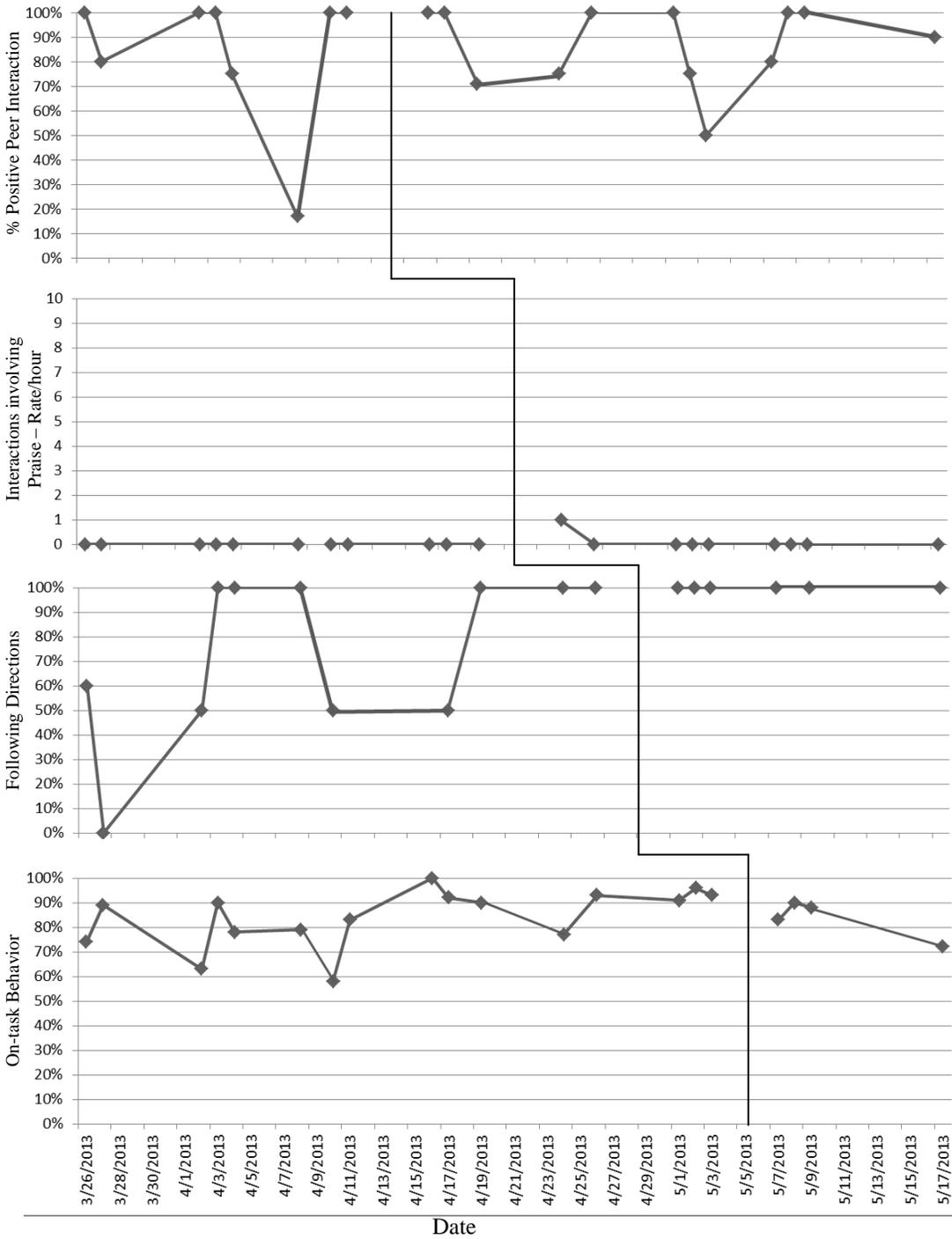


Figure 1. Child 11 multiple-baseline observational data.

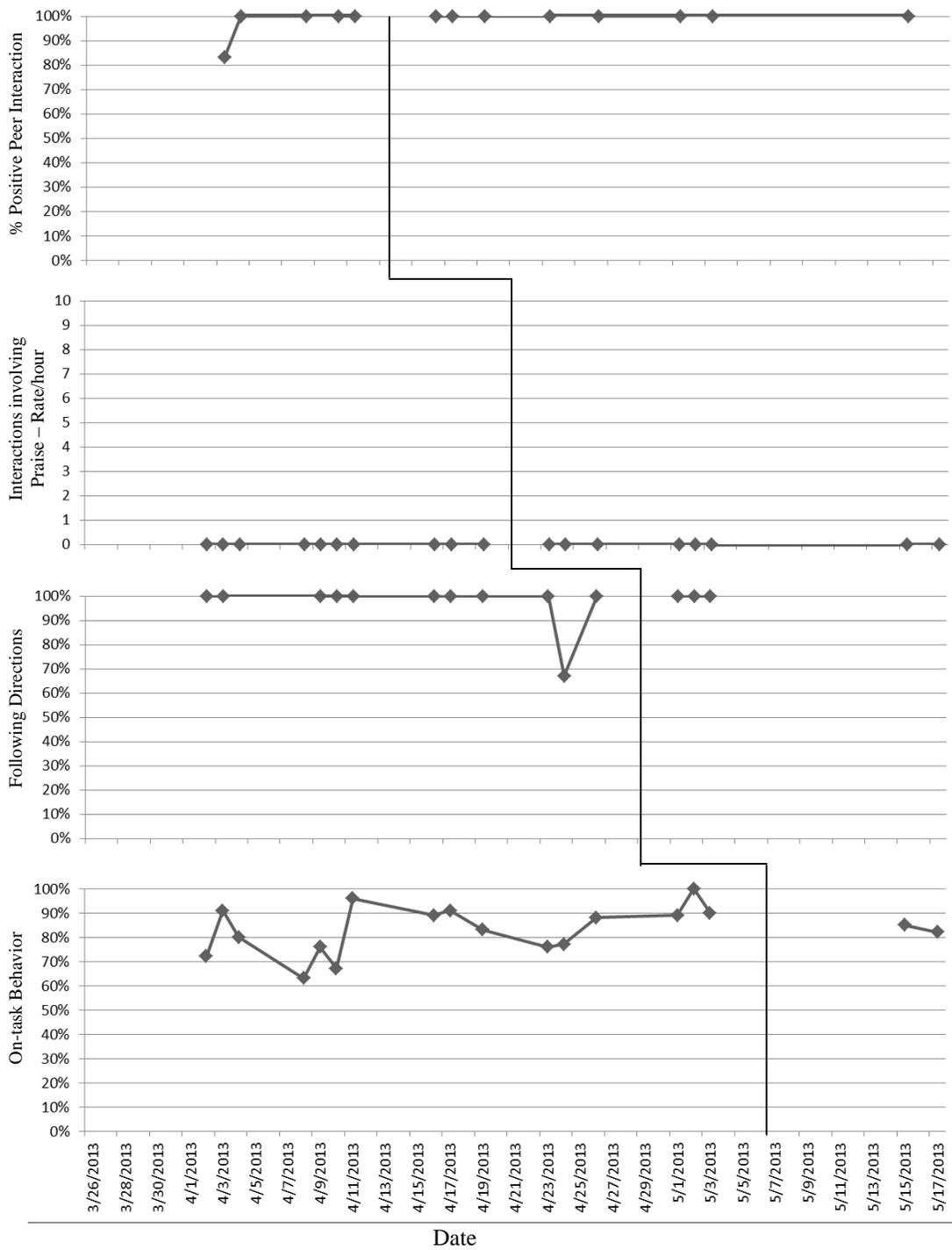


Figure 2. Child 12 multiple-baseline observational data.

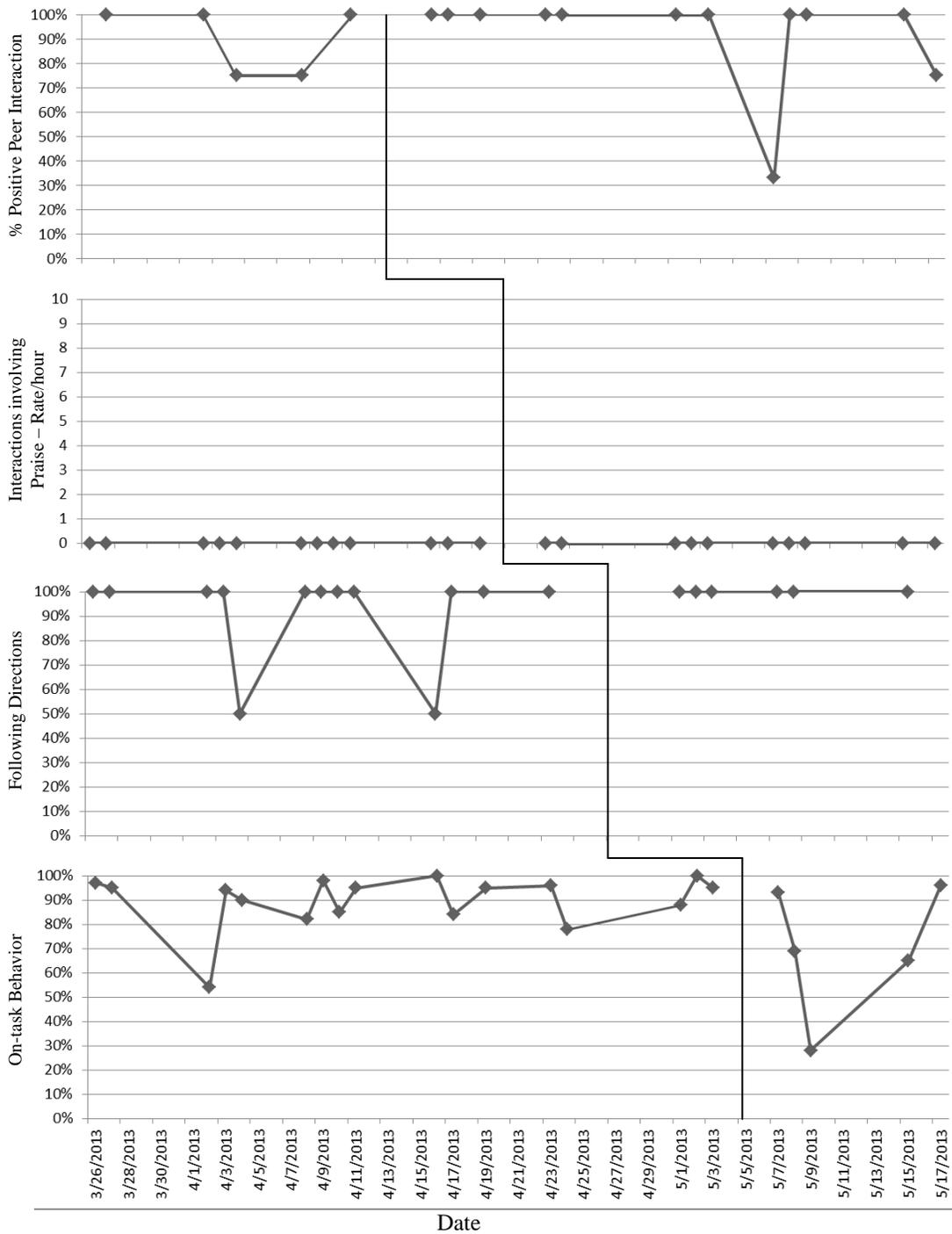


Figure 3. Child 13 multiple-baseline observational data.

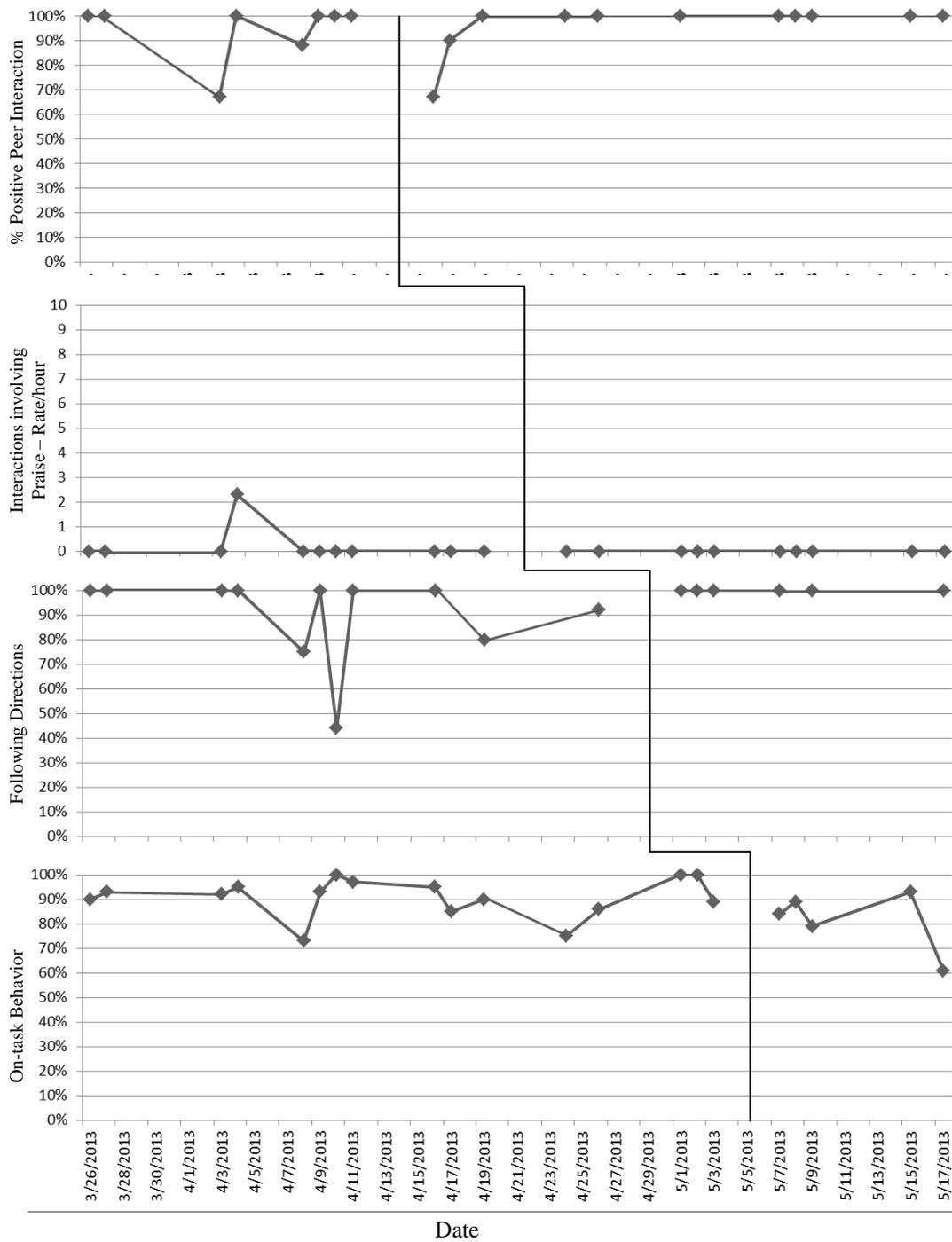


Figure 4. Child 14 multiple-baseline observational data.

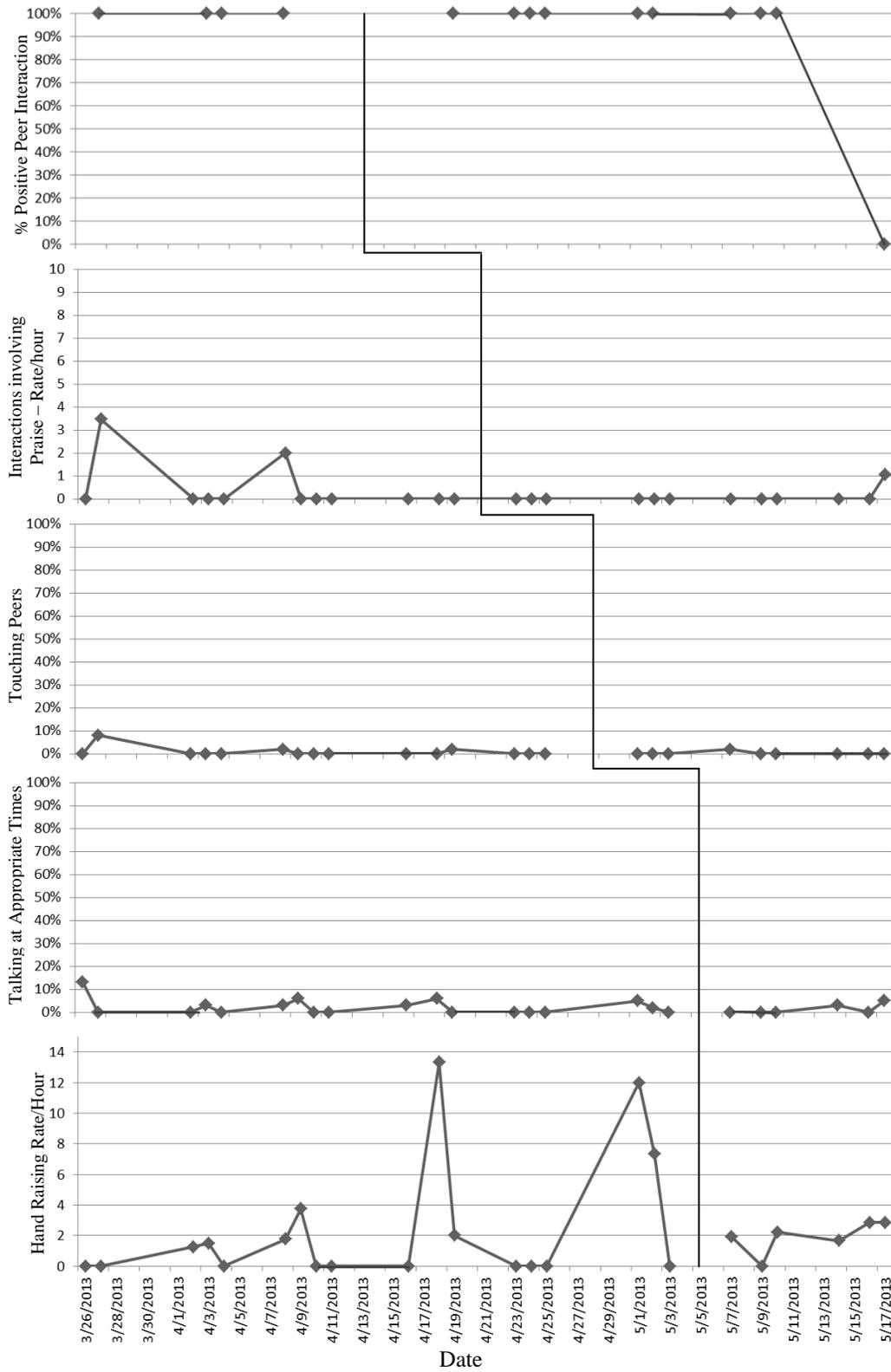


Figure 5. Child 21 multiple-baseline observational data.

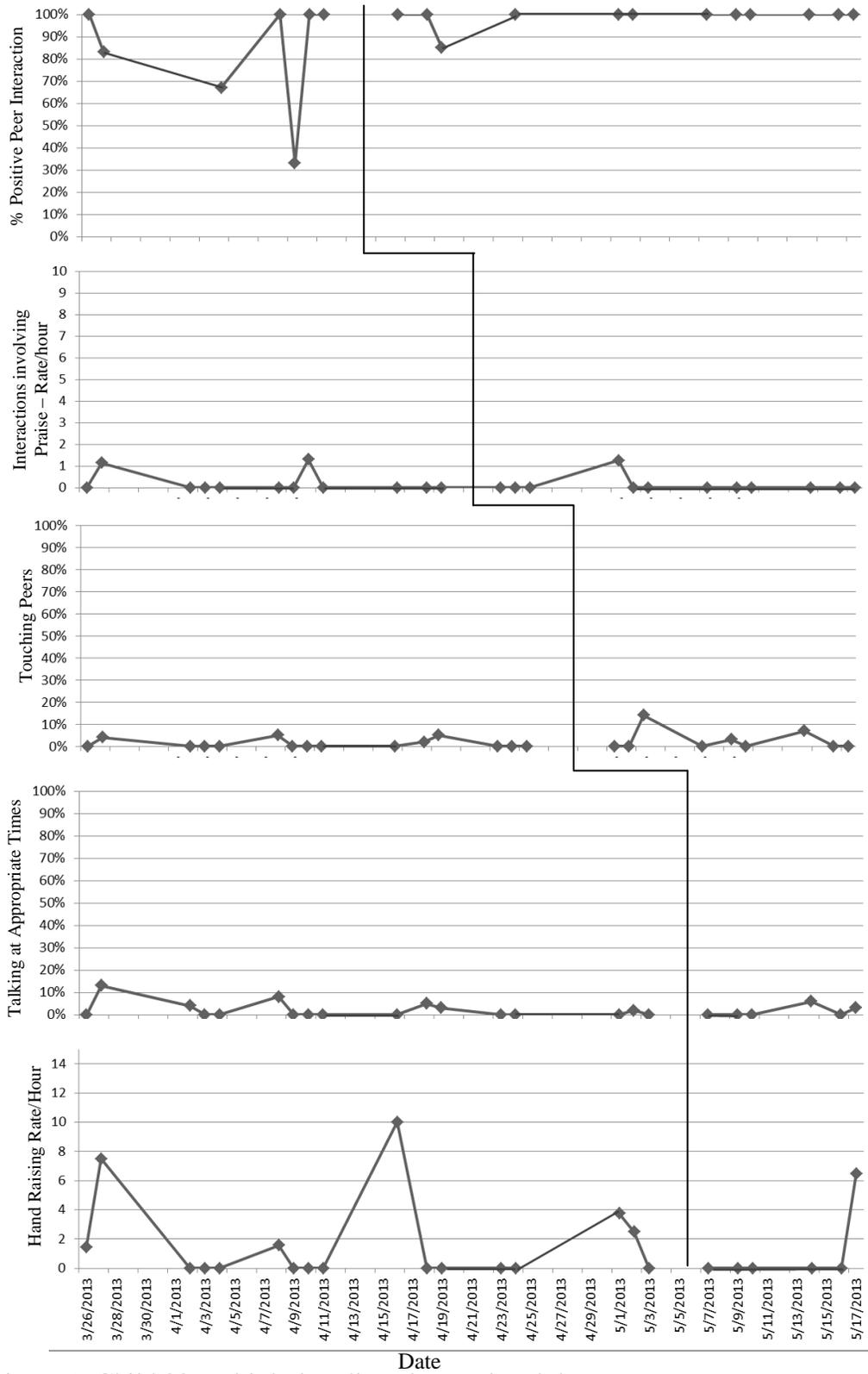


Figure 6. Child 22 multiple-baseline observational data.

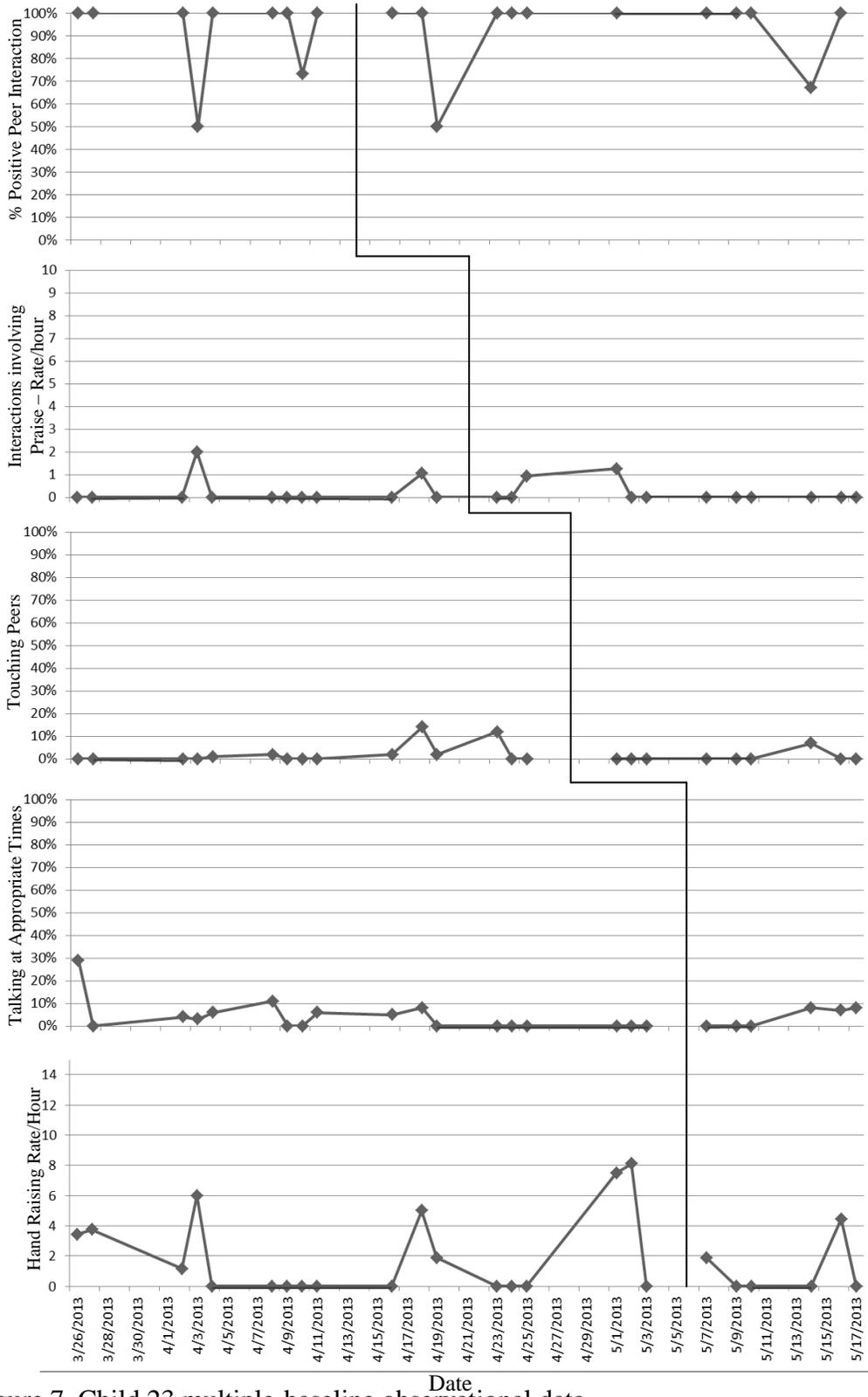


Figure 7. Child 23 multiple-baseline observational data.

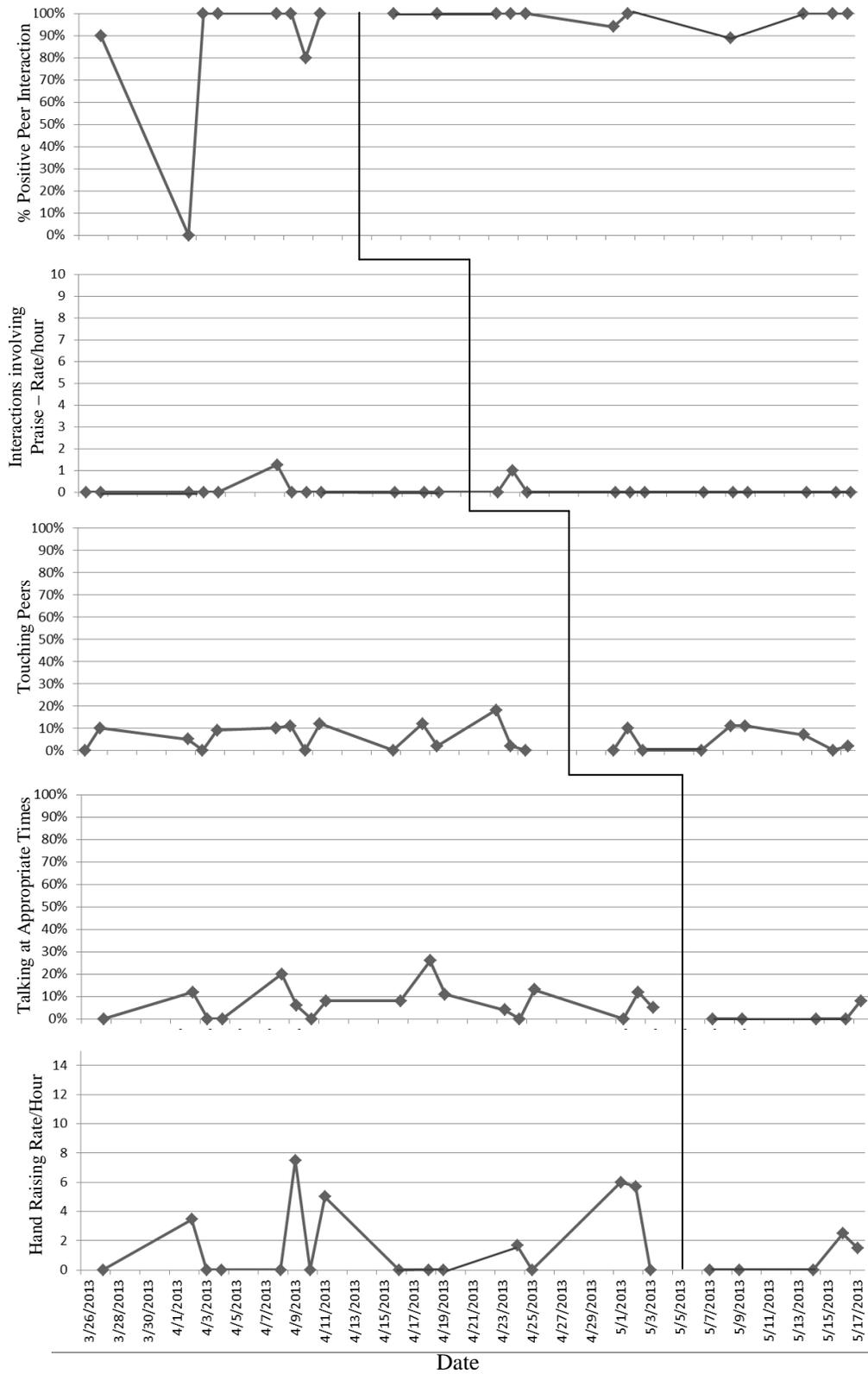


Figure 8. Child 24 multiple-baseline observational data.

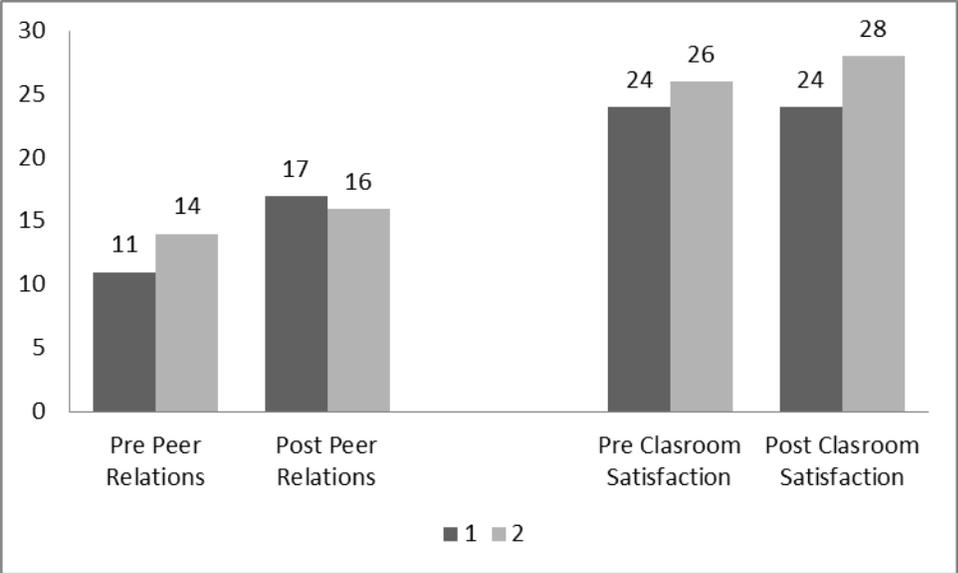


Figure 9. Changes in teacher reported Peer Relations and Teacher Perceived Classroom Satisfaction before and after program implementation.

Table 1

Reliability of Observational Measures

| Classroom 1 | | | |
|--------------------------|---------|------|----|
| Behavior | Range | Mean | SD |
| + Peer Interaction | 89-100% | 95% | 4% |
| - Peer Interaction | 98-100% | 99% | 1% |
| On Task | 77-100% | 87% | 3% |
| Follow Directions | 94-100% | 98% | 2% |
| Praise | 99-100% | 100% | 1% |
| Prompt On Task | 100% | 100% | 0% |
| Prompt Follow Directions | 99-100% | 100% | 1% |
| Prompt Other | 90-100% | 96% | 4% |

| Classroom 2 | | | |
|----------------------|---------|------|----|
| Behavior | Range | Mean | SD |
| + Peer Interaction | 94-99% | 96% | 2% |
| - Peer Interaction | 100% | 100% | 0% |
| Touching | 94-100% | 97% | 3% |
| Talking | 94-100% | 97% | 2% |
| Prompt Hands to Self | 99-100% | 100% | 0% |
| Prompt App. Talking | 99-100% | 100% | 0% |
| Prompt Other | 98-100% | 99% | 1% |
| Praise | 100% | 100% | 0% |
| Rais Hand - No Talk | 99-100% | 100% | 0% |
| Raise Hand - Talk | 100% | 100% | 0% |

Table 2

Success-Rate Difference of Observational Measures

| Classroom 1 | | | | |
|-------------|---------------------------|--------------------------|----------------------------|------------------------|
| Child | Treatment Success Rate | Baseline Success Rate | Success Rate Difference | Confidence Interval |
| 11 | 42% | 39% | 3% | -19-25% |
| 12 | 52% | 38% | 14% | -11-37% |
| 13 | 52% | 38% | 13% | -8-35% |
| 14 | 43% | 41% | 2% | -20-24% |
| Total Class | 47% | 39% | 8% | -2-19% |

| Classroom 2 | | | | |
|-------------|---------------------------|--------------------------|----------------------------|------------------------|
| Child | Treatment Success Rate | Baseline Success Rate | Success Rate Difference | Confidence Interval |
| 21 | 56% | 48% | 8% | -10-25% |
| 22 | 52% | 48% | 4% | -14-24% |
| 23 | 51% | 46% | 5% | -13-22% |
| 24 | 44% | 30% | 14% | -5-34% |
| Total Class | 51% | 43% | 8% | -2-17% |

Note. * = $p < .05$, ** = $p < .01$, + $p < .1$

Table 3

Social Skills Rating Scale scores

| Classroom 1 | | | | |
|-------------|------------------------|-------------------------|---------------------------|----------------------------|
| Child | SSRS Social Skills Pre | SSRS Social Skills Post | SSRS Problem Behavior Pre | SSRS Problem Behavior Post |
| 11 | 94 | 113 | 95 | 100 |
| 12 | 86 | 107 | 84 | 104 |
| 13 | 130 | 88 | 130 | 104 |
| 14 | 130 | 85 | 129 | 107 |

| Classroom 2 | | | | |
|-------------|------------------------|-------------------------|---------------------------|----------------------------|
| Child | SSRS Social Skills Pre | SSRS Social Skills Post | SSRS Problem Behavior Pre | SSRS Problem Behavior Post |
| 21 | 82 | 101 | 118 | 113 |
| 22 | 81 | 101 | 121 | 113 |
| 23 | 88 | 101 | 110 | 113 |
| 24 | 84 | 104 | 112 | 95 |

Table 4
Sociometric Measures

| Classroom 1 | | | | |
|-------------|---------------------|----------------------|-------------------|--------------------|
| Child | Peer Nomination Pre | Peer Nomination Post | Likert Rating Pre | Likert Rating Post |
| 11 | 0.621 | 0.134 | 2.636 | 2.700 |
| 12 | -0.874 | 0.515 | 2.545 | 2.900 |
| 13 | -0.621 | -0.247 | 2.909 | 2.500 |
| 14 | 2.988 | 1.703 | 2.818 | 2.600 |

| Classroom 2 | | | | |
|-------------|---------------------|----------------------|-------------------|--------------------|
| Child | Peer Nomination Pre | Peer Nomination Post | Likert Rating Pre | Likert Rating Post |
| 21 | -2.830 | -1.688 | 1.750 | 1.688 |
| 22 | -1.788 | -1.503 | 2.063 | 2.176 |
| 23 | 0.881 | -0.718 | 2.438 | 2.313 |
| 24 | 0.058 | -0.556 | 2.563 | 2.438 |

Note: Peer nomination scores are reported in terms of z-score differences (negative nomination z-score subtracted from positive nomination z-score) and likert ratings in terms of averages

Table 5

Teacher praise, reward, and reprimand rate/hour

| Classroom 1 | | | | | | | | |
|-----------------|----------------------|------------------------|---------------------|-----------------------|-------------------------|---------------------------|-------------------------------|---------------------------------|
| Behavior | Rate of Praise Range | Rate of Praise Average | Rate of Token Range | Rate of Token Average | Rate of Reprimand Range | Rate of Reprimand Average | Reward: Reprimand Ratio Range | Reward: Reprimand Ratio Average |
| Target Behavior | 0-13 | 3.5 (6.35) | 0-12 | 3 (6.00) | | | | |
| Other Behavior | 0-12 | 6.75 (5.38) | 0-2 | 0.5 (1.00) | | | | |
| Total | 0-18 | 10.25 (7.59) | 0-12 | 3.5 5.75 | 11-35 | 21 (11.58) | 0-.91 | .59 (.42) |

| Classroom 2 | | | | | | | | |
|-----------------|----------------------|------------------------|---------------------|-----------------------|-------------------------|---------------------------|-------------------------------|---------------------------------|
| Behavior | Rate of Praise Range | Rate of Praise Average | Rate of Token Range | Rate of Token Average | Rate of Reprimand Range | Rate of Reprimand Average | Reward: Reprimand Ratio Range | Reward: Reprimand Ratio Average |
| Target Behavior | 0-5 | 2.25 (2.22) | 0 | 0 (0) | | | | |
| Other Behavior | 2-8 | 5.75 (2.63) | 0-2 | 1.25 (.96) | | | | |
| Total | 6-10 | 8 (1.83) | 0-2 | 1.25 (.96) | 10-22 | 13.75 (5.56) | .41-1 | .74 (.25) |

Note: Target behaviors are those behaviors that were currently targeted during that week and behaviors targeted in previous weeks. Other behaviors are any behavior rewarded that was not or had not yet been targeted in the program.