Effectiveness of a Group Theraplay Intervention for Improving the Socio-Emotional Functioning of Children with Developmental Disabilities

by

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Department of Counseling, School, and Educational Psychology
To the memory of my beloved father
Carlos Joel Orduña Sancho
(1939-2014)
Who so deeply valued education.
You left this world but not my heart,
I know you are proud of me.
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ABSTRACT

Children with autism spectrum disorders (ASD) and other developmental disabilities often have difficulties in social interactions that permeate various aspects of their academic and socio-emotional development. Without appropriate intervention, these difficulties can result in peer rejection and social isolation, in turn decreasing participation in experiences that foster social growth. Although social skill training interventions are often the first line of intervention for these difficulties, evidence for their effectiveness is limited, partly due to limited consideration of individual differences in skill deficits and the impact of developmental processes on those deficits. Developmental interventions shift attention away from isolated behaviors and toward understanding and fostering developmental processes that facilitate the emergence of complex social behaviors. The current study involved analysis of de-identified progress monitoring data to examine the effectiveness of Group Theraplay, a developmental intervention, for improving the socio-emotional functioning of children with autism and other developmental disabilities. The database comprised data from children in self-contained special education classrooms across various schools in Western New York. Results suggested treatment-related improvements in measures of socio-emotional competence, global functioning, and prosocial behaviors. Further, observational measures suggested that the enjoyment of and participation in social interactions during Theraplay sessions increased as the intervention progressed. No evidence for generalization of learned behaviors outside the Theraplay sessions was found. Additional findings include construct validity evidence for a measure of global functioning (DD-CGAS) and a measure of prosocial behaviors (Theraplay Interaction Assessment, TIA), and evidence of internal validity for the TIA. Study limitations and future directions for research are discussed.
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CHAPTER ONE

Introduction

The term Developmental Disabilities refers to a collection of chronic conditions arising in early childhood as a result of cognitive or physical impairment, or a combination of the two (Boyle et al., 2011). According to the Developmental Disabilities Assistance and Bill of Rights Act (US Department of Health and Human Services, 2000), the condition must restrict the individual’s functioning in several major life activities. Examples of developmental disabilities include: Autism, Attention Deficit and Hyperactivity Disorder (ADHD), brain injury, Cerebral Palsy, Down Syndrome, Fetal alcohol Syndrome, Intellectual Disabilities and Spina Bifida (Boyle et al., 2011).

According to a recent report (Boyle et al., 2011), the prevalence of developmental disabilities (including ADHD; cerebral palsy; autism; seizures; stammering or stuttering; mental retardation; moderate to profound hearing loss; blindness; learning disorders; and other developmental delays) in the US in children aged 3 to 17 years increased from 12.84% in the period of 1997-1999, to 15.04% in the 2006-2008 period. Considering individual disabilities, although ADHD was found to have the highest prevalence across all years, Autism showed by far the largest relative increase, from a prevalence of 0.19% in 1997-1999, to 0.74% in 2006-2008, an increase of 289.5%. More recent estimates indicate that 1 in 68 children in the US are affected by autism (CDC, 2014), with more than 3.5 million people in the US diagnosed with this disorder (Buescher, Cidav, Knapp, & Mandell, 2014). The lifetime economic cost for a person with autism has been estimated to be between 1.4 million (Buescher et al., 2014), with a US national cost of $236-$262 billion dollars each year (Buescher et al., 2014).
The steady increase in the prevalence of developmental disabilities, in particular autism, together with the high societal and economic costs, highlight the need for appropriate interventions to dampen the impact of developmental disabilities on individuals, families, and society. Because of the Individuals with Disabilities Education (IDEA)’s mandate of providing children with disabilities with a free appropriate education in the least restrictive environment (Lipkin, Okamoto, The council on children with disabilities, & Council on school health, 2015), providing effective interventions within the school is of critical importance in attempting to meet the needs of these children.

Autism Spectrum Disorder (ASD) is characterized by difficulties in social communication and social interactions, as well as restrictive, repetitive behaviors, interests, or activities (American Psychiatric Association, 2013). Children with ASD typically experience difficulties in establishing and sustaining social relationships with others, with specific deficits in initiating interactions, maintaining reciprocity, sharing enjoyment, taking another person’s perspective, and inferring the interests of others (e.g., Greenspan & Wieder, 2009). These difficulties in social interactions have a profound impact on the lives and development of children with ASD. Difficulties in establishing and maintaining meaningful social interactions can lead to children being excluded from peer groups, resulting in further withdrawal and social isolation, and concomitant reductions in opportunities for social growth. Given the paramount importance of social interactions for successful social, emotional and cognitive development (Chen & Rubin, 2011; Doll, Brehm, & Zucker, 2014; Hartup, 1989; Merrell & Gimpel, 2014; Wolfberg, DeWitt, Young, & Nguyen, 2015) interventions that promote healthy social interactions in children with ASD and other disabilities affecting social functioning are of critical importance both within the school setting and in the community.
Statement of the problem

Difficulties in appropriately engaging in social interactions are not restricted to children with ASD; deficits in social skills permeate the life of children with a variety of developmental disabilities, including high-incidence disabilities such as specific learning disabilities (B. Wong, 2011), intellectual disability (Walton & Ingersoll, 2013), emotional disturbance (Siperstein, Wiley, & Forness, 2011) and ADHD (Wehmeier, Schacht, & Barkley, 2010). The term social skills is a broad concept that refers to social behaviors that allow for social interactions to be mutually beneficial and reinforcing (O’Handley, Ford, Radley, Helbig, & Wimberly, 2016), and comprise verbal and non-verbal behaviors necessary for effective interpersonal communication (Rao, Beidel, & Murray, 2008). Just like children with ASD, children with other disabilities that affect social interactions are placed at a developmental disadvantage as their difficulties hamper their ability to engage in the positive interactions with peers and adults that so strongly contribute to social development (Chen & Rubin, 2011; Doll et al., 2014; Wolfberg et al., 2015).

Social skills have thus been an important target of intervention for children with disabilities both within the school and in the community, with social skills training (SST) programs often being the first line of intervention. Despite their popularity, however, a number of meta-analytical studies indicate that SST programs have not consistently been shown to be a particularly strong intervention for children with a variety of disabilities, with effect sizes ranging from very low (Forness & Kavale, 1996; Mathur, Kavale, Quinn, Forness, & Rutherford, 1998; Quinn, Kavale, Mathur, Rutherford, & Forness, 1999), to moderate (Beelmann, Pfingsten, & Lösel, 1994), to high (Schneider, 1992). In addition, the magnitude of the effects tended to vary as a function of the outcome being measured. For example Schneider (1992) found that SST produced the largest effects on measures of social interaction and the lowest on aggression.
and peer acceptance. Likewise, Beelman (1994) reported larger effect sizes for social-cognitive skills and lower effect sizes for social interaction skills and naturally observed behavior, and Denham & Almeida (1987) reported that social problem solving interventions resulted in large effect sizes for measures of social problem solving, but weak effects on behavior ratings, indicating little generalization effects to naturalistic situations.

Similar mixed or limited results have been reported for SST implemented with children with ASD. For example, White et al. (2007), in their review of 14 group-based social skills programs for school-aged children and adolescents with ASD, concluded that the evidence for the efficacy of these interventions is inconsistent, with some studies showing no improvement, and others reporting small to moderate improvement. Similarly, in a narrative review of 10 social skills training programs for children with high functioning autism, Rao and collaborators (2008) concluded that empirical support for SST programs for children with high functioning autism is minimal; although 7 out of 10 of the studies reviewed reported positive effects, concerns related to methodological weaknesses across studies limited claims of their effectiveness. In their meta-analysis of 55 single-subject design studies examining the effectiveness of school-based social skills interventions for children with ASD, Bellini, Peters, Benner & Hopf (2007) concluded that these interventions are minimally effective for children and adolescents with ASD, with small treatment effects and low maintenance and generalization across participants and settings independent of the skills targeted by the intervention. More recently, similar conclusions were reached in a review of social skills training groups for youth with high functioning autism (Cappadocia & Weiss, 2011). In their review comparing three types of social skills training groups (SSTG), Cappadocia and Weiss note that program evaluation these interventions among children and youth with ASD constitute an under-
developed area of research, with relatively few evaluation studies, in stark contrast with the popularity of these interventions. In addition, methodological weaknesses, including the use of unblinded (parent or clinician report) outcome measures may have impacted the outcomes of SSTG studies, possibly inflating their effectiveness. Likewise, Cappadocia and Weiss point out that the heterogeneity of assessment instruments used across studies makes it difficult to compare social skills outcomes across SSTG programs.

A more recent meta-analysis examined the effectiveness of social skills group interventions for children with ASD (Reichow, Steiner, & Volkmar, 2013). Limited to randomized-controlled studies, this meta-analysis comprised five studies that collectively included 196 participants with ASD aged 6 to 21 years old. The authors report an effect size of 0.47 for improvements in social competence and of 0.41 for improvements in friendship quality, with no significant improvements in studies that assessed emotional recognition as the outcome measure. Limitations of this review include a small number of studies and participants, and a high risk of bias due to the parents’ awareness of their child belonging to the control or intervention group. The authors conclude that, although there is emerging evidence of the effectiveness of social skills interventions, more research is needed to be able to draw more robust conclusions.

Several methodological weaknesses have been cited as precluding conclusive evidence to emerge regarding the effectiveness of SST interventions. This includes lack of a consistent definition of social skills, inadequate outcome measures, small and poorly characterized samples (which can result in samples that are too heterogeneous), lack of control groups (including placebo control groups) and randomization, and limited examination of generalization and maintenance of effect (e.g., Cappadocia & Weiss, 2011; Reichow et al., 2013). A particularly
significant obstacle in evaluating the effectiveness of social skills programs is the absence of a consistent definition of social skills across studies and a consequent heterogeneity of outcome measures (Cappadocia & Weiss, 2011; Merrell & Gimpel, 2014). The kind of social skills that have been targeted in SST interventions varies widely, ranging from behaviors that appear relatively easy to execute and are easy to operationalize such as greeting, joining in games, taking turns, giving and receiving compliments, and offering help, to skills that can represent very complex patterns of behaviors and can be difficult to operationalize such as conversational skills (e.g., listening; initiating and maintaining conversations), problem solving skills, exercising self-control, recognizing non-verbal communication, social problem solving, awareness and recognition of feelings, and emotional understanding and expression (Merrell & Gimpel, 2014; Walton & Ingersoll, 2013). Some authors have also included challenging behaviors such as aggression and stereotypic behavior under the definition of social skills because these behaviors interfere with learning and with the use of more appropriate social behaviors (Walton & Ingersoll, 2013).

Having such a heterogeneous group of behaviors targeted in social skills interventions likely impacts their effectiveness because children both within and across disability diagnostic categories can be highly heterogeneous in terms of their difficulties with social interactions. This makes it very challenging to adequately match the intervention to the individual deficits of the child, particularly in the context of group interventions. In addition, deficits in the same overt social behavior may have different underlying causes (e.g., a child may not initiate a conversation because he lacks knowledge of how to do this, or because he lacks motivation), and thus may respond best to different approaches. In this context, Gresham (2001) provides a useful classification of social skills deficits and posits that social skills intervention often fail to match
the social skills teaching strategies with the type of deficit exhibited by the child. According to Gresham’s classification, a skill acquisition deficit exists when the child lacks knowledge for how to execute a given social skill even under optimal conditions, or when the child fails to discriminate which social behaviors are appropriate in specific situations (i.e., a “can’t do” deficit), whereas a social performance deficit refers to the presence of social skills in a child’s behavioral repertoire, but the failure to perform these skills at the expected rate in given situations (i.e., a “won’t do deficit). To be effective, Gresham posits, the type of skill deficit needs to be matched to the strategy used in the intervention. Children with performance deficits do not benefit from being taught a skill that is already in their behavioral repertoires, and interventions that are designed to increase the frequency of a behavior by, for example, prompting or reinforcing its occurrence, will not be useful when an acquisition deficit exists.

Another manifestation of the inadequacy of many social skills programs is the limited (or complete absence) of generalization of learned skills. In their review of social skills intervention for children and adolescents with ASD, White et al. (2007) and Cappadoccia and Weiss (2011) concluded that although some studies have provided evidence that targeted skills can be improved in these children, such improvements tend to be confined to skills that are directly and explicitly taught, with little generalization to other contexts and limited flexible use of the skills. This view is consistent with observations that social skills interventions that are delivered in the setting where the child will use the skill tend to produce higher maintenance and generalization effects (Camargo et al., 2014).

Thus, a failure to match teaching strategies to the child’s deficits and to teach those skills in a meaningful context may strongly contribute to the limited effectiveness of SST approaches. Perhaps most important, however, is the fact that a focus on isolated (and sometimes arbitrary)
behaviors as the target for change reflect a failure to consider the importance of the developmental context in which social skills deficits are observed, as well as the impact that developmental processes have on facilitating the emergence of complex social behaviors. Often, social skills interventions are devoid of a theoretical framework to support their teaching strategies, make accurate predictions and explain mechanisms of change. Consistent with this view, White et al. (2007), in their review of social skill interventions for children with ASD, point out that only a few of the intervention programs included in their review were based on a defined theoretical conceptualization of ASD.

**Purpose of the study**

The present study will examine the effectiveness of Group Theraplay, a developmental intervention, in helping children with developmental disabilities (including autism) improve their socio-emotional functioning. Theraplay is a play-based and interactive treatment method that was modeled on healthy parent-child interactions as the driving force of healthy socio-emotional development. The theoretical roots of Theraplay lie primarily on Bowlby’s attachment theory (Bowlby, 1969). Attachment can be conceptualized as a the affectional bond that infants form with their mother figure (Ainsworth, Blehar, Water, & Wall, 1978), and was posited to serve the evolutionary function of increasing the infant’s likelihood of survival by ensuring his/her physical proximity to individuals that are able to protect him/her (Bowlby, 1969). Theraplay seeks to replicate the range of experiences that are an essential part of healthy parent-child relationships in order to promote the healthy emotional development that, under ideal conditions, unfolds naturally in the context of such interactions.

**Significance of the study**

In recent years, efforts to help children with a number of disabilities improve their social...
functioning have shifted toward incorporating developmental knowledge into theory and practice (e.g., Dawson, 2008; Dawson et al., 2010; Green et al., 2015; Greenspan & Wieder, 2009; Karaaslan & Mahoney, 2013, 2015; Landry, Taylor, Guttentag, & Smith, 2008; Mahoney, Perales, Wiggers, & Bob Herman, 2006; Rogers et al., 2012; Steiner, Gengoux, Klin, & Chawarska, 2013; Webb, Jones, Kelly, & Dawson, 2014; Wolfberg et al., 2015). Within a developmental framework, attention has been shifting away from increasing the frequency of isolated social behaviors and toward understanding the developmental processes that facilitate the emergence of complex social behaviors or patterns of behaviors. One reflection of these efforts is the emergence of interventions that focus on fostering foundational skills, such as joint attention, symbolic play, and language, to ultimately help the child improve social relationships and social functioning (e.g., Greenspan & Wieder, 2009; Mundy, Gwaltney, & Henderson, 2010; Mundy, Sullivan, & Mastergeorge, 2009; Odom, Boyd, Hall, & Hume, 2014; Wolfberg et al., 2015; C. Wong et al., 2015). For example, in the Developmental, Individual-Difference, Relationship-focused model developed by Stanley Greenspan (Greenspan & Wieder, 2009), the primary focus is on improving communication; however, language is conceptualized as a tool to help organize experiences and regulate behavior rather than as an end goal in itself. More specifically, language experience is used to mediate thinking and problem solving, and thus serves to support emotional regulation, which in turn impacts social functioning (Greenspan & Wieder, 2009). One important characteristic of developmental interventions is their belief that learning is transactional (i.e., there are reciprocal and dynamic influences between the child and his/her social environment) and affectively based; thus, intervention strategies typically involve rich, affectively-charged social interactions as the context for learning, and as the driving force for socio-emotional growth. Given these premises, developmental interventions are relationship-
focused, placing a central role on meaningful and reciprocal interactions between the caregiver and the child to promote development.

Another important characteristic of developmental interventions, as mentioned above, is their lack of focus on individual behaviors or skills as the target of change, favoring instead the fostering of more essential developmental processes that underlie particular symptoms or behaviors. This characteristic circumvents the difficulties resulting when interventions attempt to target symptoms that can be highly heterogeneous across or within diagnoses; they also allow the interventions to be flexible enough to help children with a variety of disabilities who may exhibit similar patterns of difficulties, or follow similarly atypical developmental trajectories, regardless of etiology. Because developmental interventions seek to meet the child at his/her current developmental level and to help the child achieve his/her developmental potential, the underlying assumption is that normalized behaviors will naturally emerge as a healthier developmental trajectory unfolds. Thus, rather than attempting to externally modify the child’s behaviors when the developmental foundation that supports such behaviors may be lacking, developmental interventions seek to stimulate and support the emergence of these foundational processes first, essentially promoting healthy socio-emotional development from the inside out.

Although the structural and functional development of the brain during the early years of childhood is not always explicitly incorporated in developmental interventions and the theories that support them, neurodevelopmental processes are of critical importance in providing a foundation for these approaches. It is now widely accepted than an important characteristic of the mammalian brain is that its structure and function is shaped by experience, both during development (e.g., Stiles, Reilly, Levine, Trauner, & Nass, 2012) and beyond (for reviews, see Holtmaat & Svoboda, 2009; Karmarkar & Dan, 2006; May, 2011). This property of the brain is
commonly referred to as experience-dependent plasticity. In his conceptualization of the brain as a dynamic, self-organizing system, Lewis (2005) describes how developmental changes in the brain result from a reorganization of connections (or synapses) between neurons, with these connections evolving and stabilizing based on the activities of the neurons themselves (Lewis, 2005). Lewis points out that brain development involves increasing specification of structure (conceptualized not as individual brain regions but as complex patterns of coordinated activity across brain regions), which in turn permits the emergence of behaviors that are increasingly more organized, efficient, and complex. Moreover, through a mechanism Lewis terms “cascading constraints” structures appearing early in development limit the possible features of later structures contributing to the developmental trajectory of an individual (Lewis, 1997, 2005). Developmental disruptions of earlier structures will thus impact the development of other neural structures, with concomitant deficits in the behaviors that they support. Thus, just like the brain has the potential to progressively develop in an optimal fashion, the possibility of maladaptive plasticity or pathological brain organization also exists, whether as a result of genetic influences, environmental factors, or a dynamic interaction between these two (Singletary, 2015).

Developmental interventions (whether explicitly or implicitly) incorporate the notion of cascading constraints into their approaches, by seeking to meet the individual at his/her current developmental stage, and promoting development in a bottom-up fashion, presumably through fostering experience-dependent plasticity processes to reverse or overcome developmental constraints.

Two aspects of developmental interventions that have particular significance in the context of brain development are the role of early parent-child interactions and the role of emotion in promoting positive development. These two aspects are intertwined. Various authors
(e.g., Cozolino, 2014; Rogers et al., 2012; Siegel, 2015) suggest that the development of neural circuits regulating social and emotional functioning is critically influenced by interpersonal experience in early life, with an emphasis on the role of emotionally attuned, reciprocal communication. Siegel posits that collaborative and attuned communication between the caregiver and the child serves to regulate the child’s emotional states, and that these reciprocal interactions are “required for the experientially-influenced maturation of the infant’s developing emotional and social brain” (Siegel, 2001, p. 73). Similarly, Dawson et al. (2002) described a model for the normal emergence of social brain circuitry during infancy, with an emphasis on the role of early parent-child interactions; more specifically, these authors posited that reciprocal engagement with a caregiver facilitates the specialization of the child’s perceptual systems for social and linguistic information. Schore (2012) has likewise described a model in which early, emotionally rich interpersonal experiences dramatically impact the development of right brain structures (particularly, the orbitofrontal cortex) involved in the processing of emotional information and social interactions, the regulation of affect, and the development of mechanisms for coping with stresses and challenges. At a more basic neurobiological level, Lewis (2005) highlights the role of emotion as a “critical arbiter of neural self-organization in real time, and hence the forge for neural change and stabilization over development” (p. 256). He suggests that emotion (and motivation) play a strong role on basic neural processes underlying learning and plasticity. For example, in the phenomenon of Long-Term-Potentiation (LTP), a mechanism by which a connection between two neurons is strengthened based on patterns of activity between these neurons (and considered to be the substrate of learning and plasticity), both the state of excitability of the post-synaptic (receptive) neuron and the time course of its activation critically influence LTP. To various authors, this implies that the neurochemical excitation that typically
co-occurs with emotional states is critical for learning and plasticity (Lewis, 2005a). At a molar level, observations such as this suggest that events with no emotional significance are unable to maintain attention or arousal long enough for learning to occur (Lewis, 2005a, 2005b); emotion has also been proposed to modulate the allocation of attention (Yiend, 2010), thus facilitating learning.

The present study used the group modality of Theraplay in an attempt to improve the socioemotional functioning of children with developmental disabilities. As a developmental, play-based, relationship-focused intervention, Theraplay encompasses the principles of developmental interventions outlined above, attempting to provide corrective experiences that facilitate socio-emotional development through harnessing the power of experience-dependent brain plasticity. Group Theraplay is an extension of individual Theraplay that promotes relationship building among therapist and children, as well as among the children in the group. Like individual Theraplay, it seeks to increase self-esteem and trust, and to enhance feelings of safety in relationships by facilitating the experience of positive connectedness to others (Booth & Jernberg, 2009). As a group intervention, it is well-suited for implementation within the school, thus allowing the therapist to attempt to meet the needs of several children at once, while harnessing the power of peer relationships to support development. Currently, there is very limited evidence documenting the effectiveness of Group Theraplay for students with developmental disabilities within the schools. The current study seeks to bridge this gap by documenting the potential effectiveness of this approach, and to identify areas that may need to be addressed in future research involving this or similar developmental interventions within the school to help promote the socio-emotional development of children with disabilities.
Definition of terms

**Joint Attention.** Episodes during which a child and an adult are focused on the same object, and both participants are aware that the attentional focus is shared. Joint attention is considered one of the earliest steps in social development and an essential aspect of reciprocal interaction (Zampini, Salvi, & D’Odorico, 2015).

**Autism Spectrum Disorders.** A group of neurobiological disorders characterized by impaired social interaction and communication and by restricted and repetitive behavior (Vismara & Rogers, 2010).

**Developmental Intervention.** An intervention approach in which children’s learning needs are derived from assessments of their developmental skills and taught in the sequence in which typically developing children learn and acquire behaviors (Vismara & Rogers, 2010).

**Social Skills.** Refers to social behaviors that allow for social interactions to be mutually beneficial and reinforcing (O’Handley et al., 2016).

**Socioemotional Competence.** The ability of children to successfully interact with other children and with adults in a way that demonstrates an awareness of, and ability to manage, emotions in age- and context- appropriate manner (Naglieri, LeBuffe, & Shapiro, 2011a).

**Parental/Maternal Responsiveness.** Refers to parental behaviors toward their children characterized by contingent responding, reciprocity, affect and an interactive match or quality of stimulation (Karaaslan & Mahoney, 2015).

**Pivotal Behaviors.** Behaviors that are central to wide areas of functioning, such that a change in the pivotal behavior will produce improvements across a number of behaviors (Koegel, Koegel, & Carter, 1999; Mahoney, Kim, & Lin, 2007).
Non-Directive Play Therapy (NDPT). A type of play therapy in which Carl Roger’s nondirective therapeutic principles are applied to therapeutic work with children. It is based on the belief that play is the natural platform of children to express themselves, and that children should be trusted to explore and resolve their problems freely through the use of play. This type of play therapy is known as Child-Directed Play Therapy (CCPT) in the United States of America, whereas NDPT is the preferred term in the United Kingdom.

Theraplay. A developmental, relationship-focused, play-based, interactive treatment method that is modeled on healthy parent-child interactions and relationship as the driving force for healthy socioemotional development (Booth & Jernberg, 2009)
The revolution in developmental pragmatics (i.e., the study of language and communication development in social context) that occurred in the 1980’s brought to the forefront the importance of the social context (including the central role of the caregiver) in language learning, as well as the role of the child as an active social participant in the learning process (Prizant, Wetherby, Rydell, Wetherby, & Prizant, 2000). With this, the importance of deriving individualized goals and teaching strategies based on the child’s current abilities, strengths and weaknesses in designing interventions was also emphasized. These influences had a significant impact not only for the field of speech-language pathology, but also for the field of special education, and bolstered the creation of developmental interventions to help children with a number of developmental disabilities, including autism (Prizant et al., 2000). Because of its developmental appropriateness as well as its role as the natural context of learning for children, an important feature of many developmental interventions, including the one to be evaluated in the current study, use play as a vehicle to promote social interactions and foster learning. The present literature review thus focuses first on play as a critical developmental process associated not only with healthy socio-emotional development but also with the emergence of important and complex social behaviors such as language and social communication (e.g., Wolfberg et al., 2015; Wright & Diener, 2012). The effectiveness of traditional play approaches with a variety of populations, including developmental disabilities is then reviewed, followed by a consideration of the conceptual overlap between play therapy and developmental interventions in promoting healthy socio-emotional functioning in children with developmental disabilities, and of the
effectiveness of developmental interventions with this population. Finally, Theraplay and its effectiveness to date are reviewed before introducing the current study.

The importance of play

The importance of play for children’s development has long been recognized, dating back to the writings of Rousseau (1762/1930). This notion was later echoed by 20th century developmental theorists, including Freud (1924), Gessel and Ilg (1947) Erikson (1964), Piaget (1962), Kolhberg (1963), and Vygotsky (1967), who viewed play as a critical element in the experience of children for social, emotional, physical and intellectual development to unfold. More recently, research evidence has emerged supporting the notion that play promotes the development of metacognitive or self-regulation skills (Berk, Mann, & Ogan, 2006; Elias & Berk, 2002; Karpov, 2005; Whitebread, Coltman, Jameson, & Lander, 2009), which have been shown to be strongly associated with subsequent learning and academic outcomes (Blair & Razza, 2007; Moyles, 2014; Veenman & Spaans, 2005) as well as with decreased long-term negative social adjustment outcomes such as rates of arrest and emotional problems (Moyles, 2014; Schweinhart & Weikart, 1998). Likewise, play has been shown to be strongly influential not only in the development of complex cognitive functions such as problem-solving and creativity (e.g., Pellegrini, 2009; Pellegrini & Gustafson, 2005), but also for the development of symbolic representation abilities (e.g., Berk et al., 2006) and for healthy socio-emotional development (Bornstein, 2007). In recognizing the importance of play for healthy development, the United Nations lists it as a specific right for all children, conferring it with equal importance as nutrition, housing, health care, and education (Office of the United Nations High Commissioner for Human Rights, 1989).
Play in therapy

Play was introduced into the therapeutic setting by Anna Freud (1928) and Melanie Klein (1932), who wished to use it as a substitute for verbalized free association when applying psychoanalytic techniques to their work with children. Since then, the use of play in therapeutic settings has evolved tremendously; with developments including the introductions of release therapy by David Levy (1939) and structured play therapy by Gove Hambidge (1955). Both of these approaches involved the structure of play materials by the therapist to induce catharsis; this structured approach contrasted with the psychoanalytic methods, which were not directive in nature. One of the most significant developments in the field of play therapy was marked by Virginia Axline’s use of play to apply Carl Roger’s nondirective therapeutic principles to her work with children (Axline, 1947). Axline believed that play constitutes the natural platform for children to express themselves, and that children should be trusted to explore and resolve their problem freely through the use of play. These views, delivered both through her work and her writings (Axline, 1947, 1949, 1964), strongly contributed to the popularization of play therapy as a treatment modality for children. Later work by Haim Ginnott (1961), Clark Moustakas (1953), Louise Guerney (Guerney, 1979, 1983) and Garry Landreth (1991/2012) further propelled the field forward and contributed to the acceptance and practice of play therapy, in particular, what is now widely known as child-centered play therapy (CCPT, Landreth, 2012).

Following the establishment of CCPT, the field of play therapy continued to evolve dramatically, with many diverse modalities emerging over time, including gestalt play therapy (Oaklander, 1994) cognitive-behavioral play therapy (Knell, 1995), object-relations play therapy (Benedict, 2006), developmental play therapy (Brody, 1992, 1997), and Theraplay (Booth & Jernberg, 2009), among many others (For a review, see Kottman, 2014). Other developments in
play therapy have involved the integration of existing therapeutic approaches. For example, filial therapy integrates family therapy into client-centered approaches and trains parents to act as therapists (Landreth, 2012). Despite the varying theoretical and methodological underpinnings of these diverse approaches, what is common across all play therapy modalities is the belief in play as having essential therapeutic and developmental characteristics that can be used to help children prevent and/or resolve psychosocial difficulties and achieve optimal growth and development (Association for Play Therapy, 2001; Kottman, 2014).

**Effectiveness of play therapy**

Despite its growing popularity and acceptance among clinicians, play therapy has generally not been well accepted by the scientific community and has often being criticized as lacking sound empirical evidence for its effectiveness (e.g., Phillips, 2010). The difficulty in finding supporting evidence for the effectiveness of play therapy stems from several factors, including lack of adequate definitions of play therapy, research methodologies that rely on case studies, small samples and/or uncontrolled studies, and inadequate measures of therapy outcome (Phillips, 2010). Meta-analytic studies provide a way to overcome some of these limitations by combining findings across studies to determine an overall treatment effect (Glass, 1976; M. Smith & Glass, 1977). Over the past 15 years or so, several meta-analytic studies on play therapy have been published and have supported the efficacy of play therapy in a variety of settings and for a wide variety of children’s problem and symptomatology (Bratton, Ray, Rhine, & Jones, 2005; Casey & Berman, 1985; Leblanc & Ritchie, 2001; Lin & Bratton, 2015; Ray, Armstrong, Balkin, & Jayne, 2015).

A comprehensive meta-analysis on the efficacy of play therapy was carried out by Bratton and his collaborators (Bratton et al., 2005). This meta-analysis included 93 controlled
outcome studies using play therapy published between the years of 1953 and 2000. The authors found an overall treatment effect of 0.80 standard deviations, which is considered a large treatment effect. Bratton and collaborators found that using parents in play therapy produced the largest effects. The mean effect size for parent-conducted filial therapy was 1.15 standard deviations, which was significantly different to the 0.72 average effect size found when therapy was delivered by a professional. The duration of sessions provided by professionals was related to outcome effects, with the greatest effects obtained in 35-40 sessions and effect sizes diminishing as session number increased or decreased from this range. Bratton and collaborators report that similar outcomes were obtained with individual and group play therapy when it was provided by a professional (effect sizes of 0.79 and 0.82, respectively); these findings were consistent with those reported in a previous meta-analysis by LeBlanc and Ritchie (2001) and Casey and Berman (1985), and support the notion that children benefit similarly from individual and group psychotherapy. Last, Bratton et al. (2005) reported greater efficacy for therapies using humanistic approaches (non-directive play therapy approaches) than for those using non-humanistic approaches (behavioral, cognitive, and directive play therapy interventions such as board games), although they urged for a cautious interpretation of these findings due to the large difference in the number of studies in these two groups, with 78% of the treatments coded as humanistic.

A more recent meta-analysis focused on one specific modality of play therapy, child-centered play therapy (CCPT, Lin & Bratton, 2015). This meta-analysis included 55 studies published between the years of 1995 and 2010. The authors reported an overall effect size of 0.47 standard deviations, indicating a moderate treatment effect, with significant relationships between therapy outcomes and several study characteristics. These included largest effects for
children under 7 years of age and for treatments that comprised full parental involvement (consistent with Bratton et al., 2005; Casey & Berman, 1985; Leblanc & Ritchie, 2001). In addition, there was some variability in the magnitude of the treatment effect as a function of presenting issue, with the greatest benefits observed for the broad-spectrum behavioral problems (effect size = .48), children’s self-esteem/self-efficacy (effect size = .63), and caregiver-child relationship stress (effect size = .59), all of which were significantly different from the effect size obtained for the category of externalizing behavior problems (.33). Interestingly, a relationship was found between effect sizes and participant ethnicity, with non-Caucasian children benefiting to a greater extent (effect size = .76) than Caucasian children (effect size = .33), suggesting that CCPT may be particularly sensitive to the needs of diverse populations of children, perhaps due to the unconditional acceptance characteristic of the approach, and to the fact that it does not rely on verbalizations.

**Play therapy and developmental disabilities**

There is a paucity of methodologically-sound published research supporting the efficacy of play therapy for special populations, in particular for children with developmental disabilities such as ASD. The majority of published research in this area has comprised anecdotal evidence, case reports, and uncontrolled or inadequately controlled designs. Daniel (2008) posits that perhaps the biggest obstacle for the application of traditional play therapy such as CCPT to the treatment of children with ASD is the long-held view that non-directive play therapy is inappropriate for autistic children because of the differences in play behavior they often display. Children with autism tend to engage in idiosyncratic, stereotyped play that seems to lack the emotional understanding and reciprocity needed for deep interaction with another person (Moor, 2008; Wolfberg, 2009; Wolfberg et al., 2015). They tend to favor playing with objects over
interactions with people and often show a delay or impairment in functional (Williams, Reddy, & Costall, 2001; Zyga, Russ, Ievers-Landis, & Dimitropoulos, 2015) and symbolic (e.g., Baron-Cohen, 1987; J. A. Hobson, Hobson, Malik, Bargiota, & Caló, 2013; Jarrold, Boucher, & Smith, 1996; Manning & Wainwright, 2010; Wolfberg, 2009) play. Daniel (2008) argues that although these difficulties are real and can be perceived as a “brick wall” for the implementation of play therapy with children with autism, they do not necessarily preclude its use with this population. Indeed, he argues, CCPT may be particularly well suited to address some of the therapeutic needs of children with autism, which include a fundamental need for connection, a need to experience his/her own emotions with coherence and clarity, and a need for autonomy and intentionality within his/her social environment, all of which ultimately impact how the child functions (Daniel, 2008). In addressing these needs, Daniel further argues that CCPT has the potential to encourage the natural emergence of playful, social behavior in children with autism (Daniel, 2008). In a similar vein, Josefi and Ryan (2004) identified four pivotal areas affected in autism that CCPT interventions address: joint attention, imitation response, theory of mind, and symbolic and functional play. These skills, typically affected in autism, have been proposed to constitute foundational abilities for the development of more complex behaviors/skills such as language and social engagement/functioning (e.g., J. A. Hobson et al., 2013; Manning & Wainwright, 2010; Mundy et al., 2010; Paul, Chawarska, Cicchetti, & Volkmar, 2008; Paul & Roth, 2011; Rogers et al., 2012; Siller & Sigman, 2002, 2008). Consequently, interventions that address deficits in these skills are likely to have cascading effects in the development of children with autism, by allowing them to engage in experiences that will further promote socio-emotional growth. The following section describes research utilizing CCPT as a therapeutic approach with children with autism.
Kenny and Winick (2000) reported on their use of CCPT with an 11 year old autistic girl, Judy, who presented with noncompliance, aggression and difficulty connecting with others despite having a positive relationship with her mother. The authors describe the therapeutic approach as an integrative one that included not only CCPT as the primary modality, but also parent education and support, as well as directive play therapy to teach social skills. The total duration of treatment was 11 weekly sessions. The authors report positive results of this treatment as evidenced by a reduction in Judy’s irritability as well as in child-parents arguments. Judy’s teacher also reported increased compliance and fewer tantrums and anger outbursts. In addition, the therapist noted increased interactive play, and development of an attachment to the therapist. Of note, the authors report that Judy responded more positively to child-centered play and typically became sullen and much less cooperative when the structured tasks were introduced into the session. Although lacking evidence for the specific source of the observed improvements, the authors posit that they are likely to have arisen from the CCPT component of the approach, as the empathy, warmth and genuine respect characteristics of CCPT may have allowed the child to feel accepted, competent and begin to establish a sense of self-esteem, which may have been lacking due to her reliance in others due to the limitations imposed by her disabilities.

Another case study (Mittledorf, Hendricks, & Landreth, 2001) reports the results of biweekly CCPT sessions with a 5 year old boy with Autism, Brad. He presented with lack of language development, reluctance to connect with others, toileting issues and what the authors describe as a “limited sense of self”. The authors report marked improvement following the 18 month intervention, with a marked increase in Brad’s spontaneous engagement with the
therapist, display of attachment behaviors toward the therapist (such as seeking physical proximity), improvement in toileting behaviors and academic and social improvements at school.

Josefi and Ryan (2004) reported on their quantitative and qualitative analyses of 16 video-recorded sessions of Non-directive Play therapy (NDPT, the term used for CCPT in the United Kingdom) with a 6 year-old non-verbal boy with severe autism. The authors report that the child was able to enter into a therapeutic relationship and displayed progressive increase in his interactions with the therapist, demonstrating attachment behaviors toward him, such as increasing physical contact and dyadic play. Indeed, the authors report an eightfold increase in child-therapist interaction from the first to the last therapy session. Moreover, the authors noted a dramatic improvement in both the amount and the nature of John’s play. Not only did John’s time spent playing increased dramatically, but he also expanded his repertoire of play activities and started seeking activities that required increased joint attention and direct social interactions with the therapist. In addition, John’s interest in toys that had symbolic properties, such as a doll’s house, bottles and toy phones), started to emerge, and it was indeed during his play therapy sessions that John’s symbolic play was first observed ever. The authors posit that these findings are consistent with the hypothesis that engagement in joint attention with others facilitates the development of symbolic abilities in children (e.g., R. P. Hobson, 1995; Mundy, Sigman, & Kasari, 1994). They also emphasize the role of the development of an attachment relationship between John and the therapist as a facilitator of improved social interactions and engagement, suggesting that CCPT may provide the rights conditions for this attachment to develop.

An additional case study of the use of NDPT in a child with autism was provided by Carden (2009). This case study documents the therapeutic gains of a 10 year old child with
autism, Lisa, who presented with self-harming behaviors. Over the course of a year, Lisa received weekly sessions of individual NDPT followed by filial therapy and a story-making narrative. According to the authors, Lisa was able develop a trusting relationship with the therapist and developed a willingness to communicate, which in turn resulted in a marked decrease in self-harming behaviors as she was able to communicate the triggers to her anxiety; she also displayed improvements in her development of perspective-taking as well as an increased ability to cope with her anxiety.

More recently Salter, Beamish and Davies (2016) reported on the effects of CCPT on the socio-emotional development of three children with autism aged 4-6 years. Treatment focused on targeting goals set by parents and involved 10 weekly, individual therapy sessions. Both quantitative and qualitative data were collected. The measures used for collecting quantitative data were The Adaptive Behavior Assessment System, Second Edition, Parent Form (Harrison & Oakland, 2003) and the Developmental Behavior Checklist Parent/Carer (DBC-P, Einfeld & Tonge, 2002) with the informal measures consisting of Goal Attainment Scaling (GAS) and weekly parent reflection narratives. The authors report that all three children improved in several areas of social and emotional functioning as evidenced by changes in the scores on the formal measures administered. In addition, the children progressed in the specific goals for therapy set by their parents. Changes in the nature of the child’s play throughout the sessions were also reported, with decreasing amounts of functional play and increasing amounts of symbolic play, including socio-dramatic play. The authors posit that the children’s improvement was fostered by the CCPT sessions through the use of joint attention, imitation response, theory of mind and symbolic and functional play skills.
Proposed mechanisms of change and relation to developmental interventions

A common theme across these case studies is their emphasis on the potential of CCPT to improve socioemotional functioning in children with autism by promoting the development of a strong relationship between the child and the therapist (indicative of a secure attachment) and by facilitating the emergence (or improvement) of skills, such as joint attention and imitation, that are thought to provide a foundation for the more complex skills (including symbolic play) involved in healthy socioemotional functioning. Interestingly, the quality of parent-child interactions and the development of foundational skills that allow the emergence of more complex social and cognitive skills appear to be deeply interdependent. For example, parental sensitivity has been associated both with the quality of parent-child interactions (and the development of secure attachments) and with the development of language, particularly in children who are at risk for language difficulties. The same applies to joint attention, which is both an ubiquitous element in healthy child-parent interaction (Adamson & Bakeman, 1991; Braddock & Brady, 2016) and a precursor of more complex skills such as symbolic abilities, including language development (Braddock & Brady, 2016; Jones, Gliga, Bedford, Charman, & Johnson, 2014; Mundy et al., 2010; Siller & Sigman, 2002, 2008). A remarkable example of these interactive influences was provided in a prospective study (Siller & Sigman, 2002) that examined the relationship between parent’s behaviors while engaging their children with autism, and children’s subsequent language development over a period of 1, 10 and 16 years. The study identified three styles of parental engagement: unsynchronized (to the object or the activity the child was already engaged with), synchronized-demanding (a caregiver’s attempt to re-direct the child’s attentional focus or activity), and synchronized-undemanding (supporting the child’s current focus or activity through reinforcement or comments). The results showed that higher
degrees of parental synchronization during initial play interactions were associated with superior joint attention and language development in children with autism. Moreover, the strongest predictor of language skills gains was the frequency of caregiver’s utterances that were both synchronized to the child’s focus of attention and also undemanding in quality. The authors conclude that their results suggest ‘a developmental link between parental sensitivity and the child’s subsequent development of communication skills” (p.77). Furthermore, the authors note that the interactive styles shown to be most beneficial for language development in their study are closely related to the concept of “child choice” which has been shown to promote language development in children with language delays (McDuffie & Yoder, 2010) and children with behavioral problems (Shogren, Faggella-Luby, Bae, & Wehmeyer, 2004) and is an central aspect of child-centered play therapy. Child-choice has also been incorporated into various social-pragmatic (developmental) interventions that seek to improve the communication skills of children with autism and other developmental disabilities by considering the child’s motivation and shared control over materials and tasks as basic intervention parameters (e.g., Dawson et al., 2010; Greenspan & Wieder, 2009; Karaaslan & Mahoney, 2013).

**Developmental interventions**

In addition to considering child’s choice and the role of the caregiver as essential intervention components, social-pragmatic interventions are based on an understanding of typical development and on the belief that learning is transactional (i.e., there are reciprocal influences between the child and his/her social environment) and affectively based; emotional expression and affect sharing are thus considered central to this interactive learning process (e.g., Greenspan & Wieder, 2009). As such, developmental interventions typically use rich, affectively charged social interactions as the context for language learning. These social interactions typically occur
in natural contexts, either during scheduled play activities or as playful interactions with the
caregiver during activities of daily living. Given their belief in the central role of affect in
driving learning, developmental interventions are relationship-focused and family involvement is
crucial. They emphasize that affective interactions and attunement allow children to learn to
build trusting relationships, in turn providing the foundation for social, cognitive and
communicative growth (Greenspan & Wieder, 2009).

A prototypical developmental approach is the Developmental, Individualized,
Relationship-orientated (DIR) model, developed by Stanley Greenspan (2009), which focuses on
helping children with autism and other communication disorders improve social reciprocity and
functional/pragmatic communication. The model is typically comprehensive, intensive, and
multi-disciplinary in approach, and although it is not considered play therapy per se, it
incorporates play as an essential component of meaningful interactions to support development.
The model attempts to understand and systematize what Greenspan considers the essential
functional developmental capacities of the child, by gauging the child’s current functional
emotional developmental level, his/her individual differences in sensory reactivity, processing
and motor planning, and the nature of the child’s relationships with caregivers. The information
from these areas is then integrated to generate a functional developmental profile that captures
the child’s unique patterns of developmental strengths and weaknesses and guides the design of
an individually-tailored intervention program. The goal of the program, as stated by Greenspan
is to “enable children to form a sense of themselves as intentional interactive individuals to
develop cognitive, language and social capacities from this basic sense of intentionality, and to
progress through the six functional developmental capacities” (Greenspan & Wieder, 1999, p. 7).
It does so through the establishment and nurturing of relationships that create interactive,
affective opportunities to gradually progress through the six developmental levels proposed by Greenspan.

One important characteristic of the model is that it does not focus on isolated behaviors or skills. Rather, it targets the more essential developmental processes that underlie particular behaviors. For example, children with autism often lack foundational skills for interpersonal experiences that allow the development of more complex cognitive and social skills. Thus, the earliest therapy goals for children with autism are to mobilize shared attention, engagement and reciprocal communication (verbal or not verbal) to facilitate the emergence of meaningful and reciprocal interactive experiences between the caregiver and the child. According to Greenspan, it is through these experiences that children can abstract a sense of self and form higher cognitive and social capacities (Greenspan & Wieder, 1999, 2009; see Vismara & Rogers, 2010 for a review).

**Effectiveness of developmental interventions**

A number of peer-reviewed studies have examined the effectiveness of Greenspan’s DIR/Floortime model for improving the socio-emotional functioning and improving the developmental trajectory of children with autism and other developmental disabilities. Solomon, Nechless, Ferch and Bruckman (2007) incorporated the DIR/Floortime model into their PLAY (Play and Language for Autistic Youngsters) Project Home Consultation Program (PPHC) program. In this parent-training program, parents learned to engage their children in a contingent and reciprocal way for a minimum of 15 hours per week (either during scheduled play sessions or during daily activities such as bath time, bedtime, and mealtime), with support from home consultants that used modeling, coaching, video assessment and written objectives to help implement and refine the parents’ skills during monthly home visits.
The primary outcome measure used to evaluate children’s progress was the Functional Emotional Assessment Scale (FEAS, Greenspan, 2001), a valid and reliable, age-normed, clinical rating scale that can be applied to the videotaped interactions between children with autism and their caregivers. On this scale, the higher the scores, the more functional the child’s behavior and the higher the child’s developmental level. Solomon et al. reported that, over the one-year course of the intervention, there was a seven point, statistically significant, increase in the average FEAS scores of the sixty-eight children involved in the intervention, with 45.5% of the children making “good to very good” functional development progress while enrolled in the study. Unfortunately, there are several methodological limitations that warrant caution when interpreting the results of this study. First, and perhaps most important, is the fact that there was no control group, and thus the effects of maturational processes or other uncontrolled variables (such as concurrent interventions many children were receiving at school) on the outcome measure could not be ruled out. Second, the sample included middle- to upper-middle-income families, with a large percentage of well-educated parents and intact families, clearly compromising the external validity of the results. Third, because the home consultation project was part of a broader program that included medical consultation, advocacy and referral to community resources, treatment effects may potentially be due to any of these other components of the intervention, or to a combination of these components, rather than to the parent-training intervention alone. Fourth, the lack of a placebo treatment makes it impossible to discern whether the parent-training intervention was responsible for the changes observed, as the potential effects of increased parental attention or even increased time at play may have impacted the outcomes.
A randomized controlled study carried out by Pajareya and Nopmaneejumruslers (2011) in Thailand partially addressed some of the limitations of Solomon et. al’s (2007) study. In this study, the DIR/Floortime intervention was added to the routine care of children with ASD (24 to 72 months of age). Participant children were randomly assigned to either a control group that continued their routine care (which in Thailand consists primarily of ABA interventions) or the DIR/Floortime-supplemented treatment. As in Solomon’s study (2007), the intervention was carried out entirely with the parents, who received training on how to implement the play skills and the theoretical principles of the approach, including how to observe their child’s cues, follow their children’s leads and how to implement the Floortime techniques that were appropriate for their child’s current level of functional development. Child-parent interactions during play were assessed using the Functional Assessment Scale (FEAS, Greenspan, DeGangi, & Wieder, 2001) applied to videotaped child-parent interactions at the first and last session of the study. The Child Autism Rating Scale (CARS) and the Functional Emotional Developmental Questionnaire (FEDQ), a questionnaire completed by parents to rate their child’s development, were used as secondary outcome measures. The results showed an improvement of 7 points in the primary outcome measure (the FEAS) over the three-month treatment period, compared to the gain of 1.9 points for children in the control group, a statistically significant difference. Similar improvements were reported in the secondary outcome measures, with children in the DIR/Floortime intervention displaying significantly greater gains than children in the control group for both in the CARS (gains of 2.9 points in the intervention group compared to .8 in the control group) and the FEDQ (gains of 7.7 points in the intervention group compared to .8 in the control group). Notably, as pointed out by the authors, similar improvements in the FEAS scores as those in Solomon’s study, even though the current intervention was much shorter than
Solomon’s (three months vs. 12 months). The authors point out that possible reasons for this is that children in their study had lower baseline scores than those in Solomon’s study, preventing the possibility of a ceiling effect, and allowing the intervention to address more basic capacities such as regulation and attention. Similarly, perhaps as a result of a culture that is less child-focused, parents in this study started out with lower levels of skills with regards to interactions with their children, with the majority of parents indicating that they did not know how to play with their children, whereas parents in Solomon’s study were generally able interact with their children in a reciprocal and contingent manner, with 85% of those parents rated as “appropriately interactive”; thus, parents in Pajareya & Nopmaneejumruslers’ study had more opportunities for improvement. Limitations of this study included some degree of “contamination” due to varying types and amount of additional interventions in both the control and the experimental group, as well as the lack of a placebo control group to rule the effects of factors such as increased parental attention.

A more recent study by the same authors (Pajareya & Nopmaneejumruslers, 2012) extended the DIR/Floortime intervention to one year. Outcome measures were identical to those used in their previous study (Pajareya & Nopmaneejumruslers, 2011) as was the intervention methodology, except for the continued parent training and feedback required by the more extended intervention. The authors report statistically significant increases in median FEAS and FEDQ scores (7.75 and 9 points, respectively) and significant decreases in median CARS score (3 points) for the children involved in the intervention. According to the scaled FEAS scores, 47% of the children were deemed to have made good improvement, with 23% making fair progress and 29% making poor progress. Notably, the authors report a significant correlation between the gain in FEAS scores following treatment and the children’s CARS score at baseline,
indicating that the less severely affected the children, the more they benefited from the intervention. It should be noted that this study lacked a control group entirely, and has the same limitations as these authors previous study (Pajareya & Nopmaneejumruslers, 2011), namely lack of a placebo control group and contamination due to various degrees and types of additional interventions in most of the participating children.

A recent study (Liao et al., 2014) investigated the effects of a parent training DIR/Floortime intervention in Taiwan. Participants were 11 boys with autism, 45-69 months old and their mothers. Children’s IQ’s ranged from 67 to 122. Following parental training on the DIR model and how to implement its principles, participating mothers were instructed to play with their child at home for a minimum of 10 hours per week using the principles learned as well as the manual provided. Outcome measures were the FEAS to estimate level of functional development, and the Vineland Adaptive Behavior Scale, second edition (VBAS-II) to estimate adaptive functioning. The authors reported significant improvements in the total scores and the six domain scores of the FEAS, with an effect size of .49 for the overall score and effect sizes ranging from .3 to .58 for the six domain scores. In addition, children improved in their adaptive functioning, particularly in the domains of communication and daily living skills. There were statistically significant improvements in the overall score of the VBAS-II as well as in the domain scores of communication, daily living skills, and social, with effect sizes ranging from .43 to .52.

Other social-pragmatic, relationship-focused approaches have been used in clinical practice to help promote the socio-emotional development of children with autism and other developmental disabilities. Mahoney and collaborators (Karaaslan & Mahoney, 2013, 2015; 2005) developed a relationship-focused model known as Responsive Teaching (RT) to instruct
mothers of children with autism or other developmental disabilities to interact with their children in a more responsive/sensitive manner. The RT model is a manualized curriculum that asserts that the positive effects on development observed after increased responsive interactions are mediated by their impact on “pivotal developmental behaviors” such as attention, persistence, interest, initiation, cooperation, joint attention and affect. As such, the RT curriculum targets 19 pivotal behaviors that are thought to constitute core processes for cognitive, communication and socioemotional development, and have found to be influenced by maternal responsiveness (Karaaslan, Diken, & Mahoney, 2013; Karaaslan & Mahoney, 2013, 2015).

Two randomized controlled trials studies examining the effects of a Responsive Teaching intervention (Karaaslan et al., 2013; Karaaslan & Mahoney, 2013) were carried out with Turkish mothers and their preschool children with disabilities (Down syndrome, developmental delay, and ASD). Children in the control group received standard preschool classroom services, while those in the RT group received biweekly RT parent–child sessions in addition to standard services. Across the two studies, mothers in the RT group increased their responsiveness by 82%, compared to only a 17% increase in the control group. These increases were associated with increases in their child’s pivotal behavior (81% increase in the RT group compared to 18% in the control group). Furthermore, children in the RT group significantly improved their developmental functioning, with an average of a 16-point increase in their developmental quotients, compared to only a 3-point average increase for children in the control group.

Karaaslan and Mahoney (2015) conducted a mediational analysis using data from their two randomized controlled trials of a parent mediated RT intervention in order to determine whether increases in maternal responsiveness mediate the increases in pivotal behaviors and/or the observed improvements in children’s language and social development. The results indicate
that while increases in maternal responsiveness had no direct role in mediating the effects of the
intervention on children’s development, they still appeared to play a critical role in the
intervention; increases in maternal responsiveness were highly associated with increases in the
frequency of children’s pivotal behaviors. In turn, increases in pivotal behavior were found to
mediate changes in children’s language and social development.

Relationship-focused approaches thus capitalize on the strong influence that parental
responsiveness or sensitivity can have on various aspects of development including cognition
(Blair & Raver, 2012; Landry, Smith, & Swank, 2006; Landry, Smith, Swank, & Guttentag,
2008; Landry, Taylor, et al., 2008), language (McDuffie & Yoder, 2010; Siller & Sigman, 2002,
2008; Tamis-LeMonda, Kuchirko, & Song, 2014) and socioemotional behavior (Karaaslan &
Mahoney, 2015; Kochanska, Forman, Aksan, & Dunbar, 2005; Kochanska, Forman, & Coy,
1999). Notably, parental sensitivity also has a strong impact on the development of a healthy
attachment between caregiver and child (Bakermans-Kranenburg, Van Ijzendoorn, & Juffer,
2003), with concomitant benefits in socioemotional development. The following section will
review literature pertinent to Theraplay, a developmental intervention that is the focus of the
current study and that seeks to enhance attachment between parental and child as a means to
promoting healthy socioemotional development.

**Theraplay**

Theraplay is a developmental, relationship-focused, play-based, interactive treatment
method that is modeled on healthy parent-child interactions as the driving force for healthy
socioemotional development. Although Theraplay shares several characteristics of social-
pragmatic approaches, particularly a central role of affect as facilitator of developmental growth,
the use of developmentally-sensitive approaches, and a focus on relationships (Booth &
Jernberg, 2009), Theraplay has a somewhat divergent developmental history as it traces its roots to attachment theory. The concept of attachment was introduced by Bowlby (1969) and refers to “a disposition to seek proximity to and contact with a particular individual and to do so particularly in certain conditions” (Bowlby, 1988, p.27). Attachment can be conceptualized as the affectional bond that infants form between themselves and their mother figure (Ainsworth et al., 1978) and was posited by Bowlby to serve an evolutionary function in increasing the infant’s likelihood of survival by ensuring his/her physical proximity to individuals that are able to protect him/her.

Bowlby (1988) conceptualized attachment as a behavioral system that seeks to maintain homeostasis through the activation of “any behavior that results in a person attaining or maintaining proximity to a clearly identified individual who is perceived as better able to cope with the world” (p.88). This behavioral system is activated, and therefore more obvious, when the person is frightened, fatigued, or sick, and is assuaged by comforting and caregiving. Based on her research observing mother-child interactions in Uganda, Mary Ainsworth described the existence of secure and insecure patterns of attachment in infants, and developed the concept of a secure base (Ainsworth, 1967). Ainsworth posited that when infants are securely attached, they are able to separate from their attachment figure for exploration and return to this figure as a secure base, a place where they know they can return for comfort and protection should this be needed during exploration. Ainsworth later devised the strange situation, an experimental protocol in which young children are briefly separated from an attachment figure in a new environment and in the presence of a strange person. The child’s behavior during exploration, separation and reunion with the caregiver are then observed. Based on these observations, the child’s attachment to her caregiver is classified as secure or insecure (Ainsworth, 1971). These
patterns of attachment, which are shaped during the first year of life, are known to be strong definers of the quality of the child’s relationships later in life, thus continuing to impact socio-emotional functioning and development (Ainsworth & Parkes, 1991; Sroufe et al., 2005).

Theraplay has as a primary goal the development of secure attachments between parent and child. It was developed by Ann Jernberg and Phyllis Booth in the late 1970’s as a directive, relatively short-term intervention to help children with a variety of problems. Theraplay actively involves parents and children in sessions to promote the development of a secure attachment in order to allow for healthy development to emerge. The sessions involve the therapist, the child, and the caregiver.

In order to promote secure attachments, Theraplay seeks to replicate the types of interactions that occur in healthy parent-child relationships. The core concepts of Theraplay sessions thus overlap with the defined characteristics of healthy parent-child relationships and involve the sessions being (a) Interactive and relationship-based; (b) a here and now-experience; (c) guided by the adult; (d) Responsive, attuned, emphatic and reflective; (e) Geared to the preverbal, social, right-brain level of development; (f) Multisensory, including the use of touch; and (g) Playful (Booth & Jernberg, 2009). One important characteristic of Theraplay is that through attunement and the use of activities that involve movement and sensation, it promotes the child’s ability to self-regulate, as the right brain is known to be involved in both attuning to the social environment and regulating the state of the body (e.g., J. R. Schore & Schore, 2008). This idea is consistent with the concept of “embodied self-regulation” (Cook-Cottone, 2016), which suggests that the way we experience our bodies and feelings affects how we think and experience the world. Embodied self-regulation practices include approaches such as mindful-self-care and yoga (Cook-Cottone, 2016). Theraplay could thus be potentially conceptualized as
an embodied self-regulation approach inasmuch as it uses embodied actions and attunement to promote regulation of internal (emotional and arousal) states within the Theraplay interactions.

In addition, Theraplay sessions incorporate four dimensions that, under ideal conditions, are characteristic of the daily interactions between mother and child and promote the child’s ability to regulate his/her internal states. These dimensions are (a) Structure: refers to the parent/therapist provision of clear rules, directions, and boundaries, conveying a message of safety and organization as the child perceives the adult as reliable and predictable. (b) Engagement: refers to the ability of the adult to facilitate the child’s participation in playful, attuned interactions that strengthen their connection and provide shared joy; (c) Nurture: the adult is warm and comforting, responding empathetically to the child’s attachment needs and promoting self-esteem by helping the child feel accepted and loved; and (d) Challenge: in the context of play and the provision of a secure base, the adult encourages the child to take risks and explore, fostering confidence and helping the child to enjoy mastery (Booth & Jernberg, 2009).

**Effectiveness of Theraplay**

Theraplay has been used with a variety of populations and target problems, including internalizing behaviors such as withdrawal, depression, and shyness; externalizing behaviors such as anger and non-compliance; relationship and attachment problems, and in helping children with developmental disabilities, including autism (Booth & Jernberg, 2009). In addition, because of its focus on relationship building and attachment, Theraplay has been used with foster and adoptive families (Makela & Vierikko, 2004) as well as in shelter settings with mothers and children who have experienced domestic violence (Bennett & Ryan, 2006). Despite its growing popularity, most accounts of Theraplay’s efficacy consist of anecdotal reports of
clinical cases, case studies or uncontrolled studies. For example, Makela and Vierikko (2004) reported improvement in internalizing and externalizing symptoms in children in long-term foster care in Finland following 8 sessions of Theraplay intervention; with these improvements being maintained at 6 month follow up; however, a significant limitation of this study was the lack of a control group.

There appear to be three peer-reviewed publications on the effectiveness of individual Theraplay. In the first one, seeking to improve the articulation skills of children with articulation disorders, Kupperman, Bligh and Goodban (1980) implemented a Theraplay intervention in which target phonemes were embedded in the sessions’ play activities. Following 10-12 sessions of Theraplay delivered over a period of six weeks, all six children participating in treatment decreased their articulation errors, with an average reduction of 10.8 error items. Although the design of this study was not experimental and there was no control group, the relatively short time required to observe an effect, together with the observation that these children had failed to make progress with other approaches, were noted by the authors as providing support to the possibility that the Theraplay intervention, rather than maturational effects alone, was responsible for the improvements observed.

The second peer-reviewed publication reports the results of two studies designed to examine the efficacy of Theraplay in treating children dually diagnosed with language disorder and shyness/social anxiety (Wettig, Coleman, & Geider, 2011). In the first study, which the authors called the controlled longitudinal study (CLS) children were selected from a single medical center in Germany and treated by the same therapist. The clinical sample for this study consisted of 22 children (14 males, 8 females), with a mean age of 4 years, 1 month. The second study was designed to examine the generalizability of therapy effects and included 167 children
(107 males, 60 females, mean age 4.6 years) from a pool of children referred to nine separate medical centers across Germany and Austria (and thus treated by different therapists); this was labeled the Multicenter study (MCS). A single group consisting of 30 children (22 males, 8 females) with a mean age of 4.6 years and no history of language, behavioral or neurological disorders served as the control group for both studies. The measure used to evaluate treatment effects was German version of the Clinical Assessment Scale for Children and Adolescent Psychopathology (CASCAP-D; (Döpfner, Berner, Flechtner, Lemkuhl, & Steinhausen, 1999), a diagnostic rating measure that uses a Likert scale across 96 behavioral and psychiatric symptoms. This measure was administered prior to treatment and re-administered post-treatment and at follow up.

For the CLS, the authors report that at pre-test, children in the clinical group scored worse than the control group in all variables except for lack of self-confidence. After an average of 18 Theraplay sessions, the between-group differences in overall shyness/timidity, overadaptation/conformity, and mistrust/suspiciousness disappeared, although significant differences remained for attention deficit, poor cooperation, social seclusion/withdrawal and expressive and receptive language problems (although there was a trend toward improvement in these areas). When examining the pre-treatment to post-treatment changes for the clinical group, significant improvements were found for all variables except expressive language disorder and lack of self-confidence. These effects were found to be maintained at the two-year follow up.

Similar effects were found for the MCS, with statistically significant differences between the clinical and control group at pre-test in shyness/timidity, attention deficit, poor cooperation, overconformity, and mistrust/suspicion disappearing at post-test. In addition, although statistically-significant between-group differences remained for social withdrawal, lack of self-
confidence, and both expressive and receptive language, repeated measures analyses indicated a significant improvement for all variables from pre-test to post-test in the clinical group.

An important limitation of this study was the lack of clinical control and placebo control groups. Although the authors argue that, given the magnitude of the improvements in the clinical group in a relatively short time, the effects were unlikely to be due to maturation alone, this possibility cannot be ruled out without a waitlist control group. In addition, the lack of a placebo control group makes it impossible to attribute the effects to the Theraplay intervention per se as opposed to co-varying factors such as increased social interactions or increase parental attention.

Although difficult to evaluate due to the possibility of maturation effects, one surprising result pointed out by Wetting and collaborators (2011) was the improvements in receptive and expressive language abilities of the treated children. Although language development is not an explicit goal in Theraplay, this approach, like Greenspan’s DIR/Floortime (e.g., Greenspan & Wieder, 1999), seeks to capitalize on affectively-charged parent-child interactions to improve relationships and promote development. Thus, it is possible that the same mechanisms proposed to be at play in the implementation of the DIR/Floortime approach (Greenspan & Wieder, 2009) could account for the improved language abilities of children in the Wetting study.

More recently, Hiles Howard and collaborators (Hiles Howard, Lindaman, Copeland, & Cross, 2018) examined the effectiveness of a 2-week intensive Theraplay intervention in a sample of eight autistic children. During the two weeks of the intervention, each parent-child dyad participated in two 30-minute Theraplay sessions with a trained Theraplay therapist. Measures included a child-and parent- behavior sheet completed by the Therapist at the end of each session, as well as qualitative analyses of behaviors observed during videotaped Theraplay
sessions. Parent-child dyads also participated in three structured observation sessions during which the quality of the parent-child was assessed using the Marschak Interaction Method (MIM). The MIMs occurred pre-treatment, post-treatment and at 3-month follow up. The authors reported that parent-child dyads scored significantly higher at the post-test MIM as compared to the pre-test. In addition, a number of parent and child interaction behaviors improved as the intervention progressed, including parental responsivity and use of facial expression and affect, as well as gaze fixation for both parent and child, and child’s ability to accept parental guidance and attend to the tasks. Limitations of the study included lack of control group and use of non-standardized measures of behavior to assess change.

In recent years, the Theraplay model has been expanded beyond individual therapy to incorporate models that involve more than one family within the sessions (Munns, 2000) or groups of children with similar needs (Atkinson et al., 2009; Munns, 2000). In an innovative integration of Theraplay with Family systems therapy, Weir and collaborators (2013) introduced Whole Family Theraplay (WFT) for the treatment of children in adoptive families. The model was devised with the goal of helping adoptive families by increasing attachment and improving relationships among all family members. In this approach, the authors bring together elements from various family systems approaches that converge with elements of Theraplay, particularly Structural Family Therapy (Minuchin, 1974) and Experiential Family Therapy (Nichols, 2006). For example, the authors state that the directive nature of Theraplay and the dimensions of attachment (particularly structure and engagement) fit well with structural family therapy’s goals of the directive use of the “self-of-the-therapist” to facilitate change (Minuchin, 1974). Similarly, the authors point out that Theraplay and Experiential Family Therapy share their focus on the here-and-now and their attunement to the family’s emotional needs. In a pilot study
aimed at examining the effectiveness of this approach, the authors recruited 12 adoptive families from a local community. Family sessions involved both parents, the adoptive child and any biological sibling(s) in the family. Measures to evaluate change were administered before and following the intervention and included the McMaster Family Assessment device (FAD), as a measure of various aspects of family’s systemic functioning; the Outcome Questionnaire-45 (OQ), as a measure of parent’s outcomes in three aspects of functioning (symptoms distress, interpersonal relationships, and social role); and the Youth Outcome Questionnaire 2.01 (Y-OQ) as a measure of various aspects of children’s functioning. Due to missing data, only the data from seven families was analyzed. The authors reported that the intervention resulted in improved family communication, parental interpersonal relationships, and children’s behavioral functioning as evidenced by significant differences between the pre- and post-test scores in the communication scale of the FAD, the interpersonal relations scale of the OQ, and the total score of the Y-OQ, respectively. Although this study has important limitations, particularly a small sample and lack of a control group, it represents an innovative integration of Theraplay with family systems therapy of potential value for foster and adoptive families.

**Group Theraplay**

Group Theraplay is an extension of individual Theraplay that offers a collective approach to relationship building by allowing children to experience playful and caring interactions with a group of peers, guided and supported by the therapist, who acts as a coach, leader, and participant (Booth & Jernberg, 2009). Group Theraplay shares individual Theraplay’s goals of increasing self-esteem and trust by experiencing positive experiences of connectedness to others. The activities for each group are chosen to target specific goals for the group, such as improving cooperation or enhancing self-control, and are organized around four group rules (no hurts, stick
Together, have fun, and the leader is in charge) and two groups rituals (checkups and food share). These serve to communicate the Theraplay dimensions of nurture, challenge, engagement and structure (Booth & Jernberg, 2009).

Two studies (by the same author) examining the effectiveness of Group Theraplay have been published in peer-reviewed sources. Siu (2009) examined the effectiveness of Group Theraplay in children with internalizing difficulties. Within a school setting in Hong Kong, China, 46 children in grades 2-4 were randomized to a Theraplay intervention group, or a waitlist control group. The intervention involved 8 weekly Group Theraplay sessions conducted at the school, with each session lasting approximately 40 minutes long. The sessions were led by certified Theraplay therapists; during the first few sessions, mothers participated in sessions as observers, subsequently joining as participants in later sessions. In additions, mothers watched videotaped sessions and were given therapist’s feedback regarding their child behavior. The Child Behavior Checklist (CBCL, Achenbach, 1991) was completed by each child’s mother before and after the intervention and used as a measure of change. In order to be able to participate in the study, children needed to reach clinically significant scores in the internalizing behavior composite of the CBCL. The authors report significant between-group differences in the mean scores of the CBCL internalizing composite following the intervention, indicating that the scores of children in the intervention group decreased significantly across the two measurements, whereas the scores of children in the control group did not change. This suggests that Theraplay was effective in reducing symptoms of internalizing problems. One important limitation of this study was the fact that the CBCLs were completed by the children’s mothers, who were aware of the goals of the intervention; as such, the possibility of the post-tests CBCL scores reflecting mothers’ expectations of symptom improvement cannot be ruled out. The small
sample size limits the generalizability of the results, and the lack of a placebo control group limits conclusions regarding specific effects of Theraplay versus factors such as increased time spent with peers, therapist, or parents.

A second study by Siu (2014) examined the efficacy of a Group Theraplay intervention with children with developmental disabilities in a special education school setting in China. The participants were 38 students (35 boys and 3 girls; age was unreported) with developmental disabilities, reported by their teachers as being extremely poor at initiating interactions, expressing themselves, working cooperatively, and following simple rules in games and activities. The children were randomly assigned to the intervention group (n=13) or a waitlist control group (n=15). The Theraplay intervention was implemented by teachers (each group of 4-5 children being led by 2 teachers), who received basic training in both individual and Group Theraplay, supervision during the first few sessions of the intervention, and feedback on activity planning and the skills needed to conduct the session. The intervention consisted of at least 20 weekly, 30-minute sessions conducted over the course of one school year. The social functioning of the children was measured before and after the intervention using the Social Responsiveness Scale (SRS, Constantino, 2005; Constantino et al., 2003) a 65 item, Likert-Type scale that measures the frequency of social behaviors and is divided into five clinical subscales (social awareness, social cognition, social communication, social motivation, and autistic mannerism). These were completed by teachers who were blind to the status of each children in the study. The authors reported statistically significant improvements at post-test in all four analyzed subscales of the SRS for children participating in the intervention but not for those in the control group. Limitations of the study include small sample sizes and the lack of a placebo control group to assess the specificity of the treatment effects.
Current study

As conveyed in this literature review, there is a paucity of research studies examining the efficacy of developmental interventions within the school to help children with developmental disabilities improve their socio-emotional functioning. Most traditional social skill interventions implemented both within the school and in community settings have proved to be minimally effective. In contrast, the effectiveness of play-based interventions is well documented with a variety of populations and in a variety of settings, including the school. The current study seeks to add to the literature by examining the effectiveness of a play-based, developmental, relationship-focused intervention delivered within the school in fostering the development of socio-emotional competencies in children with developmental disabilities.

Research questions

The following questions will be addressed in this study:

**Research question 1.** Is a Group Theraplay intervention delivered within the school effective for improving the socio-emotional competence and global functioning of children with developmental disabilities in self-contained settings?

*Hypothesis 1: Children participating in the Group Theraplay intervention will improve their socio-emotional competencies and global functioning to a higher extent than those who did not participate. This will be reflected in higher scores post-intervention for measures of socio-emotional competence (DESSA-Mini), global functioning (DD-CGAS) and pro-social behaviors (Theraplay Interaction Assessment, TIA; in-group observations).*

**Research question 2.** Is the Theraplay intervention differentially effective for children with Autism Spectrum Disorders as compared to children with other developmental disabilities?
Hypothesis 2: Children with ASD will benefit from a Group Theraplay intervention to the same extent as children with other developmental disabilities. This will be reflected on the observation of similar pattern of improvements for both children with ASD and children with other developmental disabilities in measures of socio-emotional competence (DESSA-Mini), global functioning (DD-CGAS) and pro-social behaviors (Theraplay Interaction Assessment, TIA; in-group observations).

Research question 3. Do any improvements in socio-emotional competence resulting from the Theraplay intervention generalize outside the specific Theraplay setting, for example, can improvements be observed during spontaneous interactions during lunch or free time?

Hypothesis 3: Children participating in the Group Theraplay intervention will display improved social interactions outside the therapy setting, such as during free time or lunch time within the school. This will be reflected in higher scores on observational measures of social behaviors outside the Theraplay setting following children’s participation in the Group Theraplay intervention.
Method

Research Design

The current study involved analysis of de-identified progress monitoring data obtained in the context of a school-based intervention for children in fourteen special education classes across 26 school districts in Western New York. This intervention was delivered as part of the special education services for these children provided by the Board of Cooperative Education Services Consortium (BOCES) of Erie County. Parental consent was obtained for each child prior to their participation in the Theraplay intervention and progress monitoring activities, in accordance with school district’s policy. The data collected included paper and pencil measures of socio-emotional competence, functional impairment, quality of interactions within the classroom, as well as observational measures of social behaviors during interventions sessions and outside of sessions to assess generalization. The analysis of these data was deemed by the University at Buffalo’s Institutional Review Board (IRB) to be exempted from review; it falls into the category of “not-human-subject research” due to the de-identified nature of the data and to the fact that the author of this dissertation did not take part in data collection or the delivery of the Theraplay intervention.

Participants

A total of 102 students in self-contained special education classes in grades Kindergarten to 12th participated in this intervention. Information regarding age was only available for 56 participants. The average age of these 56 participants was 10.4 (range = 5 to 18 years), with a standard deviation of 3.44 years. No data related to race/ethnicity or socio-economic status was available in the database. All children were in special education classes classified as 6:1:1, 8:1:1,
or 12:1:1 (# of students, 1 teacher, 1 aide). Within the special education setting, children could belong to either “Academic” or “Core” classes. Core classes included students with moderate to severe disabilities requiring a highly structured environment, and who tended to have significant cognitive deficits (IQ < 70). These classes concentrate on functional academics, life skills and work readiness skills. Core classes are not divided into grades; therefore, each Core class could include children of a variety of ages. Based on a subset of 26 children in the core classes for whom age information was available in the database, the average age for children in these classes was 12.5 years (range 5-18 years), with a standard deviation of 3.8 years. Academic classes concentrate on academic skills and achievement according to the New York State education standards. Services received include individual and group counseling, a comprehensive behavioral management system, and a learning environment rich with positive reinforcement and rewards. Academic classes participating in the Theraplay intervention included students in grades K through 8th. Based on a subset of 30 children in the Academic classes for whom age information was available in the database, the average age for children in these classes was 8.6 years (range 5-18 years), with a standard deviation of 1.7 years. Each participating class had at least one student identified with autism. Although the intervention service was primarily for children with autism, the BOCES administration and teachers felt that the service would benefit the entire class, which resulted in inclusion of children with other special education classifications; these classifications included Emotional disturbance, Intellectual disability, Speech or Language Impairment, Learning disability and Other Health Impaired.

Procedures

Randomization. The fourteen participating classes were randomized to one of the two therapists by a third party using a lottery method. Next, classes were randomized for the time of
intervention, either fall or winter, for each therapist separately. At the times when the Group Theraplay intervention was not being provided, teachers received consultation services regarding their student(s) with autism.

**Data collection.** Data were collected at three points in time: (a) in the fall prior to any student participating in the intervention (Time 1, T1); (b) in the winter, following the end of the intervention for the Fall intervention group and prior to the start of the Winter intervention group (Time 2, T2); and (c) in the spring, following the end of the intervention for the Winter intervention group, and as a follow up measurement for the fall intervention group (Time 3, T3). Because the Winter intervention group did not participate in treatment between T1 and T2, it served as a control group for the Fall intervention group (see Table 1).

Table 1

*Time frame for data collection and delivery of the Theraplay intervention for the two groups participating in the study.*

<table>
<thead>
<tr>
<th></th>
<th>Time 1 (T1)</th>
<th>Fall</th>
<th>Time 2 (T2)</th>
<th>Winter</th>
<th>Time 3 (T3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall group</td>
<td>Pre-test</td>
<td>Theraplay</td>
<td>Post-test</td>
<td>--------</td>
<td>Follow-up</td>
</tr>
<tr>
<td>Winter group</td>
<td>Baseline</td>
<td>--------</td>
<td>Pre-test</td>
<td>Theraplay</td>
<td>Post-test</td>
</tr>
</tbody>
</table>

**Theraplay Intervention.** The intervention consisted of 11 weekly Group Theraplay sessions, each lasting 30-40 minutes and taking place during school hours and as part of the
children’s special education curriculum. The Group Theraplay program followed the format suggested by Booth and Jernberg (2009) and Rubin (2010). It included a welcome (“hello”) activity, a checkup, game activities based on the four Theraplay dimensions and arranged to meet the specific goals of the session, a snack sharing activity, and a closing (good-bye) activity. Each group included 6 to 8 children and was led by one Theraplay certified therapist, with participation of the class teacher or another classroom representative. A trained classroom aide was also present for the group sessions and carried out the in-group ratings based on observations of social behaviors as they occurred.

**Measures**

**Devereux Student Strengths Assessment-mini (DESSA-Mini, Naglieri et al., 2011a).** This scale is a standardized and norm-referenced behavior rating scale designed as a tool to help educators, administrators and other professionals working with youth evaluate the socio-emotional competencies of children in Kindergarten through grade 8. The DESSA-mini is an abbreviated version of the Devereux Student Assessment (DESSA, LeBuffe, Shapiro, & Naglieri, 2009) and comprises four parallel forms, each consisting of 8 items selected from sampling of the various scales found in the DESSA. Each item is rated on a five-point scale indicating how often the student has engaged in each of the behaviors over the past four weeks.

The DESSA-mini is not a diagnostic tool, but rather a screening and progress-monitoring tool intending to identify children in need of instruction or intervention in the socio-emotional domain. It provides a way to quantify socio-emotional competence along a continuum ranging from clear need for instruction to proficiency. The scale is strength-based, querying for positive behaviors (e.g., gets along with others), rather than maladaptive ones (e.g., annoys others), and yields a single score, the Social-Emotional total (SET) score which is interpreted as an indication
of the child’s socio-emotional competence based on a comparison to national norms and can be used to compare ratings from teachers across time to monitor progress toward improving socio-emotional competence. All four forms of the DESSA-mini were found to have excellent internal reliability as evidence by Cronbach alpha coefficients exceeding .90; similarly, test-retest reliability coefficients ranged from .88 to .94 for the four DESSA-mini forms. Alternate form reliability values were also found to be excellent, with correlations between alternate forms exceeding .90 values, indicating equivalency across the four versions of the DESSA-mini (Naglieri, LeBuffe, & Shapiro, 2011b). A more recent study of the sensitivity and specificity of the DESA-Mini confirmed internal reliability estimates (Cronbach’s alpha) exceeding .90, as well as high classification consistency (87% to 94%) between the DESSA-Mini and the DESSA, and a high predictive validity, with students identified by the DESSA-Mini as needing Social Emotional Learning (SEL) instruction at the beginning of the year being 4.5 times more likely to have a record of serious disciplinary infraction at the end of the school year than students not identified as having this need (Shapiro, Elizabeth Kim, Robitaille, & LeBuffe, 2017). The DESSA-Mini provides a total score for each student, which is converted into a T-score. T scores of 40 and below indicate a need for SLE instruction, t scores between 40 and 59 are considered to be in the typical range, and t scores of 60 and above are considered indicative of strengths in the socio-emotional competence domain.

**Developmental Disabilities Modification of Children Global Assessment Scale (DD-CGAS, Wagner, Lecavalier, Arnold, et al., 2007).** This instrument is a modified version of the Children Global Assessment Scale (CGAS, Shaffer et al, 1983). It is a clinician-rated scale that measures the degree of functional impairment of children with developmental disabilities 18 years of age or younger in relation to his/her age peers. The DD-CGAS yields a single score,
which reflects the level of impairment (none, slight, moderate, severe, extreme) across four key domains of functioning (self-care, communication, social behavior and school/academic). Just like in the CGAS, the global assessment score ranges from 1-100, where 1 represents the highest level of functional impairment and 100 representing superior functioning. Each decile provides a descriptive category (e.g. severe impairment in functioning in most domains) and examples of behaviors and types of environmental accommodations that might be seen at that level of functioning. Scores above 70 indicate functioning within the range of typically developing children. The DD-CGAS was reported to have excellent inter-rater reliability as shown by an intraclass-correlation coefficient (ICC) of .79; similarly, temporal stability was deemed to be excellent, with test/re-test ICCs for eight testers averaging .86 (Wagner, Lecavalier, Arnold, et al., 2007). Convergent validity was demonstrated by significant correlations between DD-CGAS scores and measures of functioning and ASD symptoms, including the Vineland Adaptive Behavior Scale- Survey Form (VABS), the Assessment of Basic Language Skills (ABLLS), the Aberrant Behavior Checklist –Irritability Scale (ABC-I), and the Autism Diagnostic Interview-Revised (ADI-R) Communication Domain-Nonverbal (Wagner, Lecavalier, Arnold, et al., 2007). Ratings on the DD-CGAS were also shown to be sensitive to treatment change in a small sample of participants with Autism Spectrum disorders taken from a large non-randomized clinical trial (Wagner et al., 2007). More recently, changes in DD-CGAS scores were found to correlate with changes in measures of general communication and ASD symptomatology during treatment in a randomized clinical trial involving adolescents with co-occurring ASD and anxiety disorders (White, Smith, & Schry, 2013). The DD-CGAS might thus be a useful tool to assess change in global functioning in children with developmental disabilities; given that children with developmental disabilities can present with highly heterogeneous symptomatology (both within
and across diagnoses), the assessment of complex, multi-faceted change in core areas of impairment can prove highly valuable in providing a measure of change that is independent of changes in specific symptoms or disorders. Using the DD-CGAS to evaluate these types of changes in functioning is consistent with the philosophy behind developmental interventions, given their focus on developmental processes rather than specific symptoms. In the present study, the DD-CGAS were scored by the clinical Psychologist in charge of the Theraplay intervention, using information provided by each child’s teacher in an interview format. The DD-CGAS is presented in appendix A.

**Theraplay Interaction Assessment (Rubin & Tregay, 1989).** This measure was designed to assess prosocial behaviors emphasized in Theraplay groups; it includes items such as “is kind toward others” “accepts nurturing when given appropriately” and “takes turns willingly during cooperative activities”. The measure is comprised of 10 items (see appendix B). Each item is rated on a scale from 1 to 5, where 1 = never and 5 = frequently. Ratings for each student were obtained by the certified therapist assigned to the student’s class based on information provided by the child’s teacher in an interview format. Because this measure has been used exclusively in clinical settings, its psychometric properties were unknown at the outset of the current study. Data from the current study was used to provide internal reliability estimates as well as construct validity. The results revealed high internal consistency ($\alpha = .90$), indicating that the items in this assessment measure a unitary construct. Similarly, construct validity for this measure was evidenced by significant positive correlations between total TIA and DESSA-Mini scores ($r = .801$, $p < .0001$), and between TIA and DD-CGAS scores ($r = .687$, $p < .0001$) in the current study, indicating convergent validity between the TIA and measures of socio-emotional competence and global functioning.
**Social ratings based on observations.** Two types of observational measures took place for this study. For the “in-group” observations, a trained classroom aide who attended the Group Theraplay sessions observed the degree to which each child exhibited social behaviors during each of the four sections (Greeting, Game, Snack and Ending) of each Theraplay session. Behaviors to be observed/rated were “eye contact,” “verbalization,” or “shake” for the greeting section; “Give” and “Receive” during both the game and the snack portion of the session, and “eye contact,” “verbalization,” or “high-five” for the ending section of the session. Ratings for these behaviors were done in a qualitative manner (e.g., V = student performed the behavior with a verbal prompt, G = participant or child gestured”; see appendix C for measure and specific rating instructions). In addition, classroom aides provided summary ratings for each child in two categories: Participation and Enjoyment. These ratings reflected assessments of each child behavior in these two areas throughout the duration of each Theraplay session (i.e., including all four sections described above). Participation and Enjoyment ratings were done numerically on a scale of 1 to 5 (lowest to highest levels of participation and enjoyment). Specific guidelines used by the raters of this measures are provided in appendix C.

Because observations of social behaviors during the Theraplay intervention involved specifically noting behaviors occurring during each section of the Theraplay session, these observations allowed a measure of treatment integrity as they provided information regarding whether or not all the sections of the intervention took place at each session. Thus, information provided by this measure regarding any missing sections during each Theraplay session was used to assess treatment fidelity.

The second type of observations took place outside the Theraplay sessions with the purpose of assessing generalization of prosocial behaviors outside the therapy setting. These
observations took place during lunch at the school cafeteria, during non-academic free time, or during earned choice time. A classroom aide blind as to the timing of the Theraplay intervention conducted these observations at T1, T2 and T3. Observations were carried out over three consecutive days and consisted of three 10-second behavior observations/ratings for each child. Aides used a record sheet to record a number of behaviors including the type of interaction the student was involved in, whether the student had initiated or responded to an interaction, and whether or not the student made eye contact and/or appeared to enjoy the interaction (see appendix D for full measure and instructions for raters). Analyses for the current study included the two summary measures of students interactions that were most relevant to behaviors that the Theraplay intervention seeks to promote and that matched closely with the in-group observations done during the Theraplay sessions: Enjoyment and Eye contact. Eye contact was recorded as a binary (yes/no) measure by the aides and was converted to numerical values (0=No eye contact noticed; 1= Eye contact noticed) that were included in the database. Enjoyment was rated qualitatively by aides as “-” (no interaction took place, therefore no enjoyment possible), “OK” (interaction occurred “matter of factly”) or “+” (child exhibited verbal and/or nonverbal interest in interacting with another student). These qualitative ratings were converted into numerical values (“-” = 0; OK = 1, “+” = 2) that were included in the database. Data from the three daily observations were averaged for each child to create a daily average; the three daily averages were then averaged for each child to obtain one total value for each data collection (T1, T2, T3). These final values were then used for analyses.

Data analysis

Data analyses were completed using IBM SPSS Statistics Version 24. Pearson’s correlations were carried out to examine possible relationships between DESSA-Mini, DD-
CGAS scores, and TIA scores, which could provide validity evidence for these measures. An internal reliability analysis (Cronbach’s alpha) was carried out for the TIA in order to evaluate the degree to which the measure assesses a unitary construct, given the availability of individual item scores for this measure in the database, and because no prior information regarding internal availability existed for this measure. To examine possible treatment effects, difference scores were calculated for the two standardized measures (DESSA-Mini and DD-CGAS) by subtracting T2 scores from T1 scores (diff 1) and T3 scores from T1 scores (diff 2). Difference scores were then used as dependent variables for independent-samples t-test with Treatment (Fall, Winter) as the independent variable. To further examine the main effects of treatment, diagnosis and class, three-way 2 (Diagnosis: Autism, Other) x 2 (Class: Academic, Core) x 2 (Treatment: Winter, Fall) mixed Analyses of Variance were carried out, using either the DESSA-Mini or the DD-CGAS scores as repeated measure variables. Significance thresholds were set at .05 for all analyses. Because the number of participants included in the various analyses was determined by the available database, power analyses were not carried out a priori. However, the G*power statistical software (Faul, Erdfelder, Buchner, & Lang, 2009) was used to carry out power analyses when predicted differences between groups were observed, to facilitate discussions related to a possible lack of power. Difference scores from T1 to T2 and from T2 to T3 will be calculated and used as the dependent variable for statistical analyses. A variety of statistical procedures were used to test for within and between group differences, including T-tests and repeated measures analyses of variance (ANOVA). Effect sizes (partial eta squared) are provided for statistically significant effects. Due primarily to the fact that some students were absent on one or more of the data collection days, not all students who participated in the Group Theraplay intervention had complete data sets; because it was assumed that missing data was
completely at random, a listwise deletion procedure was used to handle missing data for the two standardized measures (DESSA-Mini and DD-CGAS) or the TIA. This procedure removes all data from a case that has one or more missing values.
CHAPTER FOUR

Results

DESSA-MINI

The majority of the children assessed using the DESSA-Mini (62.8%) had scores falling within the “Need for instruction category” (t scores between 28-40), with 29.1% falling within the “typical” range (t scores between 41 and 59) and 4.8% classified as having strengths in socio-emotional competencies domain (t scores above 59).

To evaluate changes in DESSA-Mini scores as a result of the Theraplay intervention, the difference in scores from T1 to T2 (diff 1) and between T2 and T3 (diff 2) were first calculated. These difference scores were then used to evaluate whether or not score changes differed between the Fall and Winter groups at different time points using t-tests. The results from an independent-sample t-test using difference scores as the dependent variable indicated that mean change in DESSA-Mini scores was greater for participants in the Fall group (N = 24, M = 6.79, SD = 6.01) than for participants in the Winter group (N = 49, M = 1.27, SD = 8.97) between T1 and T2 [t (71) = -2.72, p= .008, d = 0.72), which is the period of time when the Fall group participated in the Theraplay intervention. No statistically significant differences were found between the Fall (M = .56 SD = 8.09) and Winter group (M =1.80, SD = 7.55) for the difference scores between T2 and T3 [t (76) = -6.78, p = .50, d = 0.15); see Figure 1].
To further evaluate the effects of the Theraplay intervention on participants’ socio-emotional competence as measured by the DESSA-Mini, a three-way 2 (Diagnosis: Autism, Other) x 2 (Class: Academic, Core) x 2 (Treatment: Winter, Fall) mixed Analysis of Variance was carried out, using the DESSA-Mini scores as the repeated measure variable (hereafter referred to as the “Time variable”). Data from 70 participants were included in this analysis.

The results from this analysis revealed a significant main effect of time \[ F (2, 124) = 12.078, p < .001; \text{partial eta squared} = .16 \]; pairwise comparisons using Bonferroni adjustments revealed significant differences between the DESSA-mini scores at T1 and those at T2 (\( p < .001 \)) but not between T2 and T3 scores (see Figure 2).
The results also showed a significant interaction between Time and Treatment \([F (2, 124) = 12.078, p < .01; \text{partial eta squared } = .091]\), indicating that DESSA-mini scores changed across time in a different way for participants in the Fall group versus those in the Winter group (see Figure 3).
To further explore these differential effects, repeated-measures ANOVAS were performed separately for the Winter and the Fall groups. These analyses revealed a significant effect of time for both the Winter group \(F(2, 86) = 3.86, p = .025; \text{partial eta squared} = .082\) and the Fall group \(F(2, 38) = 9.91, p < .01; \text{partial eta squared} = .343\).

Pairwise comparisons using Bonferroni adjustments indicated that, for the Fall group, T1 scores differed significantly from T2 scores \((p < .001)\) and from T3 scores \((p = .002)\), while T2 and T3 scores did not differ significantly (See Figure 3). In contrast, for the Winter group, T1 scores did not significantly differ from T2 scores, while T3 scores differed significantly from both T2 \((p = .015)\) and T1 scores \((p = .025; \text{see Figure 3})\). These results suggest that for the Fall group, DESSA-mini scores improved as a result of the Theraplay intervention (which occurred between T1 and T2 for this group). This possibility is supported by the lack of significant changes in DESSA-Mini scores between these two data points for the Winter group (which
received no Theraplay intervention during this time, essentially serving as a control group at this
time interval). Similarly, DESSA-Mini scores increased significantly for the Winter group
between T2 and T3, the period of time when participants in this group received the Theraplay
intervention. During this same period of time, DESSA-Mini scores remained stable for children
in the Fall group, suggesting maintenance of intervention gains following the end of the
Theraplay intervention.

The three-way interaction between Time, Treatment and Class was also found to be
significant \[F (2, 124) = 5.25, p = .006; \text{partial eta squared} = .078\], indicating that the interactive
effects of time and treatment were different for children in the Core and Academic classes. All
other interaction effects were not significant.

Given the statistical significance of the three-way interaction, repeated measures
ANOVA were carried out separately for the Core and Academic classes. For the Academic
class, results from a repeated measures ANOVA revealed a significant effect of time \[F (2, 74) =
13.13, p < .001; \text{partial eta squared} = .262\]. Pairwise comparisons using Bonferroni adjustments
indicate that T1 scores differed significantly from T2 \[p = .001\] and T3 \[p < .001\] scores, with
no significant difference between T2 and T3 scores. As shown in Figure 4, and as indicated by
the lack of a significant interaction between Time and Treatment for this class, participants in
both the Winter and the Fall group exhibited the same pattern of change in DESSA-Mini scores,
suggesting that for children in the Academic class, changes cannot be attributed to their
participation in the Theraplay intervention.
Results of the repeated measures ANOVA for the Core class indicated that main effect of time was not significant [although it was marginally significant; \( F (2, 58) = 2.86, p = .065; \) partial eta squared = .090]. However, the interaction between Time and Treatment was statistically significant [\( F (2, 58) = 10.25, p < .001; \) partial eta squared = .261], indicating that the changes in DESSA-Mini scores across time were different for participants in the Winter and Fall groups.

To further examine this interaction, separate repeated measures ANOVAs were carried out for the Winter and the Fall groups in the Core class. The results revealed a significant effect of Time for both the Winter group [\( F (2, 26) = 6.23, p = .005; \) partial eta squared = .28], and Fall group [\( F (2, 26) = 6.48, p = .005; \) partial eta squared = .33], with different patterns of change across time for each of these groups (see Figure 5), as expected given the significant interaction between Time and Treatment described above.
Figure 5. Average DESSA-Mini scores for the Winter and Fall groups in the Core class at the three data collection points (T1, T2, T3). Error bars represent 95% confidence intervals.

Pairwise comparisons for the Winter group indicate that T2 scores were significantly different from T1 (p = .01) and T3 (p = .015) scores, with no significant difference between T1 and T3 scores. For the Fall group, pairwise comparisons indicated that T1 scores were significantly different from T2 (p = .002) and T3 (p = .015) scores, with no significant differences between T2 and T3 scores.

Note that children in the Fall group exhibited a significant increase in their DESSA-Mini scores between T1 and T2, which corresponds to the period of time during which they received the Theraplay intervention; these gains are maintained at T3, suggesting stability of scores at follow up. In contrast, children in the Winter group, who did not participate in the Theraplay intervention between T1 and T2, experienced no improvement in DESSA-Mini scores during this time interval. Indeed, their scores at T2 were significantly lower when compared to those at T1. However, it should be pointed out that DESSA-Mini scores at T1 were significantly higher [t (33) = -4.16, P < .001] for children in the Winter group as compared to children in the Fall.
group, and fell within the “Typical” range of scores (i.e., 41 to 59) for this measure. Despite the significant differences between T2 and T3 scores for the Winter group (who received the Theraplay intervention during this time period), the fact that T1 and T3 scores were no significantly different from each other in this group suggest that changes in DESSA-Mini scores cannot unequivocally be attributed to participation in the Theraplay intervention for this group.

**DD-CGAS**

To examine whether global functioning relates to socio-emotional competencies in individuals with developmental disabilities, a Pearson’s correlation was carried out for the values obtained for the DESSA-Mini and the DD-CGAS (N=81) at T1 (that is, prior to any group participating in the intervention). The results revealed a significant positive correlation between these two measures \[ r = .732, p < .000 \], indicating that children with higher scores in the DESSA-Mini (indicative of better socio-emotional competence) also tended to have higher scores in the DD-CGAS (indicative of better global functioning).

To evaluate possible changes in DD-CGAS scores as a result of the Theraplay intervention, T-tests using difference scores as the dependent variable and group (Fall, Winter) as the independent variable were carried out. The results indicated that mean change in DD-CGAS scores between T1 and T2 was greater for the Fall group (N = 24, \( M = 9.04, SD = 7.49 \)) than for the Winter group (N = 40, \( M = 3.78, SD = 9.97 \)), \[ t (62) = -2.23, p = .029 \], and suggest a treatment effect, given that the Fall group participated in the intervention during this time period. There were no statistically significant differences between the Fall (N=25, \( M=3.28 \ SD=9.611 \)) and Winter group (N = 46, \( M = 2.13, SD = 8.172 \)) for the differences scores corresponding to the time period between T2 and T3 (see Figure 6).
Figure 6. Average DD-CGAS difference scores for each group (Winter, Fall) for the T1 to T2 interval (Mean-Diff 1) and the T2 to T3 interval (Mean-Diff 2). Error bars represent 95% confidence intervals. * Denotes statistically significant differences.

To further evaluate the effects of the Theraplay intervention on global functioning as measured by the DD-CGAS, a three-way 2 (Diagnosis: Autism, Other) x 2 (Class: Academic, Core) x 2 (Treatment: Winter, Fall) mixed Analysis of Variance was carried out, using the DD-CGAS scores as the repeated measure variable (hereafter referred to as the “Time variable”).

The results from this analysis revealed a significant main effect of Time \[F(2, 108) = 25.55, \ p < .001, \text{ partial eta squared } = .32\]; pairwise comparisons using Bonferroni adjustments revealed significant differences between T1 and T2 scores (\(p < .001\)) and between T2 and T3 scores (\(p < .001\)). There were no significant interactions between Time and Class, Time and Diagnosis or Time and Treatment. Power analysis using G*power statistical software (Faul et al., 2009) indicates that power for the Time x Treatment interaction was inadequate (power = .33). This analysis further indicated that, given the p value and effect size obtained here, a sample size of 110 participants would be needed in order to reach a power level of .80 which is
considered appropriate according to Cohen (1988). Figure 7 shows the pattern of change in DD-CGAS scores across time for both the Winter and the Fall groups. Note that in the time period between T1 and T2, children in the Fall group exhibited apparently larger score changes (from $M = 33.7$ to $M = 42.1$) than children in the Winter group (from $M = 44.3$ to $M = 48.6$); however, this difference was not sufficient for a significant time x treatment interaction to emerge, as discussed above. It should also be noted that although the Winter group exhibited higher average DD-CGAS scores at the three data collection points than the Fall group, independent-sample t-tests indicated no significant differences between groups at T1, T2 or T3.

![Figure 7. Average DD-CGAS scores for the Fall and Winter group at each of the three data collection points (T1, T2, T3). Error bars represent 95% confidence intervals.](image)

**Theraplay Interaction Assessment (TIA)**

The Theraplay Interaction Assessment (TIA) was used as a measure of prosocial behaviors that reflect behaviors that Theraplay seeks to promote. Because this measure has not previously used in research settings, no information regarding its reliability and validity was available. Thus, analysis of the data collected through by this measure first involved an internal
reliability analysis (Cronbach’s alpha). Responses from 83 participants (83.3% of the sample) at T1 were used for this analysis. The results revealed high internal consistency ($\alpha = .90$), indicating that the items in this assessment measure a unitary construct.

To examine construct validity for this measure, we examined correlations between total TIA scores and DESSA-Mini scores, and between TIA total scores and DD-CGAS at T1. The results indicate a significant positive correlation between TIA and DESSA-Mini scores ($r = .801$, $p < .0001$), and between TIA and DD-CGAS scores ($r = .687$, $p < .0001$). These indicated that the TIA correlates strongly with both a measure of socio-emotional competence and a measure of global functioning, providing evidence of construct validity for this measure.

Given the high internal consistency for the TIA, total scores were used as a measure of prosocial behaviors. To evaluate possible changes in TIA scores as a result of the Theraplay intervention, T-tests using difference scores as the dependent variable and group (Fall, Winter) as the independent variable were carried out. The results indicated no significant differences between the Fall ($N = 34$, $M = 5.98$, $SD = 7.65$) and the Winter group ($N = 43$, $M = 3.15$, $SD = 9.07$) for the time period between T1 and T2. However, the mean change in TIA scores between T2 and T3 was greater for the Winter group ($N = 47$, $M = 6.5$, $SD = 12.42$) than for the Fall group ($N = 32$, $M = .625$, $SD = 10.16$) ($t (77) = 2.23$, $p = .028$), suggesting a treatment effect given that the Winter group participated in the intervention during this time period (see Figure 8).
Figure 8. Average DD-CGAS difference scores for each group (Winter, Fall) for the T1 to T2 interval (Mean-Diff 1) and the T2 to T3 interval (Mean-Diff 2). Error bars represent 95% confidence intervals. * Denotes statistically significant differences.

To further evaluate the effects of the Theraplay intervention on prosocial behaviors as measured by the TIA, a three-way 2 (Diagnosis: Autism, Other) x 2 (Class: Academic, Core) x 2 (Treatment: Winter, Fall) mixed ANOVA was carried out, using the TIA scores as the repeated measure variable (hereafter referred to as the “time variable”). The sample for this analysis included 40 participants for the Winter group and 27 for the Fall group.

The Mauchly’s test of sphericity was statistically significant (Mauchly’s W = .825; p = .004), indicating that the condition of sphericity was not met. Therefore, the Huynh-Feldt adjustment was used when interpreting the results of this analysis.

The results from this analysis revealed a significant main effect of time [F (2, 118) = 15.06, p < .001; partial eta squared = .203]; pairwise comparisons using Bonferroni adjustments revealed significant differences between the TIA scores collected at T1 and those collected at T2 (p < .001) but not between T2 scores and T3 scores (see Figure 9).
The results also indicated that the interaction between Time and Treatment was not significant \( F(2, 118) = 2.74, p = 0.07; \) partial eta squared = 0.044; this suggests that changes in TIA scores over time were not related to the Theraplay intervention. A power analysis was carried out using the G*power statistical software (Faul et al., 2009). This analysis yielded a power of 0.57 for the sample size used, indicating inadequate power. Power analyses further indicated that a sample size of 110 participants would be needed in order to reach a power level of .80, which would be considered appropriate (Cohen, 1988). Thus, the possibility of a type II error cannot be ruled out.

To explore potential difference in patterns of score improvement across time in the Fall and Winter group, separate repeated measures ANOVAs were carried out for the Fall and Winter group. The results indicated a significant effect of time for both the Winter \( F(2, 52) = 7.31, p = 0.003; \) partial eta squared = 0.158] and the Fall \( F(2, 52) = 18.65, p < 0.0001; \) partial eta squared
Pairwise comparisons indicated that for the Winter group, T1 scores differed significantly from T3 scores (p=.008), with no other contrasts been significant. For the Fall group, T1 scores differed significantly from T2 scores (p < .0001) and from T3 scores (p = .002), with no significant differences between T2 and T3 scores (See Figure 10).

Figure 10. Average TIA scores for the Fall and Winter group at each of the three data collection points (T1, T2, T3). Error bars represent 95% confidence intervals.

The only significant interaction found in this analysis was between Time and Class [F (2, 118) = 4.78, p = .011; partial eta squared = .075], indicating that TIA scores changed across time in a different way for the Academic versus the Core classes independent of treatment group. Given that these differences were independent of the Theraplay treatment and unrelated to any predictions in this study, further examination of these differences was not warranted.

Social Skills In-group Rating Scale

In order to evaluate whether social behaviors during Theraplay sessions increased as a function of time in treatment, the Participation and Enjoyment scores of the Social Skills in-group Rating Scale were used as a dependent measures on two separate repeated measures ANOVA using Treatment (Fall, Winter) as the independent (between-subjects) variable. Data
from the eleven Theraplay treatment sessions were included in this analysis. Data included scores from 86 participants, however due to missing data, mean scores for each session may have included scores from different participants.

The results from these ANOVAs indicated a significant effect of Time for both the Participation \( F (1, 10) = 7.17, p < .001 \) and the Enjoyment \( F (1, 10) = 5.95, p < .001 \) variables, indicating that overall, the degree to which students participated in and enjoyed the Theraplay sessions increased as the intervention progressed (see Figure 11).

Figure 11. Mean Participation and Enjoyment scores as a function of session. Error bars represent 95% confidence intervals.

Because observations of social behaviors during the Theraplay intervention involved specifically noting behaviors occurring during each section of the Theraplay session, these observations allowed a measure of treatment integrity as they provided information regarding whether or not all the sections of the intervention took place at each session. The results indicated that for most of the Theraplay sessions, all sections were carried out. Sections missing were as follows: For Session 1, one group missed one section, section 3 (snack); for session 6, one group missed section 3 (snack) and one group missed section 1 (greeting); for session 7, one
group missed section 3 (snack) and one group missed section 1 (greeting); for session 9, one group missed section 4 (good-bye). Overall, these results indicate that there was good intervention fidelity, at least with respect to the implementation of all four sections of the Group Theraplay intervention at each session.

**Social ratings outside the Theraplay sessions**

Changes in prosocial behaviors exhibited outside the Theraplay session were examined to evaluate possible generalization of prosocial behaviors fostered by the Theraplay intervention. These behaviors were observed during spontaneous interactions that occurred during lunch or other non-academic time. To this end, separate repeated measures ANOVAs were carried out using the Enjoyment and Eye contact ratings as repeated measures, and Treatment (Fall, Winter) as independent (between-groups) variable.

Due to a substantial amount of missing data, only the subset of participants with data for all three measurement times (T1, T2, and T3) were included in the analysis. For the Enjoyment variable, 44 participants (27 for the Winter group, 17 for the Fall group) comprised the sample. For the Eye contact variable, the sample included 47 participants (27 for the Winter group, 20 for the Fall group).

The results indicate that for the Enjoyment variable, there was a significant effect of Time \(F(2, 86) = 6.96, p = .002\), partial eta squared = .14\) with no significant Time x Treatment interaction \(F(2, 86) = 3.06, p = .052\), partial eta squared = .067\). This suggests that although the degree of enjoyment displayed by the participants appeared to increase with time, this change was not related to the Theraplay intervention. A power analysis using the G* power statistical software (Faul et al., 2009) indicated inadequate power (power = .045), and that a sample size of
at least 92 subjects would be needed to achieve a power of .80. Thus, the possibility of a type II error for the Time x Treatment interaction cannot be ruled out.

Results for the Eye Contact variable revealed no significant effect of time [F (2, 90) = .669, p = .515, partial eta squared = .015] and no significant Time x Treatment interaction [F (2, 86) = 1.52, p = .224, partial eta squared = .033]. Power analyses indicated inadequate power for both the main effect of Time (power=.16) and the Time x Treatment interaction (power = .32). Sample sizes of at least 320 and 145 participants (respectively for the main effect and the interaction) would be needed to achieve a power of .80.
Figure 12. Mean Enjoyment and Eye contact scores at each time scores as a function of session. Error bars represent 95% confidence intervals.
CHAPTER FIVE

Discussion

Traditional interventions designed to address social skills deficits in children with developmental disabilities have focused on increasing the frequency or adequacy of social behaviors without consideration of the developmental processes that allow these behaviors to emerge. Given the high heterogeneity of socio-emotional difficulties within and across developmental disability diagnoses, targeting isolated behaviors often results in ineffective interventions due to mismatches between the behavior(s) targeted and the skill deficit(s), as well as between the child’s current developmental level and the abilities he/she is required to display. Accordingly, the effectiveness of social skills training interventions has been shown to be inconsistent. Developmental interventions circumvent these difficulties by shifting their focus away from isolated behaviors and toward an understanding and fostering of developmental processes that allow complex social behaviors to emerge. Although support for the effectiveness of individually-administered developmental interventions, particularly in the early years, has gradually emerged, there is a paucity of research examining the effectiveness of group interventions delivered within the school. The current study seeks to bridge this gap by examining the effectiveness of Group Theraplay, a developmental intervention, for improving the socio-emotional competence of children with developmental disabilities in a self-contained, special education setting. This chapter summarizes the results of the study and draws conclusions based on those findings, while integrating them into the larger body of research related to this topic. Limitations and strengths of the study, as well as future directions for research are also discussed.
Research Question 1: Group Theraplay effectiveness to improve socio-emotional functioning and global functioning.

The first research question for this study sought to elucidate whether a Group Theraplay intervention delivered within the school is effective for improving the socio-emotional functioning and global functioning of children with developmental disabilities in a self-contained setting. The prediction that participants would display higher scores in measures of socio-emotional functioning (DESSA-Mini), global functioning (DD-CGAS) and pro-social behaviors (Theraplay Interaction Assessment, and in-group observations) was only partially supported by the results. In the following, results related to each measure are discussed in detail.

Socio-emotional functioning as measured by the DESSA-Mini

Evidence in support of changes in DESSA-Mini scores as a result of the Theraplay intervention in the current study was equivocal. Analyses of difference scores indicated that the mean change in DESSA-Mini scores between T1 and T2 was greater for the Fall group than for the Winter group, suggesting an effect of the Theraplay intervention on the socio-emotional competence of children (given that children in the Fall group received the intervention during this time period). However, change scores did not differ significantly across groups between T2 and T3, the period of time during which the Winter group received the intervention.

The results from the repeated measures ANOVA were consistent with a treatment effect, given the significant Time x Treatment interaction. Average DESSA-Mini Scores improved significantly following the period of time during which children received the intervention (T1-T2 for the Fall group, T2-T3 for the Winter group), with stability of scores while not receiving the intervention (see Figure 3). However, closer examination of the data given the significant Time x Treatment x Class interaction suggests that the treatment effects were circumscribed to
children in the Core classes (which included students with moderate to severe disabilities requiring a highly structured environment, and who tended to have significant cognitive deficits); although children in the Academic classes improved their DESSA-Mini scores over time, this effect was not specific, with both treatment groups (Fall and Winter) improving their scores in the same manner, that is, independently of the timing of the Theraplay intervention (see Figure 4). This suggests that children in the Academic class may have improved their scores as a result of variables other than the Theraplay intervention, including maturation, classroom acclimation, and other interventions received either within or outside the school setting. For children in the Core class, in contrast, patterns of change in DESSA-Mini scores differed depending on the treatment group (i.e., Winter or Fall), as reflected in the significant Time x Treatment interaction for this subset of children. However, changes only appear to be meaningfully related to the Theraplay intervention for children in the Fall group (N = 14); despite apparent changes in DESSA-Mini scores for children in the Winter group (N = 17) following the time they received the intervention (T2-T3), these changes appear to be an artifact of the reduction in scores occurring for these children at T2 (See Figure 5). Thus, the results presented here suggest that the effectiveness of the Theraplay intervention for improving socio-emotional competencies as measured by the DESSA-Mini is most evident for children in Core classes.

It should be pointed out that within the Core class, DESSA-Mini scores at T1 were significantly higher for children in the Winter group than for those in the Fall group. Indeed, average DESSA-Mini scores for the Winter group fell within the “Typical” range, while those in the Fall group fell in the “Need for Intervention” range. It could be argued that children in the Winter group did not significantly improve their scores because they were already displaying adequate socio-emotional skills, rendering the Theraplay intervention irrelevant to their needs.
Certainly, average DESSA-Mini scores for children in the winter group \((M = 44)\) were not close to reaching ceiling values for this instrument; in fact, these scores were at the lower end of the typical range (with typical scores ranging from 41 to 59), indicating that there was still a lot of room for growth for these scores. However, it is possible that a ceiling effect was reached with respect to the total gains in socio-emotional competencies that the Group Theraplay had the potential to offer (i.e., considering limitations such as the intervention intensity, which will be more fully discussed later in this chapter). This possibility is supported by the observation that the highest average DESSA-Mini score observed post-intervention was 45.27.

A possible explanation for these results is that children with initially lower DESSA-Mini scores benefit to a higher extent from the Theraplay intervention, perhaps as a result of the intervention addressing more basic capacities such as regulation and attention (Pajareya & Nopmaneejumruslers, 2011). Pajareya and collaborators (2011) noted that children in their study obtained similar gains in a measure of socio-emotional development as children participating in a similar but much longer (three months vs. 12 months) intervention (Solomon et al., 2007) and hypothesized that these differences were related to lower baseline scores for children in their study. The data presented here are consistent with that possibility. The nature of the Theraplay intervention, given the strong emphasis in attuned interactions between the therapist and each child is likely to ensure that children who need more help with basic capacities such as regulation and attention receive it.

**Global functioning as measured by the DD-CGAS**

Assessment of treatment-related changes in DD-CGAS yielded some initial evidence for an effect of the Group Theraplay intervention on global functioning. Analyses of difference scores indicated that for the interval between T1 and T2, the mean change in DD-CGAS was
greater for children in the Fall group, who participated in the Group Theraplay intervention during this time interval, than for children in the Winter group, who served as a control group during this time interval (see Figure 6). Treatment-related effects on DD-CGAS scores were previously demonstrated in a sample of adolescents with ASD and comorbid anxiety disorders (White et al., 2013); providing evidence for the sensitivity to change of this measure. The results from the current study provide further evidence of this measure’s sensitivity to change, and thus constitute an important contribution to the literature. This is particularly relevant considering that assessing the effectiveness of interventions for children with ASD and other developmental disabilities has been complicated in part due to the use of inconsistent measures across studies, many of which were designed as diagnostic tools rather than measures of change.

Further examination of treatment effects for the period of time between T2 and T3 however, indicated no significant differences in the mean change in DD-CGAS scores for the Fall (N = 25, M = 3.28, SD = 9.61) versus the Winter group (N = 46, M = 2.13, SD = 8.17).

The results from the repeated measures ANOVA using DD-CGAS scores as the dependent (repeated measures) variable revealed a pattern of change similar to the one just described. The significant effect of time indicated an overall improvement in DD-CGAS across the three data points for all children in the study. However, the lack of a significant interaction between Time and Treatment suggests that this improvement was not driven by participation in the Group Theraplay intervention. Although in the period between T1 and T2, children in the Fall group exhibited larger score changes (from 33.7 to 42.1) than children in the Winter group (from 44.3 to 48.6), this difference was not sufficient for a significant time x treatment interaction to emerge [F (2, 108) = 1.46, p = .236; see Figure 7]. Figure 7 also shows that, for the time period between T2 and T3, the magnitude of change in DD-CGAS was fairly similar for
both groups and smaller than that observed between T1 and T2. Note that just like it was the case for DESSA-Mini scores, DD-CGAS scores at T1 were higher for the Winter group than for the Fall group, although these differences were not statistically significant. Despite this lack of significance, it could be argued that higher initial DD-CGAS scores for the Winter group contributed to the lack of significance for the Time x Treatment interaction, since better initial global functioning could limit the amount of change driven by the intervention (i.e., similar to a ceiling effect). However, treatment-induced changes of similar magnitude to those reported here (i.e., between T1 and T2) have been reported for individuals with ASD and co-morbid anxiety who had initial DD-CGAS scores higher than those in the current study (White et al., 2013). Indeed, mean baseline DD-CGAS scores in White’s study ($M = 58.9, SD = 10.32$) were higher than the highest mean DD-CGAS scores in the present study, even post-treatment ($M = 44.2, SD = 9.17$, overall scores at T3). Those results then indicate that it is possible to have meaningful changes in global functioning as a result of treatment even when initial global functioning is relatively high at the outset of the study. Thus, the initial differences in global functioning across the two groups in the current study are unlikely to account for the apparent lack of treatment effect on DD-CGAS scores observed in the current study.

Another possible explanation for the failure to observe treatment effects on DD-CGAS scores is that the low power (power = .33) obtained for the repeated measures ANOVA precluded the finding of a significant Time x Treatment interaction, that is, the possibility of a type II error cannot be ruled out. Power analysis using G*power statistical software (Faul et al., 2009) indicated that power for the Time x Treatment interaction was inadequate (power = .33). This analysis further indicated that, given the p value and effect size obtained here, a sample size of 110 participants would be needed in order to reach a power level of .80 which is considered...
appropriate according to Cohen (1988). Therefore, it is possible that the lack of Time x Treatment interaction effect reflects a failure to detect such an effect due to low power, rather than an actual lack of effect.

Assuming the lack of significant Time x Treatment effect is real, however, the question remains as to why the overall DD-CGAS scores increased as a function of time but independent of treatment. One possible explanation is that these changes occurred as a result of maturation. However, there is no reason to expect that global functioning would change as a function of age alone. Indeed, White et al. (2013), reported no significant correlation between DD-CGAS scores and participant age in a sample of adolescents between the ages of 12 and 17 years. Another possibility is that changes in global functioning over time were driven by other interventions that participants may have received, either within or outside the school setting. Given that the sample in this study included only children in special education settings, these children likely received a variety of school interventions as part of their curriculum, which may have impacted their level of functioning. It is also likely, given their low level of global functioning, that these children were receiving interventions outside their school setting, which could also have impacted their global functioning independently of the Theraplay intervention.

**Changes in pro-social behaviors as measured by the TIA**

The current study appears to be the first to use the Theraplay Interaction Assessment (TIA) as a measure of change in a research setting. Because the internal reliability of this measure has not been previously evaluated, the high internal reliability reported here (Cronbach’s alpha = .90) constitutes an important contribution to the literature and suggests that the TIA measures a unitary construct. Similarly, because there were no previous reports of validity for this measure, the significant positive correlations of total scores with DESSA-Mini...
and with DD-CGAS provide evidence of construct validity to the TIA, which also constitutes an important contribution.

Similar to what was observed for the DESSA-Mini and the DD-CGAS, analyses of difference scores provided some initial evidence for an effect of the Theraplay intervention on prosocial behaviors as measured by the TIA. These analyses revealed no significant between-group differences in change scores in the period between T1 and T2 (during which the Fall group received the intervention). However, the mean change in TIA scores between T2 and T3 was greater for the Winter group, suggesting an effect of the Theraplay intervention on prosocial behaviors for this time period (given that children in the Winter group received the intervention during this time period; see Figure 8). Note, however, that this pattern is the reverse of that observed for the DESSA-Mini and the DD-CGAS, where significant differences between groups only emerged for the period of time between T1 and T2, with greater mean change scores for the Fall group, which received the intervention during that time period.

The results from the repeated measures ANOVA on total TIA scores suggest an overall increase in pro-social behaviors over time as measured by the TIA scores, although changes were only significant between the T1 and T2 period. The lack of significance for the Time x Treatment interaction suggests no effect of the Theraplay intervention on pro-social behaviors. However, the low power (power = .57) observed for this interaction suggest the possibility of a type II error. That is, it is likely that the small sample size (N = 67) precluded a treatment effect from been detected. Consistent with this possibility, a closer examination of the pattern of change for the Fall and Winter groups (see Figure 10) yielded results consistent with a treatment effect, with significant differences in TIA scores found between T1 and T2 for the Fall group (the period of time when these children received the intervention) but not between T2 and T3,
suggesting stability of scores following the intervention, and therefore possible maintenance of
treatment-induced improvements in pro-social behaviors. The pattern of change for the Winter
group is less consistent with a treatment effect, as scores appeared to increase gradually over
time independently of the timing of the intervention (i.e., the only significant pairwise
comparison was between T1 and T3, that is, the start and end points of treatment). It is possible
that the higher scores at T1 for the Winter group limited the amount of change possible for these
participants as a result of the intervention, and that the gradual changes were due to other
variables, including maturation effects, or the effects of other interventions within or outside the
school setting.

**Observations of pro-social behaviors (in-session)**

Analysis of rating of pro-social behaviors during the Theraplay sessions indicated that
both enjoyment of and participation in the Theraplay sessions increased for all participants as the
intervention progressed. Only one previous study has examined behaviors during Theraplay
sessions to examine change in pro-social behaviors as a result of the intervention (Hiles Howard
et al., 2018). These authors evaluated changes in social behaviors occurring during Theraplay
sessions as the intervention progressed and reported significant improvements on a variety of
behaviors including the child’s willingness to accept parental guidance, responsivity to the
parent, and ability to focus during the Theraplay activities. The results from the current study are
consistent with those in Hiles Howard et al.’s study in that they also show improvements in pro-
social behaviors (as reflected in the enjoyment and participation variables) as the intervention
progressed. One limitation of the results presented here is that ratings were done within
Theraplay sessions that the raters generally attended; therefore, raters were not blind as to the
timing of the sessions and knew the children well, which might have influenced their ratings,
thus introducing unwanted bias into the measurement (but note that the ratings were done as the behaviors occurred, rather than retrospectively, which might reduce the likelihood of biased ratings). Ratings of behaviors based on videotaped sessions might yield more reliable information, particularly as this can facilitate assessments of inter-rater reliability and ensure that raters are blind as to the timing of each intervention session. This might be pursued in a future study, as all the Theraplay sessions related to the current study were videotaped.

Across a number of measures in this study, children in the Winter group tended to have higher baseline (T1) values than those in the Fall group, indicative of better socio-emotional competence (DESSA-Mini), better global functioning (DD-CGAS) and higher frequency of pro-social behaviors within the classroom (TIA). Given that randomization to the timing of the intervention had taken place, these baseline differences across groups were unexpected. It is possible that these differences emerged as a result of randomization occurring at the level of whole classes, rather than individual children. Although randomizing individual children would have been preferable, this would likely have proven unfeasible in the setting of this study, given constraints imposed by the self-contained special education setting. The higher baseline scores in the Winter group resulted in difficulties in the interpretation of the results, particularly given that this group served as a control group during the T1-T2 interval. Higher baseline scores introduced the potential of ceiling effects for the Winter group, which could have impacted differential patterns of growth between groups, thus creating a confounding effect (i.e., confounding treatment effects with ceiling effects). As discussed above for individual measures, ceiling effects appear unlikely given the relatively low scores of children in this study (at least for the DESSA-Mini and the DD-CGAS, the two standardized instruments) and the fact that improvements has been observed for children who start the study with higher values (at least for
the DD-CGAS, White et al., 2013), although ceiling effects relative to the potential benefits that the Theraplay intervention could offer cannot be ruled out.

**Research question 2: Group Theraplay effectiveness across diagnostic groups**

The second research question in this study sought to elucidate whether students with a diagnosis of ASD would benefit from a Group Theraplay intervention to the same extent as children with other developmental disabilities. The lack of a significant interaction between Time and Diagnosis for the DESSA-Mini, DD-CGAS and TIA support the prediction that no differences would be observed in the effectiveness of the Theraplay intervention for children with a diagnosis of Autism versus those with a diagnosis in the “other” category. Given that Theraplay attempts to foster developmental growth rather than targeting specific skill deficits for behavioral modification, it was expected that children with developmental disabilities would benefit from the intervention to the same extent, independently of the specific behavioral deficits displayed. Although the majority of developmental interventions have focused on helping children with ASD (e.g., Dawson et al., 2010; Greenspan & Wieder, 2009), some others, such as Responsive Teaching (RT) have proved effective with other developmental disabilities (e.g., Karaaslan et al., 2013; Karaaslan & Mahoney, 2013). The RT model asserts that the positive effects on development observed after increased responsive interactions (between caregiver and child) are mediated by their impact on “pivotal developmental behaviors” such as attention, persistence, interest, initiation, cooperation, joint attention and affect (Karaaslan & Mahoney, 2015). Theraplay shares with RT a focus on improving attuned responding between parent a child (or between therapist and children and among children in the case of Group Theraplay), and through these interactions, increase the likelihood that the child will display critical (pivotal) behaviors that will in turn foster their development. Although past discussions of Theraplay do
not necessarily incorporate the concept of pivotal behaviors, it appears clear that, through the Theraplay dimensions of nurture, challenge, engagement and structure, pivotal behaviors such as those described in the Responsive Teaching model (Karaaslan & Mahoney, 2015) are being encouraged, including attention (through engagement), persistence (through challenge), interest (through engagement), cooperation (through structure and across other dimensions, and particularly evident in the “stick together” rule of Group Theraplay), joint attention (through all dimensions) and affect (utilized across the Theraplay dimensions).

Consistent with this idea, a recent study reported improvements in joint attention, cooperation, and affect following an intensive Theraplay intervention in parent-child dyads in which the child had an ASD diagnosis (Hiles Howard et al., 2018).

The interactions between Time and Class observed for the DESSA-Mini values suggested that overall levels of socio-emotional functioning may impact the degree to which children benefit from the Theraplay intervention. Although data regarding IQ and age was not available for this study, children in the Core classes could be expected to have lower IQs (given inclusion criteria of IQ < 70) and lower socio-emotional competence (given that these classes are geared toward children who need substantial socio-emotional support). The observation in this study, however, was that children in the Core class were highly heterogeneous in their socio-emotional functioning as measured by the DESSA-Mini. Children who had the lowest average DESSA-Mini scores happened to be placed in the Fall group and did show the clearest pattern of treatment-related effects, which would be consistent with the idea that children with lower socio-emotional functioning benefit from the intervention to a higher extent. Unfortunately, the confounding potential of different baseline scores between groups decreases confidence in this conclusion.
Research question 3: Generalization of learned skills to situations outside the Theraplay setting.

Analyses of social behaviors outside the Theraplay setting indicated no clear effect of the Theraplay intervention on measures of enjoyment and use of eye contact outside the Theraplay setting. Although children appeared to increase their enjoyment during spontaneous social interactions as a function of time (See Figure 12, upper panel), these increases did not relate to the timing of the intervention, and thus might have resulted from other variables such as increased familiarity and comfort with other students across the school year and/or other interventions provided within the school setting. Similarly, there was no evidence indicating that eye contact during spontaneous interactions increased as a result of the Theraplay intervention; this was indicated by the lack of significant effect for both the main effect of Time and the Time x Treatment interaction, as shown in Figure 12 (lower panel). Given that these measures were intended to assess generalization effects, one interpretation of these results is that students were not able to generalize behaviors fostered by Theraplay to a different context. Given that both in-group and out-of-group observations involved rating the degree of enjoyment displayed by participants during interactions, these two measures could be conceptualized as equivalent. During in-group observations, enjoyment increased as a function of the session (see Figure 11); assuming equivalence of the two enjoyment measures, one would expect that if generalization occurred, this would be reflected in increases in enjoyment during out-of-group interactions that were related to the timing of the Theraplay intervention (i.e., T1-T2 for the Fall group, T2-T3 for the Winter group), which was not observed. Although this pattern of results might reflect true lack of generalization effects, it is also possible that both enjoyment measures reflected different constructs; this is particularly likely given the subjective nature of these observations, which
reduces confidence in their validity. Similarly, the reliability of these observations is unknown and likely to be low given that a number of different observers/raters were involved. Similar concerns related to validity and reliability of the observational measures apply to the eye contact observations. Another difficulty with these observational measures is that there were often limited expectations or opportunities for social interaction during the observation periods, since breaks and earned activity time offered primarily individual activities. Performing observations during times that would promote interactions such as board games, Pokemon cards, or joint computer games might have increased opportunities for children to display learned prosocial behaviors. Together with the small number of data points included in the analyses due to missing data, these concerns decrease confidence in the results obtained here and limit the ability to draw valid interpretations from them.

**Possible constraints to intervention effectiveness**

Besides the possibility of inadequate power contributing to the lack of effect for some of the Time x Treatment interactions (e.g., DD-CGAS and TIA), it is also possible that treatment effects were not consistently observed due to factors intrinsic to the Group Theraplay intervention as delivered in this study. One possible variable impacting the effectiveness of the Group Theraplay intervention is its intensity. Since the intervention involved only a total of 11 Group Theraplay sessions, each lasting about 30 minutes in duration, it is possible that the intensity was not sufficient, particularly given the characteristics of the self-contained special education sample of children participating in the current study. A previous study using Group Theraplay in a school setting reported significant treatment effects following only 8 Group Theraplay sessions (Siu, 2009); however the intervention in that study targeted internalizing symptoms in typically developing children, which might have rendered a relatively low intensity
intervention sufficient to produce change. The same authors reported significant effects of treatment on social skills of children with developmental disabilities following at least 20 sessions of Group Theraplay in the schools setting (Siu, 2014). Given that these children attended a special education school, it is possible that such sample more closely resembled the sample in this study, which would be consistent with the idea that a higher intensity intervention might have been needed in order for more consistent treatment effects to be observed.

Another factor that might have impacted the effectiveness of the Group Theraplay intervention in this study was the fact that parents were not involved in the intervention. Results from a meta-analyses indicated that the effectiveness of play-based interventions increases when there is parental involvement (Bratton et al., 2005); similarly, in the context of his DIR model, Greenspan (2009) has emphasized that parental involvement is crucial for an intervention to effect change. Although Group Theraplay interventions do not always include parents, at least partially due to the low feasibility of this practice within the school setting, it is possible that parental involvement in the current study would have rendered the intervention more potent. As discussed above, Siu (2009) reported significant treatment effects following only 8 sessions of Group Theraplay for children with internalizing symptoms. Given that mothers participated in the Group Theraplay sessions, it is possible that this practice boosted the effectiveness of that intervention (although the use of unblinded raters could also have artificially inflated the effectiveness of their intervention).

**Additional findings**

The current study appears to be the first to assess the utility of the DESSA-Mini as a measure of change in socio-emotional competencies in children with developmental disabilities. This measure was designed as a quick-to-administer progress-monitoring tool, and as such it is
appropriate for the evaluation of program effectiveness within the school (Naglieri et al., 2011a). In addition, the fact that it is a strength-based instrument made it an appropriate tool for the evaluation of progress in the skills promoted by the Group Theraplay intervention, as this intervention focuses on fostering development with the goal of providing the foundation for pro-social behaviors to emerge (as opposed to having a focus on behavioral modification). Because the DESSA-Mini has never been used with a special needs population, this study contributes to the literature by providing data on the distribution of DESSA-Mini scores in a sample of children with developmental disabilities in self-contained classes in public school settings. As would be expected, the distribution of scores in this sample is skewed toward the “Need for intervention” category, with 62.8% of children falling within this category, in contrast to 16% in the original standardization sample (Naglieri et al., 2011a). This pattern of results is consistent with the documented socio-emotional deficits in children with developmental disabilities (e.g., Siperstein et al., 2011; Walton & Ingersoll, 2013; Wehmeier et al., 2010; B. Wong, 2011).

The results from the current study also revealed a significant positive correlation between DESSA-Mini scores and DD-CGAS scores at T1 (r = .732, p < .0001), that is, prior to any of the children participating in the Group Theraplay intervention. This correlation suggest that higher socio-emotional competencies are associated with better global functioning and add to the growing body of evidence of convergent validity for the DD-CGAS. Wagner and collaborators (2007) reported evidence of convergent validity between the DD-CGAS and measures of functioning including the Vineland Adaptive Behavior Scale (VBAS), the Assessment of Basic Language and Learning Skills (ABLLS), the Stanford-Binet Intelligence Scale, Fifth Edition (SB-5) and the Leiter International Performance Scale-Revised (Leiter R), as well as with and measures of ASD symptom such as the Aberrant Behavior Checklist- Irritability scale (ABC-I).
and the Autism Diagnostic Interview, Revised (ADI-R). White and collaborators (White et al., 2013) further noted convergent validity between the DD-CGAS and a measure of ASD-related disability, the Social Responsiveness Scale (SRS, r = .388, p = .032). These previous studies included participants with ASD, consistent with the fact that the DD-CGAS was developed specifically for use with this population (Wagner, 2008); as such, previous convergent validity was sought and demonstrated with measures of ASD symptom severity (Wagner, Lecavalier, Arnolds, et al., 2007; White et al., 2013). The results from the current study contribute to the literature by demonstrating convergent validity between the DD-CGAS and the DESSA-Mini, a strength-based measure of socio-emotional competencies, which is conceptually distinct from measures of symptom severity. The results also expand the validity of this measure for use with a broader range of individuals with developmental disabilities beyond ASD.

**Limitations**

There are a number of limitations in this study, which should be acknowledged. First, this study involved behavior ratings or observations that were carried out by teachers and aides who were not blind as to the treatment group each child belonged to (i.e., Winter and Fall) or the (Theraplay) session number each child was participating in (i.e., for the in-group social ratings). Thus, the possibility that bias was introduced and influenced the results cannot be ruled out. It should be pointed out, however, that a recent study indicated that only 16% of the variance in DESSA-Mini ratings could be attributed to raters and some of this variance could be overcome with appropriate rater training (Shapiro, Elizabeth Kim, Accomazzo, & Roscoe, 2016).

Second, and related to the above, inter-rater reliability was not assessed in this study and may have impacted the ratings and the results obtained. DD-CGAS ratings were generated by the two clinicians administering the intervention based on information provided by teachers.
Since the reliability between these two raters is unknown, it is possible that this might have introduced unwanted variability to the data, in turn interfering with the ability to detect a treatment effect. Potentially low inter-rater reliability likely was an important factor for the DESSA-Mini ratings and might account at least partially for the differences in initial DESSA-Mini scores for students in the Winter group as compared to the Fall group.

Third, although the results presented here did not indicate generalization, it should be noted that the measure of generalization used here had limited evidence of validity and reliability. Although raters received training and had specific instructions, the subjective nature of the observations and the multiple raters involved likely added unwanted variability to this measure of generalization. In addition, given that the intervention was delivered in the school setting, a stronger measure of generalization would have involved observations or rating of social behaviors outside the school setting. For example, using parents-completed questionnaires regarding their children’s behaviors outside of school and collected at T1, T2 and T3 might have been a more meaningful measure of generalization, particularly if parents were blind as to the timing of the Theraplay intervention for their child.

Fourth, the fact that no placebo control group was used makes it difficult to attribute between group differences to the Theraplay intervention per se, as differences may result from other aspects that correlate with the intervention such as receiving extra attention or having more opportunities to interact with peers in non-academic activities. The inclusion of a placebo control group might have strengthened any claims of treatment-related effects specific to the Theraplay intervention.

Fifth, it should be pointed out that the DESSA-Mini was standardized using a sample of students in regular education classroom for children in Kindergarten through eighth grade. The
sample in the current study involved only students with developmental disabilities in a self-contained setting. As such, the psychometric properties of the measure might be different for this sample. Some participants in the current study exceeded the 8th grade; however, given their special education status, it is likely that even the higher grades in special education were equivalent to or below the 8th grade in terms of functioning levels.

**Strengths**

This study also included a number of strengths. First is the fact that intervention was done in the school setting. This is relevant considering that previous research has shown that interventions targeting social skills in the setting in which the child will use the skill tend to produce higher maintenance and generalization effects (Camargo et al., 2014). Second, this study included the assessment of maintenance and generalization effects, which have often been overlooked in previous research (Cappadocia & Weiss, 2011; Reichow et al., 2013). Third, this study included data collected through standardized measures that are easy to administer and sensitive to change (DESSA-Mini and DD-CGAS), and contributed evidence for the construct validity of these measures (DESSA-Mini and DD-CGAS) as well as to the internal reliability and construct validity of a non-standardized measure of prosocial behaviors (TIA). Fourth, this study involved the use of a control group and randomized assignment to treatment. Despite the lack of a placebo control group and the limitations of randomizing whole classes rather than individuals, this was a strength.

**Directions for future research**

Future studies building on the strengths of the current study and addressing areas of limitations would clarify the extent to which Group Theraplay interventions improve the socio-emotional competence of children with developmental disabilities. One immediate direction for
future research would be to perform quantitative analyses of interactions during the video-taped Group Theraplay sessions from the current study. This would facilitate the use of blinded raters and the assessment of inter-rater reliability, in addition to providing more reliable measures of behaviors fostered by the Theraplay intervention. These type of analyses have been done in a recent study and could provide guidance regarding their implementation (Hiles Howard et al., 2018). Further examination of the effects of Group Theraplay for children with different levels of socio-emotional and cognitive development would also be useful in clarifying whether this intervention is differentially effective across developmental levels, as suggested by the differential effects for the Core and Academic groups apparent in the current study. Such an examination might require more detailed measures of socio-emotional development, perhaps such as the Functional Emotional Assessment Scale (FEAS, Greenspan, 2001), to better characterize participants’ level of socio-emotional functioning. Future studies could also involve assessment of different intervention parameters, such as parental involvement and treatment intensity, that might bolster the effectiveness of the Group Theraplay intervention. With regards to parental involvement, future studies could examine the effects of parental participation in the school-based Group Theraplay sessions, the combination of school Theraplay sessions with sessions carried out at home with parental involvement, and/or the addition of parental psychoeducation to include information about the Theraplay dimensions and ways to incorporate them into the child/family’s everyday interactions. Future studies could also assess the effects of increasing the intensity of the intervention, to include for example, two Group Theraplay sessions per week within the school, plus an additional weekend session in a different setting such as at home or at a community setting. This approach may also increase the likelihood of generalization to other settings. Another important direction for future studies would be to
examine mechanisms of change driven by the Theraplay intervention. For example, does the intervention impact socio-emotional functioning by fostering the emergence or increasing the frequency of pivotal behaviors such as join attention, persistence, cooperation and affect? Another important question to address in future studies is whether the Group Theraplay intervention promotes self-regulation by impacting physiological processes related to the ability to regulate. It would be interesting, for example, to assess whether the Theraplay intervention affects heart rate variability (HRV), a measure of autonomic (sympathetic) nervous system activity known to be related to self-regulation and resilience processes (For a review, see R. Smith, Thayer, Khalsa, & Lane, 2017), and that has been proposed as a mechanism underlying regulation changes promoted by embodied self-regulation interventions such as yoga (Sullivan et al., 2018). A better understanding of the mechanisms through which the Group Theraplay intervention may foster socio-emotional functioning would increase our knowledge regarding how developmental processes support socio-emotional growth, while informing the delivery of services to those in need.

**Conclusion**

The present study attempted to evaluate the effectiveness of a Group Theraplay intervention to improve the socio-emotional competence of children with developmental disabilities. Although data supporting the effectiveness of this intervention was equivocal, some evidence was provided regarding the ability of this intervention to improve socio-emotional competence (as measured by the DESSA-Mini), global functioning (as measured by the DD-CGAS) and pro-social behaviors displayed during classroom interactions (as measured by the TIA). Treatment effects appear clearer during the first two data collection points (T1-T2) during which the Fall group received the intervention and the Winter group served as a control group.
Effects are less clear for the T2-T3 period, during which the Winter group received the intervention and the Fall group was evaluated for maintenance effects. It is possible that these differences are related to between-group baseline differences in scores, as participants in the Winter group had consistently higher scores than those in the Fall group for the DESSA-Mini, the DD-CGAs and the TIA. The data from this study does not allow this to be ascertained. This study provided novel information regarding the distribution of DESSA-Mini scores in a sample of students with developmental disabilities, provided evidence of construct validity for the DD-CGAS and the TIA, as well as evidence of internal reliability for the Theraplay Interaction Assessment.
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Consider the last week, rate each student re: degree of impairment and overall functioning.

<table>
<thead>
<tr>
<th>DD-CGAS</th>
<th>Student #</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<td>Level of impairment - self care</td>
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<td>Level of impairment - School/Academic</td>
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<td>Overall functioning in those domains</td>
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<td>Consistency of functioning across home, school, community</td>
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<td>Level of environmental adaptation needed</td>
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<td>Best fit category?</td>
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<td>Adjusted up or down?</td>
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<td>Final Rating</td>
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</table>
**Theraplay Interaction Assessment**

**Name___________________**

**Date______________**

**Interaction Assessment**

Considering the last month, how often does the student show the following behavior...

Rate on a scale from 1 to 5, where 1 = never, and 5 = frequently

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Student #</th>
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<td>Establishes eye contact</td>
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<td>Touches others appropriately</td>
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<td>Is kind towards others</td>
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<td>Accepts nurturing when given appropriately</td>
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<td>Is appropriately assertive</td>
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<td>When student needs help, s/he COMES TO or ASKS for help from appropriate adult</td>
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<td>Student is willing to ACCEPT help from appropriate adult</td>
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<td>Cooperatively interacts with peers for reasonable length of time (for age/ development)</td>
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<td>Can calm when dysregulated (i.e., when either distressed or excited). Independently? Yes____ No____</td>
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<td>Takes turns willingly during cooperative opportunities with peers (e.g., free time or group work)</td>
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</table>
Appendix C

In-group observations rating form

<table>
<thead>
<tr>
<th>Student</th>
<th>Greeting/Check In</th>
<th>Game</th>
<th>Snack</th>
<th>Ending</th>
<th>Enjoy?</th>
<th>Partici</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EC, Verb, Shake</td>
<td>Give</td>
<td>Give/Receive</td>
<td>EC, Verb, Hi-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EC, Verb, Shake</td>
<td>Give</td>
<td>Give/Receive</td>
<td>EC, Verb, Hi-5</td>
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</tr>
</tbody>
</table>
Instructions and Definitions for In-Group Theraplay® Social Skill Ratings 2011-2012

Rater:

Class:

Thank you! for your participation in tracking the students in your class in order to learn more about their social interactions. You will make your ratings DURING the group that Dr. Sue or Mrs. B. conducts each week for @ 11 weeks. Your class has been identified as either a Fall or Winter group. You will sit outside of the circle and rate each student as the group progresses through the four sections: Greetings/ Check-In, Game Skill, Snack Activity, and Ending.

Directions: Watch Dr. Sue or Ms. B. as they greet each student and you will mark the behavior you observe as it occurs. For example, you will mark whether the student made eye contact, shook hands and said hello/ vocalized. Then you will rate the next student being greeted, etc. until all students are rated for "greetings". You will notice that the names of your students are pre-listed on the rating sheet and each student may be greeted in a different order from that of your rating sheet. You may have to skip rows to rate each student as his/her turn occurs.

Continue to rate the remaining sections of the group.

Contact Sue or Katie if you have questions.

1) Ratings: for Greetings, Game, Snack and Ending will use the same criteria.

+ means student “did it”

G means therapist or adult gestured

V means therapist or adult gave verbal prompt

P means therapist gave physical prompt (e.g., touched child’s arm to get him started or get his attention.)
HOH means therapist or adult gave hand over hand demonstration, help, assistance
- means student did not do it
:)) happy or cooperative
:| passive, but not negative or refusing
:( refusal or negative or avoidant (e.g. dropping to the floor or saying, “I’m not
doing it - if verbal student.”

Example: Include whether student did it or not, the kind of prompts adult used and
student’s mood. +VP:| means student did the task with verbal and physical prompt and
had passive appearance (matter of fact, neutral, not much expression).

**Definition:** Eye Contact (EC) refers to greetings or good-byes in group where student turns or
positions head toward the speaker, moves eyes in the direction of speaker’s face and meets the
speaker’s eyes. If the student is passing a good-bye to a peer, consider it accomplished if he
attempts to make eye contact or clearly did make eye contact with another student or adult.

**Definition:** Initiate refers to words, actions, or moving toward another in the context of the
Game activity of the week or as part of the Snack activity. Sue or Katie will tell you what
“counts” as initiation according to the varied activities.

**Definition:** Respond refers to verbal, vocal, gestural, nonverbal movement of the body and/ or
physical touch following or associated with the behavior of another. Examples could be
accepting a turn, following the direction of the adult or partner, cooperating with one’s snack
partner.

2) The final categories - *Enjoyment* with others, and *Participation* are summary ratings of the
whole group.
Rate on a scale of 1 - 5

1- Showed little or none of the desired behavior; in fact, may have shown the opposite.
   (Enjoyment with others has ratings of :( present).

2- Shows some of the desired behavior with adults; requires active physical coaching to see
   the desired behavior and does not respond to verbal prompts, alone. The desired behavior
   may have been fleeting or brief. (Enjoyment with others shows ratings of :| , : present).

3- Demonstrated the desired behavior in at least two parts of the group; with adults and
   briefly with peers. Requires physical assistance to be successful half of the time.
   Responds to verbal prompts alone, half of the time to successfully show this behavior.
   (Enjoyment with others shows 2 :) with no refusals, leaving the group).

4- Demonstrated the desired behavior in three parts of the group; evidence with adults and
   peers. Requires verbal prompts often (3 of 4 opportunities) but can spontaneously
   demonstrate the behavior in familiar activities. (Enjoyment with others shows 3 ratings
   of :) present).

5- Student demonstrated the behavior 90% of the time spontaneously, genuinely with adults
   and peers; similar to a typical child. Enjoyment with others shows all group sections as :) present).

Thank you!
Appendix D

Social Ratings outside the Theraplay sessions

<table>
<thead>
<tr>
<th>SOCIAL RATINGS</th>
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</thead>
<tbody>
<tr>
<td>Date:</td>
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<tr>
<td>Rater:</td>
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</table>

Directions for Rater: Observe student #1 for ten seconds (count slowly to self). In the five seconds following the observation, record the following for that student: the activity, type of interaction, and whether the student showed the behavior listed at the top of the column. Proceed in the same manner separately for each of the remaining students.

<table>
<thead>
<tr>
<th>Time #</th>
<th>Student</th>
<th>Activity</th>
<th>Interaction Type</th>
<th>Resolved N/A, +, -</th>
<th>Initiated</th>
<th>Respond</th>
<th>EC</th>
<th>Enjoy +, -, ok</th>
</tr>
</thead>
<tbody>
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</table>
Thank you! for your participation in tracking the students in your class in order to learn more about their social interactions. There will be 9 tracking weeks over the 2011-2012 school year. Dr. Sue and Mrs. B (School Psychologist), will provide the schedule and reminders for you. Each rating occasion will consist of a 15-minute period during which your students have the opportunity to interact. This could be free time, “privilege” or earned activity time, scheduled play time, lunch time, etc. Check with the teacher in your class for the designated time; e.g. Wednesdays at 2:15 during free time. If school is not in session on a rating day, you may select the next available day. However, keep the same time period if at all possible. Contact Sue or Katie if you have questions.

For each 15-minute period, you will have approximately 10 ten-second ratings per student in a six-student class. The categories you will rate are described below.

Student. The first names of the students in your class will be listed on the rating sheet. Start with the name at the top of the column and remember to only observe one student at a time. If something interesting occurs for student # 3 when you are observing student # 1, only the information gained for student # 1 “counts.”

Activity refers to what the student is doing while you are observing; e.g., game, stickers, joining student, walk to desk, lying on floor, bouncing on ball. You may use abbreviations; just explain at the bottom of page.
Interaction type refers to SOLITARY activity, PARALLEL play or activity, COOPERATIVE play or interaction, and CONFLICT (with another or with self; e.g., frustration during individual play). If you see conflict; i.e., could be raised voice, scream, change in tone of voice, mood change, walking away, etc., MARK conflict AND solitary or cooperative play. *Cooperative means 2 students were interacting together around an activity, topic of conversation, object.

Resolved refers to whether Conflict stopped or continued during your 10-second observation. If there was no conflict, mark N/A. If conflict stopped without escalating or without extending to a second "round" mark +. If it was continuing at the end of your observation, MARK a minus sign.

Initiated and to Whom? Mark "Y" for yes, and "N" for no. If the student did initiate with words, actions, or moving toward another, ALSO mark WHO he interacted with: e.g., another students' first name or specific adult.

Responded + Who? During your observation did the student respond to anyone? Write “Y” (yes) if the student gave verbal, vocal, gestural, nonverbal movement of the body and/ or physical touch following/ associated with the behavior of another. Note: it’s possible for a student to respond to another person who is located across the room.

Mark “N” if the student is engaged in solitary behavior and shows no verbal or nonverbal reactions to the behavior of others in the classroom. Note: If another student or adult has attempted to communicate but was not successful, Mark that person’s name. For example, “N-Joe” means your student did not respond but Joe had tried to interact with him.
Eye Contact + Who? During your observation, did the student initiate eye contact with another or respond to another by looking at/looking toward that person? Mark “Y” if your student attempted to make eye contact or clearly did make eye contact with another student or adult. If yes, mark the first name of the person with whom eye contact was made or attempted. Note: A “yes” response includes turning (at least) head toward the speaker, movement of eyes in the direction of speaker’s face.

Mark “N” if your student did not show the above behaviors. If another student or adult was trying to engage your student with eye contact but was not successful, also mark the first name of the person with whom eye contact was NOT made; e.g., “N-Ms Kim”

Enjoyment in interaction with another + Who? Mark + if student showed verbal and/or nonverbal interest in participating with another student and/or adult. Mark the name of the person(s) whom enjoyment took place.

Mark “OK” plus first name of the other(s), if interaction occurred “matter-of-factly”: e.g., following directions, assisting the student.

Mark a minus sign if there was no interaction with another during this time period.