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Examining the Effectiveness of a Parent Manual for Improving and Generalizing Learned Social Skills in Rural Children With Autism Spectrum Disorders

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EXAMINING THE EFFECTIVENESS OF A PARENT MANUAL FOR IMPROVING AND GENERALIZING LEARNED SOCIAL SKILLS IN RURAL CHILDREN WITH AUTISM SPECTRUM DISORDERS

A Dissertation
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Requirements for the Degree of
Doctor of Psychology

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Title: Examining the Effectiveness of a Parent Manual for Improving and Generalizing Learned Social Skills in Rural Children With Autism Spectrum Disorders

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The purpose of this study was to address the need for greater access to social skills training and to reduce barriers encountered by rural families of children with ASDs. This study pilot-tested a parent manual designed to augment an existing social skills curriculum. The manual provided ASD psychoeducation and specific techniques parents utilized in the home to facilitate maintenance and generalization of skills their children were learning in a social skills treatment condition. Six families of children with an ASD participated in this 7-week study. Two families agreed to be in a treatment as usual comparison condition. Parents and a supervisor of SSIG completed measures of social behaviors and ASD symptoms. Parents also rated their satisfaction with the manual and completed weekly adherence questionnaires. Behavioral data was collected from two independent observers, blind to treatment conditions.

The results from the analyses showed that parents adhered to and were satisfied with the manual. All parents in the treatment condition reported completing all lessons in the manual. Analyses showed that all treatment condition participants made clinically significant improvements in at least one dimension of interpersonal behavior, communication, or stereotypical/repetitive behaviors, as reported by parents. Behavioral data showed that all but one participant in the treatment condition increased prosocial behaviors and all participants in the treatment condition demonstrated fewer problem behaviors from pre- to post-treatment. Both control condition participants demonstrated fewer prosocial behaviors.

TABLE OF CONTENTS

Chapter Page

APPENDICES

Chapter Page

LIST OF TABLES

LIST OF FIGURES

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CHAPTER I

INTRODUCTION

Pervasive Developmental Disorders (PDDs) refers to a group of conditions that involve delays in the development of many basic skills and is the diagnostic umbrella classification for autism-related conditions including Autistic Disorder, Asperger Syndrome, and Pervasive Developmental Disorder-Not Otherwise Specified (Boucher, 2009). The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR; American Psychiatric Association, 2000) also includes Rett's Disorder and Childhood Disintegrative Disorder in the group of PDDs. One of the biggest changes to occur in the Diagnostic and Statistical Manual – 5th Edition (DSM 5) was to this category of disorders, now known as Autism Spectrum Disorders (ASDs). Diagnostic criteria categories were reduced from the previous three (i.e., social interaction; communication; and restricted, repetitive, and stereotyped patterns of behavior) to two, focusing on social communication and social interaction deficits and restricted, repetitive patterns of behavior, interests, or activities. Onset was changed from before the age of 3 years to the "early developmental period." In addition, potential sensory abnormalities and severity of impairments in the two core areas have been taken into consideration. Specifiers were included to account for the presence or absence of intellectual impairment and/or language impairment and medical, genetic, or environmental factors. The new DSM 5 criteria allow for a history of symptoms that may not be present currently, recognizing that through intervention or normal development, some children with autism may no longer present with some symptoms (American Psychiatric Association, 2013). The impairments observed in ASDs are defined in relation to typical development. The core of ASDs is the intersection of multiple deficits in social-communication and the presence of restricted and repetitive behaviors (Lord & Bishop, 2010). ASDs are lifelong developmental disorders that may become milder with consistent intervention as a child grows older. Although much improvement can be achieved with appropriate care and intervention, lifelong impairments typically remain (Boucher, 2009).

The estimated prevalence of ASDs has risen in recent years. Research suggested that autism affects approximately 1% of children (Baird et al., 2006). However, a more recent prevalence rate was estimated to be 1 in 88 children aged eight years (Centers for Disease Control and Prevention [CDC], 2012), and the most recent prevalence estimates reflect yet another increase, with approximately 1 in 68 children aged eight years diagnosed with an ASD (CDC, 2014). An increase in the number of individuals diagnosed with ASDs has implications for the provision of appropriate diagnostic, educational, and family support resources. A National Research Council (2001) committee estimated that 10 years ago, fewer than 1 in 10 children were receiving appropriate treatment, and furthermore, treatment is still not adequately funded. The challenge lies in the ability to identify and implement treatments that are reliable and cost-effective.

Treatments applying behavioral principles have strong empirical support and are well established for young children with ASDs (Anan, Wagner, McGillivary, Chong, & Hines, 2008; Corsello, 2005; Lord & Bishop, 2010; Masse, McNeil, Wagner, & Chorney, 2007; Mesopotanese, 2004). Behaviorally-based interventions emphasizing social skills have emerged as a major theme in the treatment of individuals with ASDs, as core features of ASDs include deficits in social communication and social interaction. Behaviorally-based interventions are often provided in the school or clinic setting; however, children and adolescents still have great difficulty translating learned skills to settings outside of those in which they were learned. In an effort to facilitate generalization and maintenance of learned skills and improve treatment outcomes, research is beginning to address the importance of involving parents or caregivers in their children's treatment to act as therapists in the home.

The purpose of this paper is to examine in depth the current practice regarding social skills interventions for children with Autism Spectrum Disorders. Furthermore, specific factors that influence effectiveness and generalizability of learned social skills will be identified. Social skills programs and parent training programs will be explored, and a review of the limitations of existing research and directions for future research will be presented. Lastly, a parent manual designed to augment an existing social skills curriculum will be proposed to investigate the effects of parent involvement in teaching social skills, as well as the influence of parent involvement on generalizability and maintenance of learned social skills.

CHAPTER II

REVIEW OF RELATED LITERATURE

Autism Spectrum Disorders

Criteria and Symptoms

The American psychiatrist Leo Kanner (1943) first identified autism as a psychotic process when he described 11 children with striking behavioral similarities, labeling them as having “early infantile autism.” These children, from the first month of life, exhibited an “extreme aloneness” and a desire for the perseveration of sameness, with a variety of behavioral, cognitive, and affective symptoms (Kanner, 1943). A year later, an Austrian medical student, Hans Asperger, published a paper describing children with “autistic psychopathy” (Asperger, 1944 as cited in Boucher, 2009). Asperger’s “autistic psychopathy” was seen as a personality trait, rather than a psychotic process, which manifested in the third year of life or later and included a lack of empathy, little ability to form friendships, one-sided conversations, intense absorption in a special interest, and clumsy movements (Asperger, 1944). In addition, Asperger called these children “little professors” because of their ability to talk about their favorite subject in great detail (Asperger, 1944). This collection of symptoms was later identified as Asperger’s Syndrome (Wing, 1981). Kanner’s and Asperger’s descriptions differed in some respects, but there was also considerable overlap.

In 1979, Wing and Gould provided one of the first attempts to describe the core features of autism (impairments of social interaction, social communication, and social imagination), as well as how these features may impact a wider range of individuals than was previously thought. These features remain relevant to the contemporary understanding of autism. In 1980, autism was introduced in the Diagnostic and Statistical Manual of Mental Disorders, Third Edition

(DSM-III) as “infantile autism” (American Psychiatric Association, 1980). Criteria for infantile autism included onset before 30 months of age; pervasive lack of responsiveness to other people; gross deficits in language development; peculiar speech patterns when speech was present; bizarre responses to various aspects of the environment, and absence of the delusions, hallucinations, loosening of associations, and incoherence seen in Schizophrenia (American Psychiatric Association, 1980). This diagnosis was changed to autistic disorder in 1987 with the revision of the DSM-III. In 1994, Asperger’s Syndrome was introduced in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). Similar to infantile autism, criteria included qualitative impairment in social interaction; restricted repetitive and stereotyped patterns of behaviors, interests and activities; and clinically significant impairment in social, occupational or other areas of functioning. However, there are no significant delays in language or cognitive development (American Psychiatric Association, 1994).

To receive a diagnosis of autistic disorder, a child must demonstrate abnormalities in social interaction, language as used in social communication, or symbolic/imaginative play before the age of 3 years. DSM-IV-TR (American Psychiatric Association, 2000) criteria specify:

> A child must demonstrate 6 or more behaviors falling into the three previously mentioned categories. Individuals must experience at least two qualitative impairments in social interaction, including marked impairment in the use of nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction; failure to develop and maintain peer relationships appropriate to developmental level; lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest); and lack

> of social or emotional reciprocity. Secondly, there must be at least one qualitative impairment in communication, including a delay in, or lack of, the use of speech that is not compensated for by the use of gestures or other forms of communication; an inability to sustain conversation in those with adequate speech; the use of repetitive, stereotyped, or idiosyncratic language; and a lack of developmentally-appropriate, varied, spontaneous make-believe or social imaginative play. Thirdly, at least one form of restricted, repetitive or stereotyped interests or behaviors should be evident, including preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus; inflexible adherence to specific, nonfunctional routines or rituals; stereotyped or repetitive motor mannerisms, such as finger or hand flapping, or complex whole-body movements; and persistent preoccupation with parts of objects. (p. 75)

Criteria for a diagnosis of Asperger's Disorder are identical to that of Autistic Disorder, with one important distinction: "there is no clinically significant delay in cognitive development, effectively meaning that intellectual functioning is normal, and that there is no delay in the onset, development, or use of language" (DSM-IV-TR; American Psychiatric Association, 2000; Pasco, 2011). Lastly, a diagnosis of Pervasive Developmental Disorder, Not Otherwise Specified (PDD-NOS) is used when there is "severe and pervasive impairment in social interaction, language as used in social communication, or symbolic/imaginative play, but criteria are not met for a specific PDD or another disorder" (DSM-IV-TR; American Psychiatric Association, 2000).

The American Psychiatric Association (APA) has proposed new diagnostic criteria for autism in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). Rather than representing separate disorders, autistic disorder, Asperger syndrome, and PDD-

NOS will be conceptualized as laying on an autism spectrum continuum ranging from mild to severe, which also describes the individual's overall developmental status (American Psychiatric Association, 2012). The rationale for this change is that these disorders have been defined by a common set of behaviors and would best be represented as a single diagnostic category that can be adapted to an individual's clinical presentation (American Psychiatric Association, 2012). Expected changes in the DSM-5 also include two domains, as opposed to the three currently in the DSM-IV-TR: social/communication deficits and fixated interests and repetitive behaviors. Deficits in social behaviors and communication are "more accurately considered as a single set of symptoms," and completely fulfilling these two criteria "improves specificity of diagnosis without impairing sensitivity" (American Psychiatric Association, 2012).

Prevalence of Autism Spectrum Disorders

Autism has been most often associated with a lack of social awareness, significant cognitive and intellectual disabilities, and an absence of meaningful expressive language (Lord & Bishop, 2010). Presently, there is common agreement that autism is an extremely heterogeneous neurodevelopmental disorder with a strong genetic component (Lord & Bishop, 2010; Pasco, 2011). In 1993, Ehlers and Gillberg focused on children in Gothernberg, Sweden with cognitive abilities in the average range and above with diagnoses of Asperger syndrome (AS) or High Functioning Autism (HFA), which is a classification including milder autism symptoms and less functional impairment than other forms of autism. In addition, a person with HFA usually has average or above average intelligence. On the other hand, severe to moderate atypicality with an intelligence quotient below 70 (i.e., in the intellectually impaired range) is considered low-functioning autism. Their findings suggested a prevalence rate of 36 per 10,000 children with AS and HFA (Ehlers & Gillberg, 1993).

Epidemiological, twin, and family data suggest that the vast majority of ASD cases occur as a result of a complex genetic predisposition (Volkmar, Lord, Bailey, Schultz, & Klin, 2004). In 1977, Folstein and Rutter conducted a study in which they looked at 21 pairs of twins, both monozygotic (MZ) and dizygotic (DZ). They concluded the MZ-DZ difference in concordance for autism pointed strongly to the importance of genetic factors in the etiology of autism and that autism must be genetically linked with a broader range of cognitive disorders (Folstein & Rutter, 1977). Since this landmark study, data have emerged to suggest that the genetic liability for autism may also be expressed in non-autistic relatives of those with an ASD as behavioral and cognitive characteristics qualitatively similar to the defining features of autism, but to a milder degree. This set of behaviors and characteristics has been referred to as the "broad autism phenotype" (Bolton et al., 1994). Features of the broad autism phenotype have been reported in 15-45% of family members of individuals with autism, with higher rates in male rather than female relatives (Volkmar, Chawarska, & Klin, 2008). For example, studies of siblings of individuals with autism, considered to be at high risk for autism, have suggested that 20-25% of younger siblings may exhibit developmental impairments in their first or second year of life (Volkmar et al., 2008).

The difficulties in the way in which an individual with autism understands, communicates, and interacts with others suggest that the syndrome affects a functionally diverse and widely distributed set of neural systems; however, only selected systems may be affected because individuals with autism can still have normative intelligence and areas of superior functioning (Volkmar et al., 2004). The pattern of disruption in the brain of individuals on the autism spectrum is highly variable; thus, impairment is highly variable across individuals. Although there is much evidence that autism is a neurodevelopmental disorder, there is not yet a biological marker for ASDs; therefore, a diagnosis is made based on a behavioral profile characterized by the presence of atypical behavior, as well as the absence of typical behavior (Bishop, Luyster, Richler, & Lord, 2008). By the age of two, children with autism can be reliably identified (Volkmar et al., 2004).

Thirty years ago, autism was considered to be a rare childhood disorder; however, it is now recognized as a collection of developmental disorders that affects approximately 1% of children (CDC, 2012). It has long been established that autism is highly heritable at approximately 90 percent, yet specific genetic predisposition for autism has not been identified (Pasco, 2011). To understand an individual's susceptibility and more accurately identify the prevalence of autism, epidemiological studies have increased significantly, with over 30 such studies conducted since the mid 1960s (Volkmar et al., 2004). Between 1966 and 2012, diagnostic criteria have changed substantially, resulting in changes to prevalence estimates as well. As with any disorder, there is the risk of underestimating the actual number of individuals with ASDs when calculating prevalence rates because some individuals who are autistic may not be diagnosed for reasons such as the individual is too young to receive a diagnosis, their symptomatic expression is mild, or their physical or intellectual disabilities are so severe that their needs are dictated by their handicaps rather than by a diagnosis of autism (Boucher, 2009).

One of the first systematic studies was conducted by Lotter (1966), who investigated the prevalence of autism using very conservative criteria based on Kanner's work, identifying approximately 4-5 children per 10,000 with autism. In 1979, Wing and Gould worked to identify children with special needs who also met criteria for autism. Using the most restrictive Kanner-type autism criteria, Wing and Gould confirmed Lotter's findings. They also identified approximately three times as many children with less prescriptive criteria who all had a learning disability and showed difficulties in social interaction, social communication, and social imagination (Wing & Gould, 1979), similar to those with what is now considered PDD-NOS or Asperger's disorder. The Special Needs Autism Project (Baird et al., 2006) examined the diagnostic status of approximately 57,000 children in South East England. Researchers found 77 per 10,000 children were identified as meeting a broader set of criteria such as PDD-NOS. Their total prevalence figure, including all autism spectrum disorders, of 116 per 10,000 supported the earlier studies, with a figure of approximately 1 percent (Baird et al., 2006). A more recent prevalence rate of 1 in 68 children aged 8 years was reported after data collection from 14 surveillance sites participating in The Autism and Developmental Disabilities Monitoring (ADDM) Network (CDC, 2014). In most studies, the number of children with diagnoses such as Asperger syndrome and predominantly PDD-NOS outnumber those children with autistic disorder 2 to 1 (Lord & Bishop, 2010). Though cases of PDD-NOS are more common than autism, due to less stringent diagnostic criteria, this population is rarely studied alone (Volkmar et al., 2004).

Among the ASD population, gender distribution is not equal: autism is almost 5 times more likely to occur in boys than girls (CDC, 2012). More specifically, the Centers for Disease Control and Prevention reported that the prevalence in the United States is 1 out of 54 boys and 1 out of 252 girls (2012). Reported prevalence rates are whole-spectrum averages, masking gender distribution at the upper and lower ends of the spectrum. In fact, males outnumber females approximately 6:1 at the high-functioning end of the spectrum and approximately 4:1 at the low-functioning end of the spectrum (Boucher, 2009).

The most noteworthy facet of recent epidemiological work has been the observation of an increase in prevalence rate among those with ASDs (Volkmar et al., 2004). Since the 1980s, estimates of prevalence of individuals with ASDs have risen and continue to rise (Boucher, 2009). Several factors have been identified as contributing to the apparent increase, including changes in diagnostic criteria, increased awareness of ASDs, earlier diagnosis, issues of study design, social and cultural influences, and diagnostic substitution in order to obtain social or educational services that may not be covered under other diagnoses (Leonard et al., 2010; Volkmar et al., 2004). There is also the possibility of a true increase in cases that cannot be ruled out. Such a rise in frequency of ASD occurrence has important consequences for those with ASDs. For example, an increase in the proportion of the population with ASDs would have implications for the financing and provision of care resources such as diagnostic support, educational support, and family support (Boucher, 2009).

Deficits Associated With Autism Spectrum Disorders

The most recognizable differences in individuals with autism from the normative populations are oddities in social behavior; however, even among those with autism, these oddities are quite varied. Kanner emphasized the central role of social difficulties in autism, highlighting the most frequently reported symptoms such as limited or diminished eye contact, limited interest in social games and social reciprocity, low frequency of referencing parents, and a preference for being alone (Kanner, 1943). In addition, limited range of facial expressions and infrequently sharing affect have been reported (Volkmar et al., 2008). The onset of autism is noticeable within the first two years of life. By the age of two, typically developing children are capable of engaging in social interactions. For example, at approximately 4 to 6 months, infants are able to attend and respond to others' emotional expressions, such as smiling, and attend more to smiling rather than neutral or sad faces. Social referencing, when a child seeks emotional information from someone, is established by 9 to 12 months of age (Dawson et al., 2004). The failure of these behaviors to develop often signals the possibility of autism. Consistently, symptoms of 2- and 3-year-old children with autism center on social interaction and communication and are accompanied by delays in motor and cognitive development (Volkmar et al., 2008). Social approaches and social responses of children with autism may be reduced or atypical; they may exhibit impaired play and imitation skills and exhibit few, if any, prosocial behaviors (Gilotty, Kenworthy, Sirian, Black, & Wagner, 2002; Ingersoll, 2008).

In 1988, Wing identified four subgroups of individuals with social oddities: the aloof group, the passive group, the active but odd group, and the overly formal, stilted group. For example, those described as "aloof" behave as if those around them do not exist. Those in the passive group accept social approaches and do not move away from others, but do not initiate interactions. Individuals characterized as being "active but odd" make active approaches to initiate interactions, but do so in a peculiar fashion, such as making demands or behaving in an egocentric manner and discussing only their own interests or concerns. Finally, those described as being "overly formal" and "stilted" are higher functioning adolescents and/or adults who present as excessively formal and polite, trying hard to behave well by sticking to rigid rules of social interactions (Wing, 1988). Although this terminology is not used in diagnosis, it does illustrate the differences in social behavior between and among those on the autism spectrum. Successful social functioning involves integrating multiple contextual variables, selective attention, and inductive reasoning (Gilotty et al., 2002). For some individuals, social skills deficits can lead to negative peer interactions and peer failure, while for others, avoidance of social interactions may create a pattern of engagement in solitary activities that can be difficult to change (Bellini, 2008). Those diagnosed with autism spectrum disorders face a great deal of difficulty with social reciprocity when interacting with same-aged peers.

Adaptive behavior. Impairments in adaptive behavior, or “the performance of daily activities required for personal and social sufficiency,” distinguishes children with autism from typically developing children and children with other developmental disorders (Dawson et al., 2004; Gilotty et al., 2002). For example, the Adaptive Behavior Assessment System (Harrison & Oakland, 2012) is a measure used to assess a child’s adaptive skills in 10 areas: communication skills (i.e., speaks in sentences), functional academics (i.e., sings the alphabet song), self-direction (i.e., resists pushing or hitting another child when angry), social skills (i.e., smiles when he/she sees a parent), leisure skills (i.e., shows interest in moving toys), self-care (i.e., holds and drinks from a sippy cup), home or school living (i.e., turns TV on/off), community use (i.e., asks to go to a park or other favorite place), work (i.e., for adults or working teens) and health and safety (i.e., refrains from putting dirt or sand in mouth). Standardization included clinical samples of children with autism, ADHD, emotional/behavioral disabilities, physical impairments, and learning disabilities. Children with autism displayed significant impairments in all nine areas (with work excluded), whereas children with ADHD only showed impairments in three of nine areas and children with learning disabilities showed significant impairments in six to eight of the nine areas. Children with emotional/behavioral disorders and physical impairments also showed significant impairments in all nine areas; however, scores for children with autism were, on average, eight points lower (Harrison & Oakland, 2012). In addition, the Vineland Adaptive Behavior Scales (VABS; Sparrow, Balla, & Cicchetti, 1984) measures adaptive functioning in four areas: Communication (Written, Receptive, and Expressive), Socialization (Play and Leisure Time, Interpersonal Relationships, and Coping Skills), Daily Living Scales (Personal, Domestic, and Community), and Motor Skills (Gross and Fine, only for children under 6-years old; Sparrow et al., 1984). Individuals on the autism spectrum show a unique profile across adaptive behaviors relative to age- and mental age-matched peers on the VABS (Freeman, Ritvo, Yokota, Childs, & Pollard, 1988; Perry, Flanagan, Geier, & Freeman, 2009; Rodrigue, Morgan, & Geffken, 1991).

Perspective taking and social awareness. Many individuals with ASDs fail to consider others' interests (which are important to social interactions), exhibit overly selective attention, or attend to irrelevant details of their environment. It is believed that individuals with ASDs lack theory of mind (ToM), or the ability to understand others' perspectives and that those perspectives may differ from our own, as well as understand that our behaviors affect others and the world around us (Baron-Cohen, Leslie, & Frith, 1985). ToM is important for social behaviors such as empathy, joint attention, imitation, and communication. For example, when presented with images of adults displaying facial expressions of distress, children with autism looked less at the adults and showed less concern when compared to children with mental retardation and typically developing children (Volkmar et al., 2008). This suggests that children with ASDs differ from other children in both awareness and consideration of others' emotional presentation. Without awareness of others' emotional states, empathy cannot occur. Deficits in joint attention skills, such as orienting to one's name and other social stimuli, are among the earliest signs of an ASD and affect aspects of giving, showing, pointing, and eye gaze, which are important in play and communication with others (Charman, 2003). Imitation emerges early in development and plays a crucial role in the development of cognitive and social communication behaviors such as language, play, and joint attention (Rogers & Pennington, 1991). Imitation serves a learning function in infants' acquisition of new skills and knowledge and also serves a social function in facilitating infants' engagement in social and emotional exchanges with other individuals (Ingersoll, 2008). Children with ASDs are impaired in functional imitation skills and imitation during play. These deficits disrupt peer play, which further disrupts reciprocal play and communication as the child gets older. Individuals with autism can also appear to be egocentric in their interactions with others as a result of poor (or lacking) development in social orienting, joint attention, and interest in those around them. In addition, many individuals with ASDs are narrow-minded in their view of the world, precluding them from considering multiple viewpoints. Therefore, these individuals can come across as argumentative when asked or made to consider alternative viewpoints (Bellini, 2008).

Intertwined with perspective taking and self-awareness are personal space and personal hygiene. Difficulty maintaining personal hygiene is a result of inadequate perspective taking and self-awareness (Bellini, 2008). If an individual is not aware of his unkempt nature and does not consider that others think about him, he is oblivious that his lack of hygiene would negatively affect another person. Similarly, successful perspective taking and self-awareness provides us with the necessary information to maintain appropriate personal space in each context and social interaction. However, as with any social interaction, the amount of personal space varies from person to person and from situation to situation. This variation is dictated by cultural and societal norms, which we learn through exposure and social interactions (Bellini, 2008).

Social reciprocity. A survey of adolescents and adults with ASDs found that 46% of these individuals had no reciprocal friendships (Orsmond, Krauss, & Seltzer, 2004). Social reciprocity refers to the give-and-take in a social interaction, a mutual exchange between two or more persons (Duncan & Klinger, 2010). In order for a social interaction to be successful, a number of individual social skills must operate in coordination. For example, having a conversation with another individual requires individual skills such as knowing the social rules of joining a conversation, having the ability to read nonverbal and contextual cues, regulating emotion, coordinating motor movements, utilizing eye contact, having appropriate timing, nonverbal expression, and having awareness of the other person's interests and views (Bellini, 2008). Individuals with autism may engage in one-sided interactions in which they do all the talking or fail to respond when others initiate social exchanges.

All social interactions begin with a social indication of some sort, whether it is a verbal introduction, nonverbal gesture, exclamation or the like. Individuals with ASDs have difficulty initiating and maintaining reciprocal interactions. Individuals with ASDs who do not initiate interactions may demonstrate anxiety, fear, or apathy with regard to social interactions. Others may initiate interactions frequently or excessively, but these initiations may be ill-conceived and poorly timed (Bellini, 2008). Having the awareness of the other person's body language, tone of voice, and continued interest is important for the maintenance of any conversation. Individuals with ASDs also have difficulty understanding or fail to read the cues that signal the end of a conversation or improperly terminate social interactions (Bellini, 2008). This can cause the other party to feel very confused, uncomfortable, or angry about the inferred lack of respect or courtesy when terminating interactions.

Nonverbal communication. Bellini (2008) argued that the most important social interaction skill is the ability to understand nonverbal cues; however, understanding the unwritten rules of social behavior is difficult for individuals with ASDs. Nonverbal cues allow us to send and receive messages through the use of hand gestures, eye contact, body posture, proximity, and touch. These cues are important in communication because they assist in understanding a person's expressed meaning. For example, saying "I'm fine" and smiling means something completely different than "I'm fine" while looking cross and walking away quickly. Without nonverbal communication, verbal communication can be very difficult to comprehend.

One learns these rules through exposure to social situations and by watching others experience and process social situations. Individuals with ASDs have difficulty reading nonverbal cues because, often, they are not looking for them; their eyes are averted from faces during interactions, which prevents them from being able to read others' facial expressions and other salient nonverbal cues (Bellini, 2008). To infer the meaning of nonverbal communication, one must recognize others' body language and integrate all available nonverbal and contextual cues (Bellini, 2008).

Anxiety and depression. Individuals with HFA have the capacities for interpersonal awareness; however, they continue to struggle in their ability to understand how their social difficulties impede forming and maintaining relationships (Bauminger et al., 2008; Tse, Strulovitch, Tagalakis, Meng, & Fombonne, 2007). Poor social skills in higher functioning individuals with ASDs have been linked to low self-esteem and significant levels of anxiety and depression (Duncan & Klinger, 2010; MacKay, Knott, & Dunlop, 2007; Tse et al., 2007). For example, individuals may partake in compulsive and ritualistic behavior, have irrational fears and beliefs, exhibit increased aggression, and have poor relationships with parents and teachers (Duncan & Klinger, 2010). Social anxiety – the intense fear of social or performance situations where embarrassment may occur – is thought to occur in 3 to 13% of the normative population (Bellini, 2008); however, research suggests this rate may be higher in individuals with ASDs (Bellini, 2004). In addition, anxiety and depression seem to increase with the level of cognitive functioning for those with ASDs (Schreiber, 2011). Therefore, it is critical for adolescents with ASDs to learn a variety of social skills so that they can develop more successful peer relationships and combat symptoms of anxiety and depression (Duncan & Klinger, 2010).

Barnhill and Myles (2001) reported that by adolescence, 80% of those with HFA were being treated with antidepressant medication.

Theories and Hypotheses of Social Deficits

Many theories and models have been developed to explain the observed social impairments in individuals with autism. For example, a developmental model posits that a negative feedback loop causes abnormal brain development (Dawson et al., 2004). In the first six weeks, typically developing infants exhibit a sensitivity to social stimuli and at five months, infants demonstrate sensitivity to small deviations of eye gaze during interactions with adults (Dawson, Meltzoff, Osterling, Rinaldi, & Brown, 1998). It has been argued that one of the earliest social impairments in autism is a failure to orient to social stimuli that is, to look at and pay attention to naturally occurring stimuli in the environment. This lack of attention to social stimuli early in infancy deprives the child of a foundation for normal social development, which affects subsequent social development and contributes to the development of social and communicative impairments (Dawson et al., 2004). A study by Dawson and colleagues found that one-year-olds who were later diagnosed with autism attended less to people, failed to orient when their names were called, and exhibited impaired orienting ability to social stimuli (Dawson et al., 1998). Retrospective analysis of first birthday home videotapes suggests that infants later diagnosed with autism were less likely to smile or vocalize at others and showed difficulties responding when their names were called as compared to typically developing children or infants with developmental delays (Volkmar et al., 2008). Later aspects of social cognition depend on these early social orienting skills. The inability to orient to and shift between social stimuli affects the ability to share attention with others (Dawson et al., 2004). Children with ASDs are not drawn to social stimuli such as facial expressions and gestures because they are complex and are not motivated to attend to social stimuli because they do not associate a reward value with such stimuli (Dawson et al., 2004).

The Theory of Mind (ToM) hypothesis emerged in the 1990s to explain the social dysfunction in individuals with autism (Baron-Cohen, 1995; Gevers, Clifford, Mager, & Boer, 2006). This theory posits that there is a disruption in the acquisition of the ability to conceive of another person and exhibit "mind-sharing abilities," or an understanding of others' knowledge and beliefs (Frith, 1989). These mind-sharing abilities are evident by the end of an infant's first year of life. In particular, infants will turn their heads to look where someone else is looking (gaze following). In time, infants will demonstrate shared or joint attention when they have followed someone else's gaze and turned back to check the other person's reaction or convey their own reaction (e.g., someone points at something, you follow their point, and you make eye contact to share your reactions to whatever it is you are both looking at; Bellini, 2008; Dawson et al., 2004; Frith, 1989). Joint attention allows us to communicate interests, desires, and needs to another person without words. For example, before the first year of life, children begin to use protodeclarative pointing, or the use of the index finger, to indicate an item of interest (Volkmar et al., 2004). More specifically, children begin pointing at an item of interest because they want it or because they want to show the item of interest to someone else, indicating joint attention. Sharing attention with others requires a rapid shift of attention between different stimuli (Dawson et al., 2004). It has been hypothesized that infants with autism lack mind-sharing abilities such as joint attention (Baron-Cohen et al., 1985), resulting in an inability to construct a social world guided by intentions and desires (Volkmar et al., 2004). Impaired theory of mind has been argued as the main cause of the lack of social understanding and communication egocentricity in autism (Volkmar et al., 2004).

Research has shown that joint attention is important for competent communication (Dawson et al., 2004). Previous studies comparing children with autism, children with Down's syndrome, and children showing typical development found that children with autism were more impaired in their ability to follow another’s gaze (i.e., joint attention), supporting the hypothesis that shared attention impairments may be the result of failure to attend to social stimuli such as facial expressions or an individual’s eyes (Dawson et al., 2004). Shared attention skills presumably require that the child is interested in attending to another person. Dawson and colleagues found that preschool-age children with an ASD were significantly impaired in social orienting, joint attention, and attending to another person’s distress when compared to mental-age-matched children with developmental delays and typically developing children (Dawson et al., 2004). Consequently, a lack of joint attention can negatively impact an individual’s social development across the life span (Dawson et al., 2004).

The hypothesis of executive dysfunction concerns the deficits in *learning* in autism. Executive functioning refers to a set of cognitive processes that help us plan, memorize or retain information, and connect past experiences with present actions (Ozonoff, Pennington, & Rogers, 1991). Therefore, executive dysfunction refers to a lack of or impairment in these cognitive processes. This hypothesis defines learning in autism as characterized by poor self-regulation, perseveration, difficulty with change and transitions to new environments, reduced forward planning, rigid reasoning and problem-solving behavior, and ineffective adjustment to feedback from others and the environment (Ozonoff et al., 1991). It appears as though deficits in early imitation disrupt aspects of executive function development which, in turn, may contribute to the lack of reciprocity and social interaction that characterize individuals with autism (Gilotty et al., 2002; Volkmar et al., 2004) Many of the social skills difficulties exhibited by children with autism can be attributed to the way in which they process social information. Autism involves an impairment in attentional functioning, requiring rapid shifting of attention between different stimuli in social exchanges (Dawson et al., 1998). Although individuals with autism have difficulties orienting and shifting their attention, these difficulties are more evident for social stimuli (Dawson et al., 1998). A typical social exchange involves the evaluation of subtle and complicated information, and the subsequent selection of appropriate responses. An individual must utilize their working memory to recall social rules obtained in the past and apply these rules to interactions with peers (Dawson et al., 1998). It is hypothesized that because social stimuli (i.e., facial expression, gestures, speech, intonation) are complex and unpredictable, children with autism have difficulty processing and representing such stimuli and, therefore, they are not naturally drawn to such stimuli (Dawson et al., 1998). Often, children with autism do not know why they are engaging in a behavior; they are simply reacting to a situation as a result of impairments in and/or delayed processing of social information. Without appropriate attentional functioning, children with autism are lost in social interactions.

Behavioral Therapy for Autism Spectrum Disorders

There is great importance in targeting basic social attention skills in early intervention in order to facilitate the development of social understanding and communication skills essential for successful social interactions. The National Research Council *Committee on Educational Interventions for Children with Autism* reported that children with autism who receive intensive treatment starting at an early age show the most dramatic improvement in social behaviors (Anan et al., 2008). Behavioral approaches have strong empirical support for the treatment of autism spectrum disorders. Behavioral approaches are rooted in learning theory and focus on observation and measurement of behavior to identify antecedent stimuli and consequences that facilitate skill development and reduce problematic behavior (Anan et al., 2008; Mesopotanese, 2004).

Applied behavior analysis. Applied Behavior Analysis ([ABA]; Bear, Wolkf, & Risley, 1968) has a large body of empirical support as the leading behavioral treatment of ASDs. ABA focuses on “teaching specific, well-defined behaviors in a systematic manner in the context of repeated trials, or discrete trial instruction” (Corsello, 2005; Masse et al., 2007; Mesopotanese, 2004). ABA is an approach in which behavioral principles are applied to “increase socially appropriate repertoires while decreasing challenging behaviors for children diagnosed with ASD” (Bear et al., 1968; Corsello, 2005; Lord & Bishop, 2010; Masse et al., 2007; Mesopotanese, 2004). At this time, applied behavior analysis (ABA) is the only social skill intervention method that has solid empirical research demonstrating an increase in positive behaviors as well as a decrease in negative behaviors, and it is recommended as evidence-based practice by the U.S. Surgeon General (Mental Health: A Report of the Surgeon General, 1998 as cited in Schreiber, 2011). A number of states have adopted rules indicating that ABA, the most commonly studied treatment, is the only well-established treatment for young children with ASDs (Lord & Bishop, 2010; Volkmar et al., 2004). In addition, researchers argue that a child’s engagement in the treatment may be the most important factor in an intervention, which includes the child’s attention, interests and skills, and the family system (Volkmar et al., 2004).

Several other behavioral approaches with solid empirical support have been adapted from ABA principles, including The UCLA Young Autism Project (Smith & Lovaas, 1998), Pivotal Response Training ([PRT]; Koegel et al., 1989), the Treatment and Education of Autistic and related Communication Handicapped Children ([TEACCH Model]; Schopler, 1966), the

Developmental, Individual difference, Relationship-based model ([DIR]; Greenspan & Wieder, 1999), and Parent-Child Interaction Therapy ([PCIT]; Eyberg & Robinson, 1982).

The UCLA young autism project. The UCLA Young Autism Project, developed by Lovaas (1987), is a comprehensive intervention that targets all of a child's developmental and behavioral difficulties (Masse et al., 2007; Smith & Lovaas, 1998). This treatment is an intensive home-based program that builds from ABA principles and provides an ongoing assessment and revision of the child's intervention goals and objectives (Lord et al., 2005). The UCLA Young Autism Project utilizes several therapists who provide one-on-one treatment in the home, school, and community for 40 hours a week (Corsello, 2005; Lovaas, 1987; Masse et al., 2007; Smith & Lovaas, 1998). This intervention works by using repetition to modify a negative or undesirable behavior. For example, a child is given a command (i.e., "show me," "give me," etc.). If the child fails to respond or responds incorrectly, verbal or physical prompts are used to obtain the desired response. If the child responds correctly, he/she is rewarded. The same command is given until the child responds correctly without the need for prompts.

Pivotal response training. Pivotal Response Training (PRT), developed by Koegel and colleagues (1989), is a data-driven approach, based on behavioral principles, used to treat language, social, behavioral, and play deficits characteristic of children with ASDs (Corsello, 2005; Masse et al., 2007; Rocha, Schreib, & Stahmer, 2007). PRT differs from ABA in that it specifically focuses on improvement in broad areas of functioning in order for generalization to occur in other domains (Masse et al., 2007). For example, PRT targets areas such as motivation, responding to multiple cues, and social initiations. In addition, the child chooses what activities to participate in and what objects will be used for reinforcement (Koegel et al., 1989). The goal of PRT is to improve a child's independence by focusing on the key areas of motivation and selfinitiation (Corsello, 2005; Masse et al., 2007; Rocha, Schreib, & Stahmer, 2007). The assumption is an increase in responsiveness to the natural environment will occur when the child is more motivated to change his/her social behaviors for him/herself.

The TEACCH model. Another treatment approach in the behaviorist tradition is the TEACCH Model, developed by Schopler and colleagues (1971), which emphasizes a comprehensive structure required across the lifespan to teach new behaviors, target specific skills, and define conditions and consequences of behaviors through shaping (Corsello, 2005; Masse et al., 2007; Schopler et al., 1971). In addition, four aspects of communication are underscored: functionality, incidental learning, teaching of nonverbal or alternative forms of communication, and psycholinguistics, or the psychological and neurobiological factors that allow people to acquire, use and understand language (Masse et al., 2007; Schopler et al., 1971). An integral component of the TEACCH Model is the child's parents, who work to collaborate with the therapists for the benefit of their child (Masse et al., 2007; Schopler et al., 1971; Schopler & Reicheler, 1971).

The DIR model. The DIR model, developed by Stanley Greenspan (1999), is a developmental approach that aids children in reaching important developmental milestones: "self-regulation and interest in the world, engaging in relating to others, intentionality and two-way communication; social problem-solving, mood regulation and formation of a sense of self; creating symbols and using words and ideas; and emotional thinking, logic, and a sense of reality" (Corsello, 2005; Greenspan & Wieder, 1999; Masse et al., 2007). The DIR model is an intensive program that requires parents to work with their children across multiple settings (Masse et al., 2007).

Parent-child interaction therapy (PCIT). PCIT has "demonstrated success in improving parent-child relationships" while increasing child compliance and reducing problematic behavior (Eyberg & Robinson, 1982). PCIT is based on social learning theory and attachment theory and consists of two phases: child-directed interaction and parent-directed interaction (Herschell, Calzada, Eyberg, & McNeil, 2003; Masse et al., 2007; M. Solomon, Ono, Timmer, & Goodlin-Jones, 2008). Child-directed interaction involves parent engagement in a play situation with the child leading the play, and parent-directed interaction involves parents learning to use specific behavior management techniques. PCIT is an empirically-supported and manualized intervention model in which parents are coached, in real time, to reinforce positive behaviors and manage negative behaviors (Solomon et al., 2008). While initially developed to treat oppositional behavior problems in young children, PCIT has been adapted to treat a variety of early childhood issues, including behaviors associated with ASDs (Solomon et al., 2008).

In each of these interventions, there is a common component important to the child's treatment: parent involvement. In addition to therapists in the UCLA Autism Project, parents are a part of the treatment team and learn the techniques and procedures so they can also provide treatment (Masse et al., 2007; Smith & Lovaas, 1998). Parents also play an important role in the PRT by helping to implement the intervention (Koegel et al., 1989; Masse et al., 2007). At the core of the DIR model is a specific technique referred to as Floortime, in which the caregiver literally gets on the floor and interacts one-on-one with the child (Greenspan & Wieder, 1999; Masse et al., 2007).

Social Skills Interventions

"Social skills" encompasses a wide range of abilities, including speaking and listening skills, recognizing and understanding facial expressions, and appropriately employing nonverbal gestures, posture, and proximity (Ryan & Charragain, 2010). Deficits in skills taught in social skills training (SST) are a key feature of autism (MacKay et al., 2007; Ryan & Charragain, 2010; Schreiber, 2011). There are few manualized social skills programs designed for individuals with ASDs, so behavioral interventions that have shown efficacy with other populations have been adapted for use with ASD populations (Rao, Beidel, & Murray, 2007). However, adapting SST methods for children with disruptive behaviors to children with ASDs is particularly troublesome because social impairments in ASD are "qualitatively different from those encountered in other child psychological disorders" (Koenig, Los Reyes, Cicchetti, Scahill, & Klin, 2009). Over the past 30 years, excitement about the potential of SST as a panacea for many psychological disorders has shifted to recognition that SST is a valuable therapeutic approach for children with different kinds of social impairments when integrated with more complex cognitive-behavioral interventions (Koenig et al., 2009; Spence, 2003). Social skills interventions for individuals with ASDs involve the complex, multidimensional construct of social reciprocity that is "buffeted by a number of different factors that occur at different times and in different contexts," which have "major implications for the design and evaluation of group-delivered interventions" (Koenig et al., 2009). Often, individuals with ASDs are referred to outpatient mental health clinics for social skill interventions (Barry et al., 2003). Receiving services only in outpatient clinics does not meet these children's needs. The pervasiveness of ASDs makes it important for social skills interventions to be implemented in clinic, school, and in community settings to increase skill acquisition, maintenance, and generalization (Duncan & Klinger, 2010; Sim et al., 2006). Without paying attention to the above-mentioned issues, future research on efficacy of social skills interventions for children and adolescents with ASDs is not likely to provide transparency (Koenig, Los Reyes, Cicchetti, Scahill, & Klin, 2009; Volkmar et al., 2008).

Components of social skills interventions. As difficulties in social interactions are central to ASDs, interventions that require children to focus on peers create a positive social group culture important to the social development of children with ASDs (Krasny, Williams, Provencal, & Ozonoff, 2003). Group formats are commonly used for social skills interventions as a way of providing opportunities for peer interaction and practice in a more naturalistic setting. Group interventions are desirable for a number of reasons, such as increasing the number of children who can receive services at one time, providing peers with whom the child can socialize and practice skills with the guidance of group leaders, and reducing the cost of service delivery (Koenig et al., 2009; Kroeger, Schultz, & Newsom, 2007; Tse et al., 2007). A question when considering the use of a group is whether the group should be composed of all children with HFAs or a combination of autism spectrum disorders. One benefit of having a group comprised of all children with HFA allows the children to work on their unique skill deficits in a safe setting with peers who share similar experiences (Lopata, Thomeer, Volker, Nida, & Lee, 2007). However, if inclusion criteria is too stringent, generalizability to other ASD sub-populations may be threatened (Scahill & Lord, 2004). On the other hand, a heterogeneous sample provides the opportunity for the children to practice newly learned skills in a naturalistic format and promote interaction with children of varying abilities (Barry et al., 2003). A disadvantage of having a heterogeneous sample is that it is not possible to determine whether the intervention can benefit any specific sub-group on the autism spectrum (MacKay et al., 2007). Researchers must consider what questions they want their research to address in order to achieve the appropriate balance between homogeneity and heterogeneity in the participant population (Scahill & Lord, 2004).

Across the literature, the actual implementation of social skills groups varies in emphasis on different aspects of behavioral theory, targeted skills, and whether or not generalization and maintenance of learned skills is being measured. Gresham, Sugai, and Horner (2001) identified a number of strategies to promote social skill acquisition, maintenance, and generalization, including teaching skills in natural settings, using active models of social skills, and reinforcement procedures. Ryan and Charragain (2010) argue that in order for social skills to generalize to the "real world," teaching should involve social factors, be unpredicatable, and the pace be negotiated with other participants as though it were the "real world." Highly structured and predictable environments that provide immediate performance feedback and reinforcement have been identified as beneficial in promoting skill acquisition and maintenance (Lopata et al., 2007). For example, social skills groups deconstruct a complex social behavior such as having a conversation into separate components (i.e., greetings, asking questions, body language, maintaining conversations, termination). Each component, or skill, is taught in a part-to-whole sequence (Lopata et al., 2007). The group practices the skill with the help of modeling from the therapist and role-playing with peers. After each component has been practiced alone, the components are practiced together (i.e., in a conversational sequence). The therapist provides specific feedback throughout the learning sequence. An extrapolation of these successful techniques may reveal promising trends for designing successful social skill interventions for children and adolescents with ASDs (Schreiber, 2011). Literature documents a variety of empirically supported social skills intervention techniques such as "incidental teaching, modeling, role-playing, social stories and scripts, self-monitoring, and peer mediated activities" (Beaumont & Sofronoff, 2008; Duncan & Klinger, 2010; Lopata et al., 2007; Ryan & Charragain, 2010; Schreiber, 2011).

Incidental teaching is used to “discuss social problems or difficulties that may arise” during the course of a session, such as a disagreement among group members, and to provide feedback about how to manage similar problems in a variety of social settings (Duncan & Klinger, 2010). Similarly, role-plays allow the child or adolescent with ASD to observe and practice a particular skill after direct instruction (Duncan & Klinger, 2010). Social stories, developed by Carol Gray, is a technique used to improve one’s understanding of social situations through simple short stories describing a social situation, socially appropriate ways of handling the situation, and providing aspects of self-management (Gray & Garand, 1993). Social stories appear to be an effective intervention for children with HFA, perhaps because of their verbal strengths, and have been widely used in school settings and in conjunction with a variety of interventions (Schreiber, 2011). Social scripts similarly describe how to behave in social situations through comments and questions appropriate to a particular social situation by the characters created for the social script (Duncan & Klinger, 2010).

Self-monitoring involves self-awareness and adjusting, or changing, one’s behaviors as necessary to the social context and is an important tool that can be used to help children and adolescents with ASDs to keep track of a variety of social skills, as well as track their own progress in using appropriate social skills in social interactions (Duncan & Klinger, 2010). Strategies that help those with ASDs to monitor their own emotions are essential to social skills interventions. In an era of technological advancements, videotaping individual and group social interactions has become an important technique in social skills interventions. Therapists videotape children during social skills groups and review the videos with the children to examine an individual child’s behavior, others’ behaviors, and contextual factors that lead to specific emotions or behaviors to increase social understanding (Schreiber, 2011).

Another effective method for increasing social interactions in children with autism involves educating and training typically-developing peers to observe and encourage children with ASDs to engage in social exchanges, known as peer mediation (Barry et al., 2003; Schreiber, 2011). Studies of peer-mediation are numerous in the empirical literature and have shown that children with ASDs appear to be more responsive to social interactions when peer support is present (Barry et al., 2003; Kroeger et al., 2007). For example, in a program consisting of social skills play groups, lunch buddy groups, recess buddy groups, and tutoring activities, students who received peer mediation for more than a year showed more generalization of learned social skills to other groups of peers compared to children who did not receive peer mediation (Kamps et al., 2002).

Typically, research on SST intervention groups with ASD populations includes males who are higher functioning, adolescents, and/or are capable of at least minimal expressive verbal language (Barry et al., 2003; Beaumont & Sofronoff, 2008; Gevers et al., 2006; Koenig, 2012; Kroeger et al., 2007; Lopata et al., 2007; MacKay et al., 2007; Sim, Whiteside, Dittner, & Mellon, 2006; Tyminski & Moore, 2008). A 2009 review found the average number of participants in social skills groups is 10 (Koenig et al., 2009). Duration of social skills groups varied considerably, with shorter-term groups lasting from five to eight weeks (Kroeger et al., 2007; Pfiffner & McBurnett, 1997; Schreiber, 2011); moderate-length groups ranging from 12 to 16 weeks (Koenig, 2012; MacKay et al., 2007); and longer-term groups lasting 21 weeks to bi-monthly for the length of an academic year (Duncan & Klinger, 2010; Gevers et al., 2006). Session length was much more consistent, with sessions typically lasting 60 to 90 minutes (Gevers et al., 2006; Koenig, 2012; Kroeger et al., 2007; Pfiffner & McBurnett, 1997; Schreiber, 2011).

The structure of the reviewed social skills intervention groups varied slightly, but generally maintained a similar layout. For example, each session began with a greeting period, accomplished with a “hello” circle time activity or socialization with other group members; the body of the intervention groups consisted of reviewing homework assignments, a didactic component accomplished through teaching and practicing a new skill, participating in large or small group activities, modeling, role-playing, or playing a computer game used to teach decoding of thoughts and feelings, and snack time. Finally, each intervention group ended with a closing period that included reviewing skills learned, assignment of homework, free time, and parent time in which the parents were debriefed about the skills their child was taught and their child’s progress (Barry et al., 2003; Beaumont & Sofronoff, 2008; Duncan & Klinger, 2010; Koenig, 2012; Kroeger et al., 2007; MacKay et al., 2007; Pfiffner & McBurnett, 1997; Schreiber, 2011).

Effectiveness of social skills interventions. A number of group intervention approaches have been tested, yet efficacy remains inconsistent (Koenig et al., 2009). Recent studies evaluating social skills programs for individuals with ASDs generally show limited effects, and those studies reporting more promising results are characterized by small sample sizes, a lack of no-treatment control conditions, and/or failure to collect post-treatment/follow-up data (Beaumont & Sofronoff, 2008). Results of meta-analyses of SST programs have varied considerably, with the effect size depending on the presenting problem of the child, outcome measure, length of follow-up period, location, and informant (Koenig et al., 2009; Spence, 2003). A review of 79 controlled outcome studies concluded that social skills training produced an average moderate effect size of .40 (Schneider, 1992). “While individual skills can be delineated as targets for intervention, show improvement, and be measured with reasonable accuracy, testing the efficacy of broad-based group interventions is a more difficult task" (Barry et al., 2003; Koenig et al., 2009). Obtaining "uniform estimates of effect size across multiple outcome measures" should not be expected because the broad construct of social reciprocity is made up of many different, individual social skills (Koenig et al., 2009). Though these findings appear to be discouraging, meta-analytic studies have shown that social skills training varies according to the type of intervention, targeted skills, outcome measures used, and length of follow-up (Spence, 2003). Although effectiveness varies, research has established a need for social skills interventions for children with ASDs (Koenig et al., 2009).

A number of "quality indicators" identified by Koenig et al. (2009) as important to interventions for individuals with ASDs, include:

> Random assignment of participants to treatment and control conditions; the use of manuals for all groups; having a recruitment plan in order to obtain a representative sample; clearly stated inclusion/exclusion criteria; careful characterization of participants; systematic monitoring of intervention fidelity; clear rationale for selection of outcome measures; use of outcome measures collected blind to the treatment condition; and appropriate statistical analyses of differences between groups post-intervention, effect size, and variables that may influence outcome. (p. 1165)

In addition, Koenig et al. (2009) recommended that "specific strategies and techniques be established as effective using case studies, strategies should be manualized in order to promote consistent application and replication, and clinical trials should be conducted incorporating certain critical components."

Koenig and colleagues (2009) highlight the importance of "using established standards for determining the strength of the evidence for treatment" for individuals with ASDs.

Unfortunately, implementation of social skills treatment in outpatient settings has been met with limited success and has failed to increase social acceptance by same-age peers (Sim et al., 2006; Pfiffner & McBurnett, 1997). Unless children and adolescents are taught that social skills are interesting, rewarding, and meaningful, they may not acquire the necessary communicative and social skills necessary for interacting appropriately with others (MacKay et al., 2007). Tyminski and Moore (2008) found that psycho-educational approaches might be more effective for older children or adolescents, or those individuals without notable cognitive impairments (higher functioning individuals). On the other hand, Tyminski and Moore (2008) suggest process-oriented approaches may be more suitable for younger children with ASDs, or for those with significant cognitive delays, because these approaches require more time for relationships to develop, for social patterns to be internalized, and for individuals to acquire an emotional vocabulary. Koenig and colleagues (2009) report that "a consensus among researchers and clinicians has emerged supporting the view that small effects can be of clinical importance, and thus, the intervention is worth continuing study and refinement" (Koenig et al., 2009).

Though clinic, school, and community settings are common for social skills interventions, little research has been conducted to determine the most effective manner of providing such treatments for children with ASDs (Barry et al., 2003; Duncan & Klinger, 2010; Kroeger et al., 2007). The targets of social skills interventions for individuals with ASDs range from very specific behaviors to global improvements in social functioning (Koenig et al., 2009). In general, interventions aimed at documenting global improvement in social skills for individuals with ASD have failed to find evidence of large-scale improvements, and when improvement in specific skills are found, they tend to have limited generalizability at best (Barry et al., 2003). A study done by Ozonoff and Miller (1995) reported on a 4 ½ -month training program with adolescents with HFA in which the treatment condition made gains on a variety of ToM tasks, but the control condition did not. However, the skills learned in the group did not generalize to other settings as reported by parent and teacher ratings. Barry et al. (2003) argues that, with few exceptions, even peer-mediated social interactions do not generalize to settings with untrained peers. Given that severe social deficits are a core impairment of ASDs, Barry et al. (2003) further argue it may be unrealistic to expect generalization to broad, untaught behaviors. The failure to transfer and apply social knowledge taught in isolation to real-life sitautions is a major issue for interventionists and generalization and maintenance of the learned skills are often unknown (Koenig et al., 2009; Kroeger et al., 2007).

Little empirical evidence exists for the efficacy of non-manualized programs for those with HFA (Schreiber, 2011). However, non-manualized programs are still being used as a way of providing support for children and adolescents with ASDs. For example, Schreiber (2011) reviewed social skills intervention research since the year 2000 for children and adolescents with HFA and found that some non-manualized social skills groups were loosely based on the structure outlines by the Treatment and Education of Autistic and Related Communication-Handicapped Children (TEACCH) system. TEACCH was developed with the philosophy addressing an understanding of the effects of autism on individuals; the use of assessment to assist program design around individual strengths, skills, interests and needs; enabling the individual to be as independent as possible; and working in collaboration with parents and families (Schopler & Reicheler, 1971).

The lack of evidence of effective interventions raises the question of whether family and community resources are being used to the best advantage (Koenig et al., 2009). In order for social skills to be maintained and generalized, they must be practiced in naturalistic settings on a regular basis. Parent and family training may be essential to ensuring effective social skills application (Schreiber, 2011; Sim et al., 2006). Parents spend more time with their children than anyone else and, therefore, have the greatest opportunity to facilitate behavior change. Pfiffner and McBurnett's (1997) study revealed that parents in both the treatment and no-treatment control condition advocated for adding a parent group to the social skills training to facilitate skill generalization in their children. In addition, parents in the Montreal Children's Hospital's social skills group for adolescents requested more parent involvement in the group, continued contact with other families, and even the addition of a parallel parent group (Tse et al., 2007).

Parent Training

In the late 1960s, there was a shift in addressing children's problematic behaviors from focusing exclusively on changing the child's undesirable behaviors directly to focusing on changing parents' behavior as a means to change the child's behavior (Brookman-Frazee, Stahmer, Baker-Ericzén, & Tsai, 2006; Scott, 2002; Wyatt Kaminski, Valle, Filene, & Boyle, 2008). With evidence that parents could act as agents of change in their child's behavior, and with the recognition of Bandura's work with behavior modification (1969), a better understanding of how parents contributed to their child's positive and negative behaviors developed (Wyatt Kaminski et al., 2008). Parent training draws on two traditions, behavioral learning theory and play therapy, and incorporates a range of concepts from child development to psychological treatment research (Scott, 2002). For example, behavioral theory is reflected in identifying antecedents and consequences of problematic behaviors, as well as strategies to manage negative behaviors and reinforce positive behaviors in the environment in which these behaviors are most likely to occur. Play therapy is reflected in the strategies to enhance the parent-child relationship. In parent training, therapists form a collaborative relationship with the parents, working with the parents to achieve their goals, recognize and build on their existing strengths, and utilize role-playing and feedback as teaching techniques (Reyno & McGrath, 2006; Scott, 2002). Though parenting programs differ in orientation or techniques, these programs do share some common characteristics (Reyno & McGrath, 2006). For example, many of the empirically-based parent training programs follow behavioral principles of positive child management and utilize specific curriculums or manuals; are conducted individually; last several weeks; and include handouts, books, or homework assignments for parents to further assist in skill development and application (Ingersoll & Dvortcsak, 2006; Ingersoll & Wainer, 2011; Reyno & McGrath, 2006; Scott, 2002; Webster-Stratton, 1998).

Despite being highly effective and considered an essential component of successful interventions with a number of populations, parent training is rarely included in publicly funded early childhood special education programs in any country of the world (Coolican, Smith, & Bryson, 2010; Scott, 2002). For example, PCIT is primarily used in university training clinics and, consequently, has not yet become standard in community mental health care, where the majority of children with disruptive behaviors and externalizing disorders are treated (Herschell et al., 2003). A psychoeducational approach is being used by many clinicians, where the parents are informed about the nature of their child's behaviors but are not expected to practice the specific skills (Scott, 2002). Engaging parents is crucial if these programs are to work.

The most entrenched challenge to interventions for ASDs is the difficulty of generalizing skills from explicit and structured settings to naturalistic ones. The greater the demands of spontaneous use of social skills, the greater the level of social difficulty in individuals with ASDs (Volkmar et al., 2004). Generalization and maintenance of behaviors are not passive phenomena; they must be addressed actively (Schreibman, 2000). In fact, there is little evidence that a change in behavior in one environment will generalize to another without special instruction (Ingersoll & Dvortcsak, 2006). Studies have shown that if generalization is not specifically addressed, it will very rarely happen of its own accord (Volkmar et al., 2004). Overall, few empirically supported interventions for social skills exist and "research on their effectiveness have been mixed." However, there is support for "several strategies that lead to successful acquisition of social skills in individuals with ASD" (Duncan & Klinger, 2010). Empirically supported treatments for autism rely on heavy parent involvement, which is lacking in most social skills programs. Therefore, the development and evaluation of interventions designed to enhance social skills for children and adolescents with ASDs are crucial (MacKay et al., 2007).

Teaching parents to support and reinforce social skills appears to increase generalization and maintenance of learned skills outside of the home (Coolican et al., 2010; Scott, 2002). Once a child is able to demonstrate a skill independently in the teaching environment, the next step for each individual in the program is generalization. Generalization consists of demonstrating a skill learned in a single environment to a variety of environments, materials, and people (Mesopotanese, 2004). These children may be able to display a skill independently in school, for example, but may not be able to do so independently in the home. Similarly, gains with one person such as a teacher may not generalize to another person such as a parent (Brookman-Frazee et al., 2006; Mesopotanese, 2004). Researchers have found that when parents are trained in behavioral methods in the home environment, generalization and maintenance of behaviors to naturalistic settings improves over time (Brookman-Frazee et al., 2006, 2006; Ingersoll & Dvortcsak, 2006; Schreiber, 2011). Therefore, training parents of children with ASDs to provide additional interventions in the home can play a pivotal role in helping their child generalize and maintain skills across daily life (Ingersoll & Dvortcsak, 2006; Ingersoll & Wainer, 2011). In addition, parent groups can be an empowering environment for parents of children with ASDs, decreasing their stress and insularity and providing new sources of support within the ASD community (Webster-Stratton, 1998).

Parent training and the ASD population. Historically, behavioral procedures have played a role in the management of problematic behaviors in children with developmental disabilities (McDiarmid & Bagner, 2005). For example, parent-mediated interventions have been widely researched and shown to be effective for a variety of childhood behavior problems, with conduct problems and disruptive behavior disorders (DBD) most frequently targeted (Brookman-Frazee et al., 2006; Scott, 2002). Programs for DBD focus on reciprocal parent-child interactions as the mechanisms of change, whereas until recently, programs for ASDs have focused on the therapist-child interaction as the mechanisms of change. However, research from the 1960s has demonstrated that therapists are not the only individuals who can modify a child's behavior. Parents spend more time than anyone with their child and, therefore, have the most opportunity to change their child's desirable and undesirable behaviors. Therefore, it has been hypothesized that parents of children with ASD may also benefit from basic parenting skills that are standard in parent training programs (Brookman-Frazee et al., 2006).

As stated above, the overall goal of implementing behavioral procedures is to change behavior. Generalization of such behavioral changes to a more naturalistic environment is important for an individual to function independently (Anan et al., 2008). Consequently, intensive behavioral treatments have been shown to be effective interventions for the ASD population, but are time- and labor-intensive and can be prohibitively costly for many (Anan et al., 2008; Ingersoll & Wainer, 2011). Such interventions are estimated to cost upwards of $60,000 per child per year and are seldom covered by insurance (Anan et al., 2008). Therefore, a viable option has been for parents to participate in their child's treatment and to be trained to serve as their child's therapist (Anan et al., 2008; Ingersoll & Wainer, 2011; McConachie & Diggle, 2007). Parent inclusion was accomplished by holding weekly sessions that provided psychoeducation regarding ASDs and effective teaching strategies (Gevers et al., 2006; Lopata et al., 2007; Pfiffner & McBurnett, 1997; Schreiber, 2011), and also included homework assignments that were to be completed in the home to facilitate generalization of learned skills (Beaumont & Sofronoff, 2008; Schreiber, 2011; Sim et al., 2006).

Disruptive behaviors are often a concern and source of parental stress among parents of children with developmental disabilities, specifically ASDs (McDiarmid & Bagner, 2005). The importance of training parents of children with ASDs to manage their child's behavior was first emphasized by Lovaas and his colleagues when they noted that children whose parents were trained in the interventions continued to make gains, whereas children who returned to an institutional setting lost the skills they previously acquired (Ingersoll & Dvortcsak, 2006). Over the past several years, there has been an increase in the number of children with ASDs and their families referred to PCIT clinics (McDiarmid & Bagner, 2005; Scott, 2002). With emerging understanding of ASDs and parental stress, parent-training programs have proven to be a more powerful extension of behavioral treatment than simply lengthening treatment in a clinic setting (Anan et al., 2008; Coolican et al., 2010; McDiarmid & Bagner, 2005). For example, research has indicated that parents of children with ASDs can learn behavioral strategies with a high degree of fidelity and use these strategies to increase their child's language, social engagement and social communication development (Ingersoll & Wainer, 2011). In addition, a small number of studies with and without random treatment assignment have suggested that parent training has a positive effect on children’s social communication, parental ability to teach new skills, and quality of parent-child interaction (McConachie & Diggle, 2007).

Limitations and Conclusions

Limited research regarding the ASD population. Although parent training has been successfully applied with children with developmental disabilities, formal parent training is still the exception in community-based intervention programs for children with ASDs (Ingersoll & Wainer, 2011; McConachie & Diggle, 2007). The lack of available parent training programs for younger children with ASDs is even more striking. A survey in North Carolina found that only 8% of parents of children with ASD four years and under reported receiving parent training (Ingersoll & Wainer, 2011). In a 2008 meta-analytic review of parent training effectiveness, 128 studies involving parent training were examined (Brookman-Frazee et al., 2006; Wyatt Kaminski et al., 2008), but none included children with ASDs.

Majority of studies regarding the ASD population “focus on children under the age of 5 years, which may be explained by the emphasis on early intervention for children with ASDs” (Brookman-Frazee et al., 2006). For example, research has suggested that early intervention in parenting is more effective and more likely to prevent a pattern of disruptive behaviors from developing (Webster-Stratton, 1997). There have been no studies focused on problematic behaviors in school-aged children with high functioning ASDs (Solomon et al., 2008). In addition, research in DBD continues to place emphasis on parental factors, while research in ASDs target individual variability in child factors. Further, even the terms used to describe parenting programs differ between the DBD and ASD populations.

Parents of children with ASDs face a variety of challenges over the span of their child’s life. As such, research has recognized that “children with ASDs have difficulties such as variable skill development, inconsistent responding, and a lack of responsiveness to typical parenting strategies such as social praise" (Brookman-Frazee et al., 2006). Such unique difficulties "may lead to differences in methodology from those seen in the DBD population" (Barry et al., 2003; Koenig, 2012; Sim et al., 2006; Tyminski & Moore, 2008). For example, DBD researchers have been focusing on primarily using randomized clinical trials, whereas ASD researchers continue to use single-case experimental designs (Brookman-Frazee et al., 2006; Schultz, Schmidt, & Stichter, 2011). Only recently have a few studies evaluated the outcomes of parent training as compared with no training through randomized controlled designs (Brooke Ingersoll & Wainer, 2011).

Limitations of social skills intervention research. Research has highlighted the importance and validity of using social skills intervention groups to teach socialization to children and adolescents with ASD; however, the literature regarding the use of group interventions for this population is inconsistent (Lopata et al., 2007; Sim et al., 2006). The research that does exist has been characterized by lack of randomized treatment studies and few manualized programs (Gevers et al., 2006; Lopata et al., 2007). Additional reported limitations of SST outcome research include small sample size (Barry et al., 2003; Gevers et al., 2006; Koenig et al, 2009; MacKay et al., 2007; Pfiffner & McBurnett, 1997; Schreiber, 2011; Tyminski & Moore, 2008); lack of neutral assessment and potential rater-bias (i.e., treatment providers are also primary evaluators; Beaumont & Sofronoff, 2008; Gevers et al., 2006; Lopata et al., 2007; MacKay et al., 2007; Sim et al., 2006); diagnostic accuracy (i.e., representative samples of individuals with ASDs, lack of use of "gold standard" diagnostic measures to obtain diagnoses; Lopata et al., 2007; MacKay et al., 2007; Schreiber, 2011; Sim et al., 2006; Tyminski & Moore, 2008); lack of post-treatment data or measurement of generalization (Gevers et al., 2006; Schreiber, 2011; Sim et al., 2006; MacKay et al., 2007); poor outcome measures (Barry et al., 2003; Beaumont & Sofronoff, 2008); lack of direct observation used for assessment (MacKay et al., 2007); limited demographic representation (Lopata et al., 2007); relatively short intervention period (MacKay et al., 2007); lack of treatment manuals (Koenig et al, 2009); lack of effect sizes (Schreiber, 2011); and few interventions have been based on a theoretical understanding of the mechanisms of ASDs (MacKay et al., 2007).

Much of parent training research with children with ASDs has taken place in university settings and has involved a majority of middle-class, well-educated parents (Ingersoll & Dvortcsak, 2006; Scott, 2002). Consequently, a criticism of traditional parent training models for parents or caregivers of children with ASDs is that they may not be appropriate for all families, particularly those experiencing high levels of stress or socioeconomic disadvantage (Ingersoll & Dvortcsak, 2006).

Parent training attrition. Attrition rate is of major concern when considering whether clients benefit from the services they are receiving. Studies looking mostly at adults have shown that over 50% who begin therapy will fail to attend more than four sessions (Frankel & Simmons, 1992). A recent study of parent training for child behavior problems reported attendance rate at only 60% (McGilloway, Ni Mhaille, & Bywater, 2012), with other studies reporting attrition rates comparable to the 50% seen with adults (Gevers et al., 2006; Koenig, 2012). Dropout rates are typically high in families with children who have conduct problems, and higher for families who have children who behave antisocially (e.g., 45 to 65%; Frankel & Simmons, 1992; Scott, 2002). Recent studies reported that 40 to 60% of families of children and adolescents who enter treatment terminate prematurely and against the advice of their therapists (Brooke Ingersoll & Wainer, 2011).

A number of variables have been reported as risk factors for high dropout rates, including maternal depression, single-parent status, younger maternal age, low educational attainment, low income and low socioeconomic status (SES), family isolation and ethnic minority status (Frankel & Simmons, 1992; Scott, 2002; Webster-Stratton, 1997, 1998). Additional variables include distance from the clinic and referral source (Frankel & Simmons, 1992). Families marked by these risk factors are more likely to drop out of parent training prematurely, fail to show changes after treatment, or fail to maintain changes made during treatment (Reyno & McGrath, 2006; Webster-Stratton, 1997, 1998). For example, families who terminated prematurely from PCIT looked the same after one and three years post-termination as they had before treatment began, whereas families who completed treatment maintained their gains (Herschell et al., 2003). In addition, Ingersoll and Dvortcsak (2006) found that even after several accommodations were made to encourage parent participation, only 75% of families chose to participate and, of these, only 56% participated in the entire parent training program. Individuals who respond to recruitment for treatment are more likely to be motivated, have the time and ability to implement the programs, and are more financially sound (Scott, 2002).

Parents who may benefit the most from parent training (i.e., those who are economically disadvantaged or socially isolated) are often the most reluctant to attend or are less likely to complete treatment (Reyno & McGrath, 2006; Scott, 2002). Such families have been described as resistant, disengaged, chaotic, unmotivated, disorganized, in denial, uncaring, dysfunctional, and unlikely candidates for parent training programs – they are "unreachable" (Webster-Stratton, 1998). However, these families may describe the current clinic-based programs as "unreachable;" clinic programs may be too distant, too expensive, too intensive, inflexible, may utilize foreign terminology, and may seem critical of their lifestyle (Webster-Stratton, 1998).

Families at high risk for dropping out of parenting programs may have had negative experiences with professionals in the past and are not “unreachable” because of their own characteristics, but because of the way the interventions have been organized by the system.

Rural populations. Due to the geographic and cultural differences between rural and urban communities, people in rural areas regularly encounter barriers to receiving effective services (Rainer, 2010). Therefore, treating families living in rural communities presents a distinct set of challenges. So much so that the government recognized the health needs of rural Americans in 1987 and formed specific committees for rural health (Smalley, Yancey, Warren, Naufel, Ryan, & Pugh, 2010). Unfortunately, despite more than 30 years of focus on rural mental health, rural communities continue to face challenges in receiving psychological services and the themes of rural mental health remain constant: mounting needs, limited resources and lack of available professionals (Curtin & Hargrove, 2010; Lishner, Levine, & Patrick, 1996; Rainer, 2010; Smalley et al., 2010). Seventeen million Americans live in rural areas with a shortage of primary care physicians (Lishner et al., 1996); more than 85% of designated Mental Health Professional Shortage Areas are in rural areas (Smalley et al., 2010). These challenges combine to both create and sustain mental health problems in rural communities (Smalley, et al., 2010). In addition to the themes of mounting needs, limited resources, and lack of professionals are two relatively consistent characteristics of rural mental health: poverty and payment for services, with poverty being the single greatest common factor across rural populations (Curtin & Hargrove, 2010; Rainer, 2010).

As private mental health services expand, rural mental health services remain predominantly publicly funded; that is to say, largely underfunded (Rainer, 2010). Rural areas have difficulty attracting qualified health care professionals and lack the population base to offer highly specialized services (Lishner et al., 1996). The paucity of services and difficulty accessing services extends also to the children of rural communities (Smalley et al., 2010). To make matters worse, an absence of information on the prevalence and severity of disabilities among rural children and adolescents has resulted in a lack of attention and reduced ability to address the healthcare needs of this subset of rural communities (Lishner et al., 1996). Therefore, seeking services outside of their areas of residence comes with great financial and personal costs for the families of these children and adolescents. Children and adolescents with ASDs experience compounded complications: rural setting often limit capacity for interpersonal and social contact (Rainer, 2010). As stated above, social deficits are the most identifiable deficits in individuals with ASDs. Therefore, there is much need for social skills programs for children with ASDs who live in rural areas, as well as creativity in service delivery to reduce barriers to participation in parent training for their families.

Future directions

As noted, individuals with ASDs represent variable skills and deficits in social, cognitive, and behavioral functioning and important aspects of successful treatment of children and adolescents with ASDs have been identified (Koenig et al., 2009; Volkmar et al., 2004). Often, data regarding efficacy and cost-effectiveness of interventions are lacking, which may result from the growing gap between what science and research show to be effective and what treatments parents are choosing or are being offered to families (Volkmar et al., 2004). For behavioral interventions to be considered evidence-based, they must be based on a theory of behavior change, utilize a protocol/manual, and have supporting evidence published in scientific literature (Koenig, 2012; Lord & Bishop, 2010). Although research has reported the benefits of behaviorally-based programs for children and adolescents with ASDs, additional steps must be taken to adequately measure effectiveness of such programs. Intensive interventions can be extremely effective and produce significant improvement in the behavior of children and adolescents with ASDs; however, greater effort is necessary to select intervention programs that are based on empirical evidence (Schreibman, 2000; Spence, 2003).

Much ASD research is conducted in single subject group designs because there is so much variability across the ASD population. Research suggests that in order to address questions of mechanisms, moderators, and individual differences regarding different interventions, research must extend upon and integrate these findings with randomized controlled studies (RCTs), which are rare in developmental and behavioral therapies for the ASD population (Volkmar et al., 2004). Heterogeneous groups parallel the "real world" and RCTs can examine this heterogeneity. However, single subject group designs are still important because it is difficult to identify a single technique that will work for each person across the ASD population. With our understanding of the wide variability in presentation of impairments, determining the efficacy of interventions for children and adolescents with ASDs requires utilizing direct and appropriate assessments to measure social behaviors and social skills deficits (Koenig et al., 2009; Lopata et al., 2007; Sim et al., 2006). These steps are essential if we are to determine which forms of treatment benefit which specific subpopulations of the autism spectrum (Schreibman, 2000).

Interventions emphasizing social skills have emerged as a major theme in the treatment of individuals with ASDs, ranging from preschool-aged children to adults. With the current prevalence estimates at over 1% of the population, it is necessary to coordinate treatment services for families who cannot attend university-based programs, and reach out to schools and community-based providers (Lord & Bishop, 2010; Schreibman, 2000). As previously discussed, more extensive generalization and maintenance of behaviors are achieved when parents or caregivers are included as treatment providers. However, only recently have parents been included in social skills interventions (Sim et al., 2006). Just like other behavioral interventions for children and adolescents with ASDs, social skills programs should extend into the child's naturalistic setting such as school and home. To accomplish this, teachers, parents, and caregivers should play a role in social skills training within and outside of the training sessions in order to serve as models of skilled social behaviors and provide prompt reinforcement for appropriate social responding (Smalley et al., 2010; Spence, 2003). Tse and colleagues (2007) also suggest that future research address whether the addition of a parallel parent group to a children's social skills group enhances their child's learned skills. Further, Brookman-Frazee and colleagues (2006) recommended future research on program development for parents of older children and adolescents, "as their needs may differ from younger children, as may the needs of the parents." The importance of generalization and maintenance of learned social skills and behaviors demonstrates that additional research is needed to specifically focus on interventions that enhance these aspects of treatment outcome (Schreibman, 2000).

Successful programs not only need to involve parents or caregivers in their child's treatment, but also need to be realistic and accessible for families characterized as low-income, low SES, single-parent, or isolated, just to name a few. For example, clinicians and researchers have been working to find creative solutions for families in rural and isolated communities, such as including scheduled phone contact or email correspondence (Smalley et al., 2010). In addition, Scott (2002) found that providing a book and offering regular telephone advice led to reasonable gains on parental questionnaires (Scott, 2002). Similarly, homework assignments are provided in a number of behavioral interventions, including social skills programs, as an integral part of the child's learning process (Garcia Winner, 2006; Koenig, 2012; Webster-Stratton, 1998). The literature also stresses the importance of providing booster sessions and utilizing follow-up measures with families in order to measure and facilitate maintenance and generalization of learned skills (Lopata et al., 2007; Spence, 2003).

Current Investigation

As shown, generalization of social skills learned in a structured setting to more naturalistic settings is a key area of concern for children and adolescents with ASDs. In addition, research has suggested that parent training is worth exploring as an avenue to improving maintenance and generalization of learned skills. Unfortunately, many of the parents who would benefit the most from parent training face a number of barriers to obtaining parent training services. Therefore, the current study was designed to address the need for greater access to social skills training that reduces some of the barriers encountered by rural families of children with ASDs. The first goal of the current study was to test the feasibility of a new home-based parent training program to augment a social skills curriculum currently being implemented in a rural, community-based social skills treatment program for children with ASDs. The curriculum is an adaptation of Michelle Garcia-Winner's *"Think Social! A Social Thinking Curriculum for School-Age Students"* (2006) and children participating in the social skills treatment program participate in twice weekly social skills groups. At present, there is no mechanism in place to educate or train their parents on the skills being taught in the treatment condition. For the current study, a parent manual was developed that provided psychoeducation regarding ASDs and specific techniques that parents used in their home to facilitate maintenance and generalization of the social skills that their children learned in their social skills treatment condition. The current study evaluated parent acceptance of, adherence to, and satisfaction with this augmentation to their children’s social skills program. The second goal of the study was to evaluate whether the parent manual actually improved generalization and maintenance of gains. Since there was no mechanism in place to educate or train parents, there was no mechanism for evaluating maintenance and generalization of learned skills to settings outside of the Social Skills Intervention Group (SSIG). The current study assessed maintenance and generalizability via parent feedback and satisfaction ratings. This project added to the limited research on parent training for underserved families of children with ASDs by inviting participation of single-parent families, families who were socially and geographically isolated, and families of low SES.

In addition to psychoeducation regarding the social deficits of children and adolescents with ASDs, the parent manual explained the role of the parent in facilitating the child’s social behavior and included information regarding seven consecutive weekly topics on which the child received instruction in the SSIG program. One lesson was covered each week. Seven weekly lessons were chosen because five to eight weeks was the duration of treatment most often reported in the social skills research (Kroeger et al., 2007; Pfiffner & McBurnett, 1997; Schreiber, 2011). The parents were provided with information on each lesson, newly introduced vocabulary terms, and a rationale behind the techniques introduced in the lessons (Table 1).

This pilot study had two aims. First, this study aimed to assess the feasibility of implementing an adjunctive parent manual program to an existing social skills intervention group. To that end, the current study analyzed parents’ satisfaction with and adherence to the parent manual, as well as obtained feedback from parents/guardians. First, it was predicted that parent/guardians would be able to carry out the tasks outlined in the parent manual. Secondly, it was predicted that parent/guardians would report being satisfied with the parent manual.

The second aim of this study was to determine whether the addition of the parent manual would lead to any meaningful change in the child's treatment outcome. To determine whether the parent manual led to meaningful change in the child's ability to carry out the skills learned in group to other settings, it was predicted that the parent/guardians of the self-selected treatment condition would rate their children as more socially skilled on the Social Skills Rating System, Parent Form (SSRS-P) and Social Responsiveness Scale (SRS) at post-treatment compared to the SSIG only group. It was also predicted that the SSIG staff would rate those children or adolescents in the self-selected treatment condition as more socially skilled compared to the SSIG alone group.

Table 1

Summary of Topics and Skills Taught

Topic	Skills Taught
1. Expected vs. Unexpected Behavior	- There are “expected” and “unexpected” behaviors in a setting - Excepted behaviors are behaviors such as having good eye contact and staying on topic - Unexpected behaviors are behaviors such as interrupting others and throwing things. - Expected behaviors impact others in a positive way, while unexpected behaviors often have a negative impact.
2. Body and Brain in or Out of the Group	- Determining whether a person is part of a group is based not only on physical presence, but also attention to the group. - Monitoring ability to stay in a group.
3. Thinking of ME, Thinking of You	- People should behave differently in a group than they do when they are by themselves. - There a certain comments that people make that do not add to the group
4. Good Thoughts vs. Weird Thoughts	- Our behaviors can influence both positive and negative feelings of others. - People have “good thoughts” and “weird thoughts” about our behaviors.
5. Identifying Emotions	- Emotional identification. - People can share experiences by sharing emotions. - Different people express emotions in different ways.
6. Big Problem vs. Little Problem	- Some problems are big, while others are little. - Different kinds of emotions are associated with different-sized problems. - Mismatching one’s reaction to the problem size can make things worse.
7. Self-Monitoring	- Monitor behaviors of others and selves based on skills learned in six previous lessons. Modify behaviors based on feedback from others.

Note. Adapted from Garcia Winner (2006). *Social Thinking! A Social Thinking Curriculum for School-Aged Children*. San Jose, CA: Think Social.

CHAPTER III

METHODOLOGY

Participants

Participants and their parents/guardians (henceforth referred to as "parents") were recruited from a Social Skills Intervention Group (SSIG) at New Story in Indiana, Pennsylvania. The SSIG program currently serves 35 children and adolescents, ages 6 to 18 years old, with DSM-IV diagnoses of autism, Asperger's Syndrome, Pervasive Developmental Disorder, Not Otherwise Specified, or another developmental disability, who range from low to superior intellectual functioning. Twenty-six males and nine females were enrolled in the SSIG program at the time of recruitment for this study. Children and adolescents are referred to the SSIG program by a third party and program personnel determine whether each child is appropriate for the program. To be enrolled in the SSIG program at New Story, children must have an Axis I diagnosis of an ASD, a diagnosis of ASD that is under investigation, or another documented developmental delay. A child cannot be accepted into the SSIG program at New Story when he/she is actively suicidal, homicidal, or psychotic, extremely aggressive, or considered a safety risk for staff and participants (e.g., a known risk of sexually offending behaviors); has an uncontrolled medical condition (i.e., seizures, diabetes, etc.) and cannot be adequately monitored outside of a medical setting; is successful in a lesser level of care; chooses not to participate in the program; does not have an Axis I diagnosis; does not have medical assistance; or requires 1:1 assistance.

Children attend the SSIG program 2 to 3 days per week and are separated into different groups based on functional level (i.e., average to high functioning individuals are in one group and low functioning individuals are in another group). At the time of recruitment, 14 children ages 10 to 18 years were included in the average to higher functioning group. The SSIG program utilizes curriculum based on *Think Social! A Social Thinking Curriculum for School-Age Children* by Michelle Garcia Winner (2005; see Appendix A for letter of approval to use the *Social Thinking* curriculum). The *Social Thinking* curriculum aims to increase children and adolescents' knowledge of social expectations, self-awareness and self-monitoring behaviors, and improve flexibility in adapting to their social surroundings. In addition to the *Social Thinking* curriculum, behavioral strategies such as social stories, social scripts, modeling, role-playing, and reward systems are part of the interactions between children and SSIG program personnel. The SSIG curriculum had been in place for one year at the time of recruitment; some children attending the SSIG program had been enrolled in the SSIG program for multiple years and therefore, had been exposed to the curriculum once before. The SSIG program has established data collection procedures and also provides parents with written feedback regarding their child's progress in each SSIG session. However, the SSIG program had never included a parent component, nor had any procedure for teaching parents to encourage skills in the home environment been established. Many parents do not have transportation to attend parent groups at New Story; therefore, providing a manual that can be completed in the home was considered to be preferable to holding a parent-training group at New Story.

The investigator in the current study was a Mental Health Professional (MHP) with the SSIG program at the time of data collection and was responsible for supervising the Mental Health Workers (MHW) who implemented the curriculum. The investigator received permission from New Story to recruit participants from the SSIG program for this pilot study (See Appendix B for the letter of agreement). Parents of children between the ages of 10 and 18 years who were enrolled in the average to higher intellectual functioning group were invited to participate. This grouping of children was selected because the curriculum utilized in the program has been shown to be most effective for children and adolescents with average to high average intelligence (Garcia Winner, 2006). All parents of children meeting these criteria were informed that the investigator was conducting a research study evaluating a parent manual to accompany the curriculum their children were learning. Parents were told that they would receive a parent workbook that contained suggestions about how to encourage at home the social skills that their child would learn during 7 weeks of the social skills curriculum at SSIG, that they would complete measures of their child's social behaviors, that they would receive three calls from a research assistant to ask questions related to adherence, and that they would receive weekly calls from the investigator to answer any questions or concerns they may have had about the parent workbook or their child's treatment.

A recruitment letter (Appendix C), consent form (Appendix D) and child consent form (Appendix E) were distributed to parents of the 14 children ages 10 to 18 years old who were enrolled in the SSIG program. Recruitment letters explained the purpose of this pilot study and requested their participation. The investigator hand-delivered the letters to parents who brought their child to New Story for the SSIG program; those children for whom transportation was provided were given the recruitment letter in a sealed envelope to give to their parents. The investigator contacted parents by telephone to answer any questions about participation in the study and to explain the informed consent form. Parents also had the option to either tell the investigator personally (when they dropped their child off at the program) or to call New Story to leave a message regarding their decision to participate. Along with the recruitment letter, recruitment packets included the Social Responsiveness Scale (SRS; Appendix F) and demographic questionnaire (Appendix G), along with instructions for completing the measures if parents chose to participate in the study. Measures were returned to the investigator when the parent/guardian dropped their child off at the SSIG program, or with their child in a sealed envelope.

Upon providing informed consent, parents who agreed to participate in the treatment condition were sent a copy of the parent manual developed by the investigator to accompany their child's curriculum in the SSIG program. The investigator then called each participating family to ensure that the parent received the manual and to discuss any questions about the parent manual (see Appendix H for complete manual). Parents were also offered the option of meeting personally with the investigator to discuss this information. No parents requested an individual meeting with the investigator to discuss the manual.

Six families (43% of the children recruited) agreed to participate in the pilot study; four families agreed to participate in the treatment condition and two agreed to participate in the comparison group. To thank parents for their participation, they received a small gift card donated by a local business. Children whose parents declined to participate in this pilot study remained enrolled in the SSIG group and the services they received were not affected.

Demographic data collected included child's gender, age, and ethnicity, as well as parents' marital status, parents' level of education, whether the child was adopted, whether the child was taking any medication, and other members of the household who assisted in the child's care. Four males and two females participated in this pilot study:

- Participant 1 (Treatment condition) was an 11-year-old Caucasian female diagnosed with PDD-NOS. Parents were married and reported that the mother's highest level of education was some college and the father's highest level of education was high school. This participant was neither adopted nor taking any medication at the time of the study. A

15-year-old sister was identified as also living in the home. Lastly, two aunts were identified as assisting in the child's care, ages 45 years and 57 years. This participant's mother completed the tasks, answered the adherence questions, and completed the parent satisfaction questionnaire.

- Participant 2 (Treatment condition) was a 15-year-old Caucasian male diagnosed with Autistic Disorder. Parents were married and both reported receiving a graduate degree. This participant was neither adopted nor taking any medication at the time of the study. A 20-year-old sister was identified as living in the home. This participant's mother completed the tasks, answered the adherence questions, and completed the parent satisfaction questionnaire.
- Participant 3 (Treatment condition) was a 17-year-old Caucasian female diagnosed with PDD-NOS, Calculus of the Kidney, and Intellectual Disability, severity unspecified. This participant was enrolled in the average to higher functioning SSIG group because of her age and because she had been enrolled in the SSIG program for a number of years prior to this study. Parents were married and both reported receiving a graduate degree. This participant was not adopted and was currently taking 2.5 cc of Miralax. This participant's mother completed the tasks, answered the adherence questions, and completed the parent satisfaction questionnaire.
- Participant 4 (Treatment condition) was a 13-year-old Caucasian male diagnosed with Asperger's Disorder. Parents were married and reported that the father received a bachelor's degree and the mother's highest level of education was some college. This participant was not adopted and a 20-year-old sister was identified as also living in the home. This participant was taking 40 mg of Vyvanse, Ritalin (as needed for homework),

and Claritin and Nasonex for seasonal allergies. This participant's mother completed the tasks, answered the adherence questions, and completed the parent satisfaction questionnaire.

- Participant 5 (Control condition) was an 18-year-old Caucasian male diagnosed with Reactive Attachment Disorder and mild Intellectual Disability. This participant was also enrolled in the average to higher functioning group because of his age and because he had been enrolled in the SSIG program for a number of years prior to this study. At the time of this study, he was living in a foster home with his foster mother and an 18-year-old life-sharing client. Other individuals identified as assisting in the child's care included a 25-year-old foster brother, 63-year-old grandmother of the foster mother, a 24-year-old foster sister, and a 34-year-old son-in-law of the foster mother. The foster mother reported her highest level of education as some college. This client was not taking any medication at the time of the study.
- Participant 6 (Control condition) was a 14-year-old Caucasian male diagnosed with PDD-NOS. Parents were married and both parents reported receiving a high school education. This participant was not adopted and was not taking any medication at the time of the study.

Measures

Demographic Questionnaire

A demographic questionnaire was used to assess demographic information such as child's name and date of birth, parent/guardian's name and date of birth, whether the child had been adopted, or whether the child was taking any medication. Also, names and ages of additional family members who took part in the child's treatment were collected.

Social Skills Rating System (SSRS)

The SSRS (F. Gresham & Elliot, 1990) is a multi-rater system used to evaluate social behaviors of children and adolescents ages 3-18 years old. The SSRS-Teacher (SSRS-T) contains 50 items, while the SSRS-Parent (SSRS-P) contains 60 items. Both the SSRS-T and SSRS-P consist of two scales: the Social Skills Scale, which includes items assessing cooperation, assertion, responsibility, empathy, and self-control; and the Problem Behavior Scale, assessing the presence of externalizing problems, internalizing problems, and hyperactivity. The SSRS-T also includes the Academic Competence Scale, which compares an individual's academic standing to his/her classmates. Each item has a 3-point rating scale that measures the frequency and importance of a specific behavior. The frequency scale ranges from 0 (*never true*) to 2 (*very often true*) and the importance scale ranges from 0 (*not important*) to 2 (*critical*; Elliot, Sheridan, & Gresham, 1989). Criterion and construct validity for both the SSRS-T and SSRS-P is evidenced through correlations with well-regarded measures including Piers Harris, Achenbach, and the Social Behavior Assessment (F. Gresham & Elliot, 1990). Test-retest reliability was measured using a sample of parents and teachers who rated the same students four weeks after the initial standardization ratings (F. Gresham & Elliot, 1990). Social Skills reliability coefficients range from 0.75 to 0.88 for teachers, and from 0.77 to 0.84 for parents (F. Gresham & Elliot, 1990). Problem Behaviors Subscale reliability coefficients range from 0.76 to 0.83 for teachers and 0.48 to 0.72 for parents (F. Gresham & Elliot, 1990). Overall, reliability has been stated to be stronger for social skills than for problem behaviors (F. Gresham & Elliot, 1990). Reliability coefficients for both the teacher and parent forms are considered to be good for the Social Skills scale; coefficients for the Problem Scale are acceptable to good for the Teacher Form, but poor to acceptable for the Parent Form. The New Story SSIG program requires routine completion of the SSRS-T and SSRS-P for each participating child; the SSRS-T was completed by the lead Mental Health Professional of the SSIG program and the SSRS-P was completed by the child's parent/guardian. The SSRS-T and SSRS-P were utilized as baseline and post-intervention measures of participants' social behaviors.

Social Responsiveness Scale (SRS)

The SRS (Constantino & Gruber, 2005) is a 65-item parent and teacher questionnaire used to identify severity of autism spectrum symptoms for children and adolescents ages 4-18 years old. It includes five treatment subscales: Receptive, Cognitive, Expressive, and Motivational aspects of social behavior, as well as Autistic Preoccupations. Each item has a 4-point scale that measures an observed aspect of reciprocal social behaviors and ranges from 0 (*never true*) to 3 (*almost always true*; Constantino et al., 2003). Data indicates that the SRS compares favorably with the Autism Diagnostic Interview – Revised (ADI-R; Lord, Rutter, & Couteur, 1994), a structured interview for evaluating possible autism spectrum disorder for individuals 18 months and older (Constantino et al., 2003). T-scores of 76 or higher suggest severe interference in everyday social interactions (Constantino & Gruber, 2005). Strong agreement between teachers, mothers, and fathers has been demonstrated, with correlation coefficients ranging from 0.75 to 0.91, and stability has been demonstrated over a two-year period (0.83; Constantino et al., 2003). The participants' parent completed the SRS as a baseline measure and post-intervention measure of participants' social behaviors.

Observational Data

An observational code was used to record live child behaviors during the SSIG. Behaviors coded were based on the session topic and the number of behaviors coded increased each week as new topics were introduced (See Appendix I for operational definitions of behaviors). One advanced undergraduate student and one doctoral student, blind to the conditions, independently coded specific social behaviors (i.e., using expected versus unexpected behaviors, using whole-body listening, matching reactions to the size of the problem; see Appendix J for sample data sheet) for each child in the manual and comparison conditions during each SSIG session over the 7 weeks that the current study was conducted. The coders attended sessions prior to the start of the pilot study to practice coding identified social behaviors and their ratings were compared with the investigator's ratings. Adequate agreement was found between coders and the investigator prior to collecting observational data (kappas were .75 for the first coder and .80 for the second coder). After each practice session, a meeting was held to discuss and resolve areas of poor agreement between coders. Operational definitions were reviewed and adjusted as necessary to increase reliability between coders. Specific social behaviors were coded based on presence or absence in five-minute increments, with each participant observed for a total of 30 minutes during twice-weekly two-hour periods. Coders were randomly assigned four participants prior to the start of the pilot study that they would observe each session. Two participants overlapped between coders each session in order to monitor inter-rater reliability. Thus, coders observed two different participants and two of the same participants each session. In the event that one (or both) of the coder's participants was absent during that SSIG session, another participant was assigned to that coder for the evening. Both coders observed no less than two of the same participants during a given session.

Parent Satisfaction

Parent satisfaction with the parent manual was assessed using a 10-item questionnaire adapted from the Therapy Attitude Inventory (TAI) developed by Eyberg and colleagues (Brestan, Jacobs, Rayfield, & Eyberg, 1999; Eyberg, 1974). The parent satisfaction questionnaire was used to obtain feedback including how much the parent felt he/she learned throughout the study, whether the parent felt their child's problem behaviors had changed since the beginning of the study, whether the parent felt their participation in the study helped them improve their child's behavior, and the parent's general feeling about their participation in the study.

Adherence to Treatment

Adherence to the parent workbook was assessed using questions adapted from Nock and Kazdin's method of assessing treatment adherence (Nock & Kazdin, 2005). A graduate research assistant called parents via telephone after the first, fourth, and seventh week of treatment to administer adherence questions. Specifically, the parent was asked, "How many of the worksheets did you complete with your child?" This item was scored on a 5-point scale (None of them, Some of them, Half of them, Most of them, All of them). In addition, the examiner called the parents each week to ask questions specific to the past weeks' lessons. Specifically, parents were asked whether they had any difficulties with the weeks' lesson, whether they had any questions about any of the techniques introduced in the lesson, whether they had any questions about a particular behavior their child was engaging in, and whether they had any questions about the upcoming lesson.

Procedures

New Story procedure requires a number of steps before a child is enrolled in the SSIG program. First, New Story receives a copy of the child's most recent psychological evaluation, which must be completed within 60 days prior to enrollment and include a recommendation for the SSIG program. Then, the client's information is sent to the Authorization Specialist to ensure eligibility for services and the evaluation is forwarded to the lead MHP at the SSIG program, who drafts a treatment plan for the Program Assistant (PA) at New Story. The PA conducts an intake with the child’s family either in person or via telephone. The intake includes the Social Skills Responsiveness Scale-Parent Form (SSRS-P; Appendix K). Once the child is enrolled in the program, the lead MHP completes the Social Skills Responsiveness Scale-Teacher Form (SSRS-T; Appendix L). Every three months, an updated managed care authorization is completed, which requires the family to again complete the SSRS-P and the lead MHP to again complete the SSRS-T. As these measures are completed at the time of enrollment, all children participating in the current study had a baseline measure of their social behaviors using the SSRS-T and SSRS-P.

Content of Social Skills Intervention Group

The children attended the SSIG program twice weekly and were instructed in specific skills as indicated by the curriculum. The parent manual included a week-by-week explanation of the skills being taught in the children’s group, the vocabulary terms covered, corresponding assignments that parents could do at home with their child to provide additional exposure to the skills, and suggestions to generalize the skills to other settings. The length of social skills programs reported in the literature ranges from five to 21 weeks (Duncan & Klinger, 2010; Gevers et al., 2006; Koenig, 2012; Kroeger et al., 2007; MacKay et al., 2007; Pfiffner & McBurnett, 1997; Schreiber, 2011), with an average length of about 10 weeks. Although the New Story SSIG program is a continuous program, a span of 7 weeks was chosen based on coverage of pertinent social skills deemed important to master by the investigator (i.e., those that most closely addressed the core deficits of ASD), as well as a convenient length for the pre-existing SSIG program. The first week, the participants learned about “expected” and “unexpected” behaviors in a group and discussed how they felt when they were doing both the expected and unexpected behaviors. For example, the participants learned that expected behaviors, such as looking at a person who is talking and remaining on the topic of conversation, make other people feel “safe” and “happy,” while unexpected behaviors, such as interrupting another person and offering comments that are not on topic, make other people feel “weird” or “nervous.” Finally, the participants learned that different behaviors are expected at different times and in different locations. In the parent manual, parents were provided with three worksheets to review, practice, and observe expected and unexpected behaviors with their child (See Appendix H for parent manual and Appendix I for coded behaviors).

The second week, the participants learned about being part of a group. Participants discussed the idea that the physical location of a person’s body is one way to determine who is in a group. Participants then discussed the different ways a person can look when they are both in and out of a group. For example, participants discussed that when a person “spaces out,” their body is still physically in the group, but it does not appear that their brain is a part of the group or activity. In the parent manual, parents were provided with three worksheets to assist their child in reviewing expected and unexpected body and brain behaviors. The worksheets also allowed parents to help identify behaviors that are easy or difficult for their child, such as keeping their body still in a group, making eye contact when talking, or looking at a person when the person is talking. In addition, the parents assisted their children in identifying behaviors that needed to be changed.

In the third week, participants learned that people behave differently in a group than they do when they are by themselves. They discussed that there are “Thinking of You” kids and “Just ME” kids. For example, “Thinking of You” kids are part of a group and they think about the possible needs or wants of the other people in the group. “Just ME” kids only think about themselves and do not care about the needs or wants of the other people in the group.

Participants also discussed general rules for groups. Parents were provided with three worksheets to help teach their child that people behave differently in a group than they do when they are alone, and to help teach their children about making appropriate comments and adding information to group discussions.

The fourth week, participants learned that their behaviors can influence the feelings of others in both positive and negative ways. They learned that when others have too many "weird thoughts" about someone, others may think that person is not fun, safe or easy to play with. The idea of "weird thoughts" is that sometimes, when a person shows unexpected behaviors, such as intruding on someone's personal space or interrupting, others feel uncomfortable and think in a negative way about that person. The participants were taught that people could have uncomfortable/weird thoughts about anyone, even adults. Parents were provided with two worksheets that helped them to teach their children that learning to monitor and control their behavior can increase the likelihood that others will want to be around them.

The fifth week, participants learned how to identify emotions in context and practiced emotional identification in context while watching movie clips. They also discussed that people can share experiences by sharing emotions without talking about them. Parents were provided with three worksheets to help teach their child to identify feelings and communicate those feelings more clearly. In addition, the worksheets assisted parents in teaching their children to make appropriate guesses about how other people are feeling based on the person's facial expression, environmental cues, and the child's own experiences.

During the sixth week, participants learned that some problems are really big, while others are little, and problems require different emotions and solutions based on their size. They also learned that there are many strategies and coping mechanisms available for differently-sized problems and what happens when someone has an emotional response the size of a big problem when it is actually a little problem. Parents were provided with two worksheets to help teach their children about personal problem solving, such as identifying the sizes of different problems and responding differently to problems based on their size. Parents assisted their children in identifying different behavioral choices for solving problems, as well as identifying consequences (good and bad) for each behavioral choice.

During the final week, participants learned about self-monitoring. Participants were video-recorded during the previous week's lesson to be used during this week's lesson. Participants watched themselves on video while answering questions and completing a self-monitoring worksheet. The questions and self-monitoring worksheet included all of the topics and behaviors the participants learned in the previous six weeks. In addition, participants took turns monitoring other children's behavior to reinforce identification of expected and unexpected behaviors. Parents were provided with three worksheets to help their child understand how expected and unexpected behaviors affect other people's perspectives and that consequences are also tied to emotional states of people around them. The final activity was an opportunity for the parent to assist their child in tracking their child's behavior throughout a day the parent and child agreed upon. The parent and child selected a single behavior they wished to change. The parent "checked in" with their child throughout the day and tracked the number of times their child engaged in changing the identified behavior.

Parents were contacted throughout the program to discuss their implementation of the treatment activities, as well as ask any questions they may have. A research assistant, blind to the hypotheses of this study, contacted parents separately to assess parents' adherence to the parent manual and home assignments (see Appendix M for adherence questions). In addition, parents were able to use this opportunity to anonymously provide feedback about the program. Each week, the investigator had phone contact with each parent/guardian to ask a number of pre-determined questions (Appendix N), to answer any questions parents/guardian may have and to also assess adherence to the manual and completion of homework assignments.

Debriefing

The final chapter of the manual addressed maintenance of skills learned throughout the seven weeks. This chapter discussed having realistic expectations for their child and setting realistic goals throughout treatment and in the home. Also, this chapter discussed the importance of remaining close with the child's care providers and working as a treatment team.

After completing the 7 weeks outlined in the current study, the lead MHP of the SSIG program and the parents of each participant completed the SSRS-T and SSRS-P, respectively, and the parents of each participant completed the SRS in order to evaluate pre- and post-treatment social behaviors. Lastly, parents of each participant completed a parent satisfaction questionnaire (Appendix O) to assess their overall impression of the parent manual and the skills addressed, and to obtain feedback regarding whether they felt the treatment manual was beneficial. In addition, the parent was given a gift card from a local business. Children enrolled in the SSIG program continued to receive the remaining modules of the social skills intervention curriculum after completion of this pilot study.

CHAPTER IV

RESULTS

Analyses

The participants of this study varied in age, functional level, pre-treatment symptoms, medication, attendance, and length of participation in the SSIG program. Therefore, non-statistical data evaluation methods were employed to examine change in individual participants. In order to thoroughly describe the participants' parents, descriptive analyses and correlations were conducted. Specifically, frequency counts and percentages were used to describe the distribution of parents for demographic information such as gender, age, marital status, or being an adoptive parent. These analyses identified differences between parents who agreed to participate.

It was expected that parents might differ in satisfaction with and adherence to the intervention. To test the hypothesis that parents would be able to carry out the tasks outlined in the parent manual, adherence ratings and weekly parent questions regarding completion of material presented in the manual were examined. Parent satisfaction questions were also examined in order to test the second hypothesis that parents would be satisfied with the parent manual.

Individual analyses were conducted for each participant to examine differences between pre- and post-treatment measures. Scores obtained from parent and lead MHP ratings on the SSRS and SRS for the self-selected treatment condition (treatment condition) were compared to scores for those children in the SSIG-alone group (control condition) to identify clinically significant changes in social functioning. In addition, specific items on both the parent and teacher forms of the SSRS and the parent form of the SRS that were more closely aligned with the skills being targeted by the parent manual were also examined, as overall scores on the SSRS and SRS may mask differences in specific forms of behavior. These analyses addressed the hypothesis that parents of children in the self-selected treatment condition would rate their children as more socially skilled than would parents of children in the control condition.

Finally, it was expected that differences in social behavior would emerge between students in the self-selected treatment condition and those in the SSIG-alone group. To address the second goal of this study, an analysis of each child's progress throughout the group, via observational behavioral data, was conducted to determine whether independent observers rated children in the self-selected treatment condition as more socially skilled than those not participating in the treatment condition.

Participants

Demographic Information

Two males and two females participated in the treatment condition and two males participated in the comparison group (Table 2). All participants in both groups were Caucasian. Ages of the four participants in the treatment condition were 11, 13, 15, and 17 years. Participants in the control condition were 14 and 18 years old at the time of the study. Two participants in the treatment condition and one participant in the control condition were taking medication at the time of the study. Within the treatment condition, two participants were diagnosed with PDD-NOS, one of whom was also diagnosed with Intellectual Disability; one participant was diagnosed with Autistic Disorder; and one participant was diagnosed with Asperger's Disorder. Within the control condition, one participant was diagnosed with Intellectual Disability and one was diagnosed with PDD-NOS. All four participants in the treatment condition had two parents who were married. One participant in the control condition had two parents who were married; the other participant had a foster parent who was not married. All parents in the treatment condition and one parent in the control condition had at least some college, whereas one parent in the control condition had a high school degree and one participant in the control condition had some college experience.

Table 2

Participant Demographics

Participant	Age	Ethnicity/Gender	Diagnosis
Treatment Condition			
1	11	Caucasian Female	PDD-NOS
2	15	Caucasian Male	Autistic Disorder
3	17	Caucasian Female	PDD-NOS, Calculus of the kidney, Intellectual Disability
4	13	Caucasian Male	Asperger's Disorder
Control Condition			
5	18	Caucasian Male	Reactive Attachment Disorder, Intellectual Disability
6	14	Caucasian Male	PDD-NOS

Attendance

One participant in the treatment condition and one participant in the comparison group attended all 14 sessions, one participant in the treatment condition attended 13 session, two participants in the treatment condition attended 11 sessions, and one participant in the comparison group attended 9 sessions. Within the treatment condition, participant 3 was absent for the complete instruction of the fifth skill (Identifying Emotions) targeted by the parent manual. Participant 4 was absent for the complete instruction of the second skill (Body and Brain In or Out of the Group) targeted by the parent manual and the introduction of the fifth skill (Identifying Emotions). However, participant 4 was present for the second half of the instruction of this skill. Participants 1 and 2 were present for the instruction of the third skill (Thinking of ME, Thinking of You) targeted by the parent manual, but were absent for the second half of this skill. Overall, one participant in the treatment condition attended 100% of sessions, one participant in the treatment condition 93% of sessions, and two participants in the treatment condition attended 79% of sessions. Within the control condition, one participant attended 100% of sessions and one control participant attended 64% of sessions.

Results

Social Skills Rating System

The Social Skills Rating System (SSRS) is used to evaluate social behaviors of children and adolescents ages 3-18 years old and provides total scores for both Social Skills and Problem Behaviors. The SSRS utilizes behavior levels (i.e., fewer, average, more) to describe social skills and problem behaviors in comparison to a standardized sample (M = 100, SD = 15). Thus, a positive change on the Social Skills subscale would involve participants moving from demonstration of Fewer (SS = < 85) social skills to Average social behavior or More (SS = ≥116) appropriate social behaviors. On the other hand, a positive change on the Problem Behaviors subscale would involve participants moving from More (SS = 115) problem behaviors to Average to Fewer (SS = < 85) problem behaviors.

For this pilot study, pre-treatment parent ratings for two of the participants in the treatment condition were in the Average behaviors range and two participants were in the Fewer behaviors range for the Social Skills subscale (Figure 1). On the parent-reported Problem Behaviors subscale, two participants in the treatment condition were in the Average behaviors range at pre-treatment and two participants were in the More behaviors range (Figure 2). Thus, at the start of treatment, both participants with fewer social skills were reported to have more problem behaviors, while the other two participants were average in both areas. Pre-treatment teacher ratings for all four participants in the treatment condition were in the Average behaviors range for both the Social Skills and Problem Behaviors subscales.

In the control condition, one participant began in the Fewer parent-reported Social Skills range and the other participant began in the Average behaviors range (Figure 1). The control participant with Fewer social skills began in the More parent-reported Problem Behaviors range and the second control participant began in the Fewer behaviors range (Figure 2). Pre-treatment teacher ratings for both participants in the control condition began in the Average range for both the Social Skills (Figure 3) and Problem Behaviors (Figure 4) subscales on the Teacher Form. Thus, all participants (treatment and control) were rated in the Average range in all areas on the teacher forms, but treatment and control participants were not equivalent in social skills or problem behaviors at pre-treatment according to parent reports.

Post-treatment parent ratings indicated that two treatment condition participants remained in the Average behaviors range for both social skills and problem behaviors, with no clinically significant change in behavior. Participant 3 remained in the Fewer behaviors range for social skills, but declined in problem behaviors from the More behaviors range to the Average behaviors range. Lastly, participant 4 remained in the Fewer behaviors range for social skills and remained in the More problem behaviors range for problem behaviors, with no clinically significant change.

At post-treatment, control condition participant 5 remained in the Fewer behaviors range for social skills and the More behaviors range for problems behaviors, per parent report. Participant 6 remained in the Average behaviors range for social skills, but moved from the Fewer behaviors range to the Average behaviors range for problem behaviors.

Overall, parent social skills ratings did not change across the study for any participant (Figure 1). However, one treatment participant showed an improvement on the problem behaviors subscale, whereas one control participant demonstrated somewhat more behavior problems, although still within the Average range (Figure 2). No treatment condition participants declined in functioning. Results suggest that the manual did not lead to any clinically significant behavior change in parent-reported social skills on the SSRS.

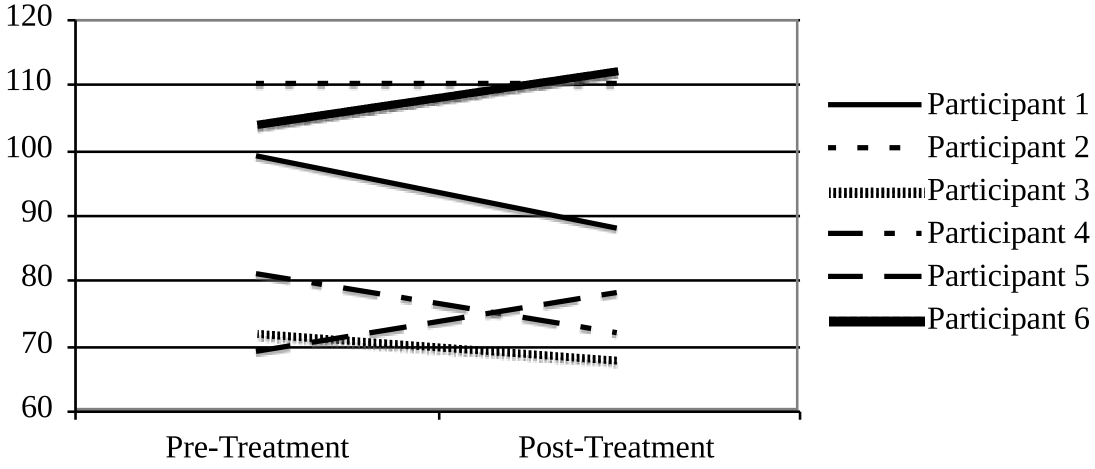

Figure 1. Pre- and post-treatment SSRS-P ratings on the social skills subscale. Participants 1 – 4 are treatment condition participants and 5 – 6 are control condition participants.

It should be noted that the sixth participate graduated the SSIG program shortly after the conclusion of this study due to mastering behavioral and social goals identified in his treatment plan. Thus, this participant was functioning in a more socially skilled manner than the other five participants in the study, regardless of treatment condition. It should also be noted that within the treatment condition, participant 3 was diagnosed with Intellectual Disability and was reported to have more severe impairment, as indicated by pre-treatment parent ratings of Fewer social skills and More problem behaviors. Pre-treatment teacher ratings indicated that participant 3 began at the low end of the Average social skills range and bordered on the Fewer social skills range.

Within the control condition, participant 5 was also diagnosed with Intellectual Disability and also began with more severe impairment, as indicated by pre-treatment parent ratings of Fewer social skills and More problem behaviors.

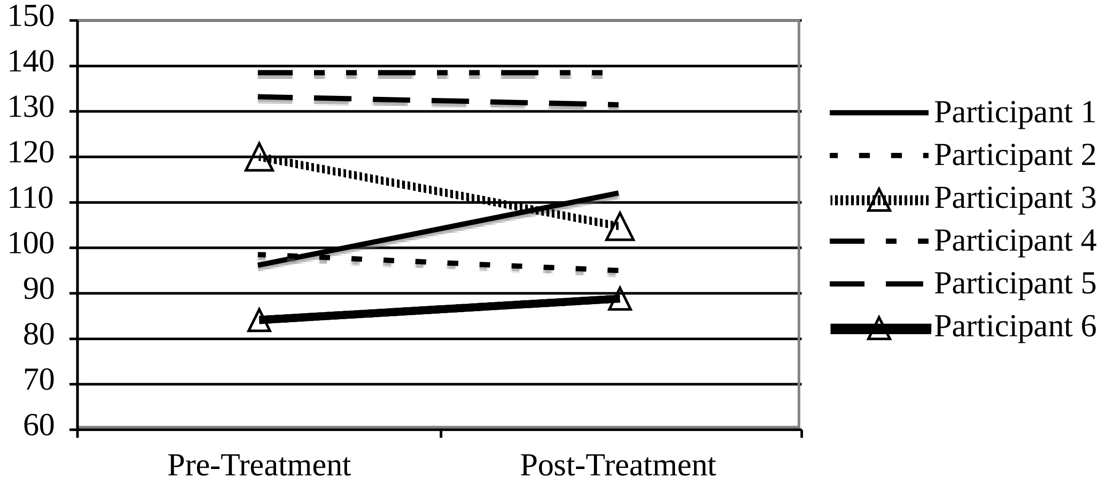

Figure 2. Pre- and post-treatment SSRS-P ratings on the problem behaviors subscale. Δ Indicates clinical change from one behavior level to another. Participants 1 – 4 are treatment condition participants and 5 – 6 are control condition participants.

Teacher reports at post-treatment indicated that three participants in the treatment condition remained in the Average behaviors range for both social skills (Figure 3) and problem behaviors (Figure 4). Participant 4 remained in the Average behaviors range for social skills, but moved from the More problem behaviors range to the Average range. Within the control condition, participant 5 remained in the Average range for both social skills and problem behaviors. Participant 6 remained in the Average behaviors range for social skills, but moved from the Average behaviors range to the Fewer behaviors range for problem behaviors, per teacher report. Teacher social skills ratings for all participants did not change across the study, but one treatment condition participant and one control participant showed an improvement in problem behaviors. No participants declined in functioning.

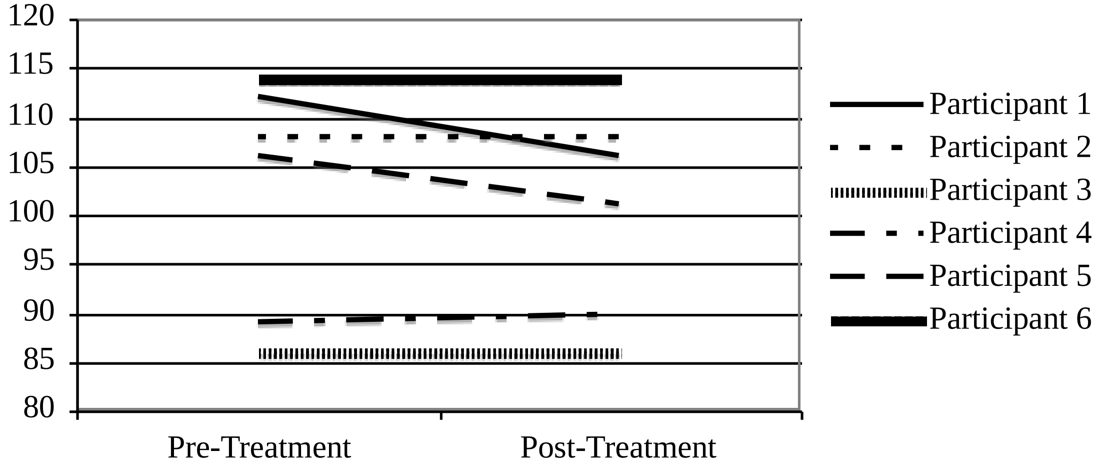

Figure 3. Pre- and post-treatment SSRS-T ratings on the social skills subscale. Participants 1 – 4 are treatment condition participants and 5 – 6 are control condition participants.

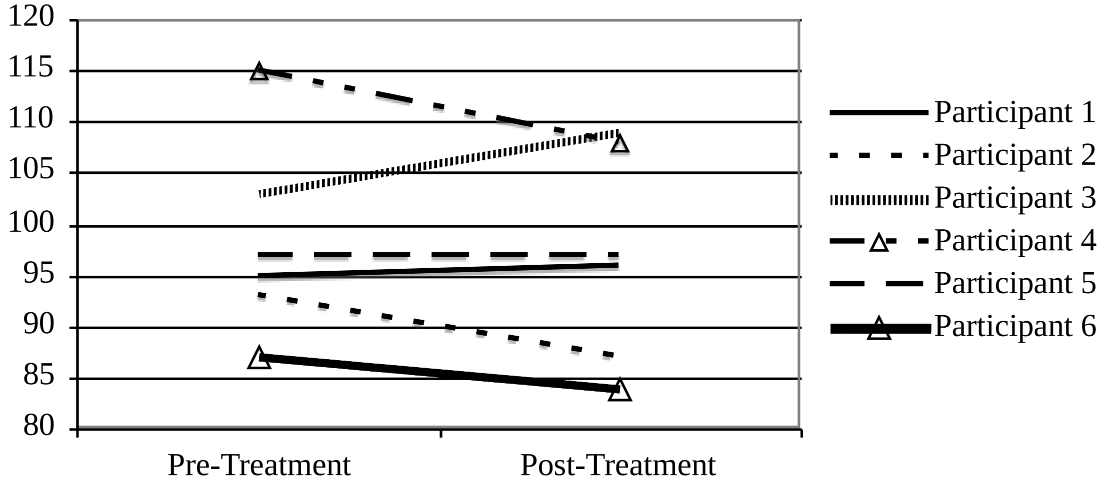

Figure 4. Pre- and post-treatment SSRS-T ratings on the problem behaviors subscale. Δ Indicates clinical change from one behavior level to another. Participants 1 – 4 are treatment condition participants and 5 – 6 are control condition participants.

Overall, little change in scores on the SSRS was observed over the course of the study. However, given the wide range of behaviors assessed by the SSRS, clinically significant change in ratings was unlikely, as many of the behaviors assessed by the SSRS were not directly targeted by the intervention. Thus, to provide a more specific evaluation of behavior change, ten Social Skills items were identified on the Parent Form that were closely aligned with skills targeted by the parent manual (Table 3) and were combined to create a new subscale score. As responses range from 0 (*never*) to 2 (*very often*), a maximum total score of 20 could be obtained, with higher scores indicating more prosocial behaviors. Eight Problem Behaviors on the Parent Form were closely aligned with behaviors targeted in the parent manual and were combined into a second subscale score with a maximum score of 16, with higher scores indicating the presence of more problematic behaviors (Table 3).

Social skills behavioral scores were calculated for each participant (Figure 5). Within the treatment condition, the first participant's social skills behavioral score decreased from 15 to 13, per parent report. That is, the frequency of prosocial skills decreased. Per parent report, the second participant's social skills behavioral score remained the same. The third participant's social skills behavioral score decreased from 12 to 11, per parent report. Lastly, the fourth participant's social skills behavioral score decreased from 10 to eight, per parent report. Within the control condition, the fifth participant's social skills behavioral score increased from 12 to 13, per parent report. The sixth participant's social skills behavioral score increased from 10 to 13, per parent report. In sum, participants in the treatment condition did not improve in social skills even on items directly measuring the skills addressed in the manual; however, the control condition showed improvements in social skills.

Table 3

SSRS – Parent Form Items More Closely Aligned With Skills Being Targeted in the Parent Manual

	SSRS Items	Parent Manual Skills
	Social Skills Items	
1.	Joins group activities without being told.	Body & Brain In or Out of the Group; Expected vs. Unexpected
2.	Responds appropriately when hit or pushed by other children.	Self-Monitoring; Expected vs. Unexpected
3.	Attends to speaker at meetings such as in church or youth groups.	Body & Brain In or Out of the Group; Expected vs. Unexpected
4.	Controls temper when arguing with other children.	Self-Monitoring; Expected vs. Unexpected
5.	Controls temper in conflict situations with you.	Self-Monitoring; Expected vs. Unexpected
	Asks permission before using another family member's property	Expected vs. Unexpected; Thinking of Me, Thinking of You
6.	Requests permission before leaving the house.	Expected vs. Unexpected; Thinking of Me, Thinking of You
7.	Responds appropriately to teasing from friends or relatives of his/her own age.	Expected vs. Unexpected; Big Problem vs. Little Problem
8.	Accepts friends' ideas for playing.	Thinking of Me, Thinking of You; Good Thoughts vs. Weird Thoughts
9.	Cooperates with family members without being asked to do so.	Thinking of Me, Thinking of You; Good Thoughts vs. Weird Thoughts
	Problem Behavior Items	
1.	Fights with others.	Expected vs. Unexpected; Thinking of Me, Thinking of You
2.	Threatens or bullies others.	Expected vs. Unexpected, Good Thoughts vs. Weird Thoughts
3.	Disturbs ongoing activities.	Thinking of Me, Thinking of You; Expected vs. Unexpected
4.	Argues with others.	Expected vs. Unexpected; Thinking of Me, Thinking of You
5.	Disobeys rules or requests.	Thinking of Me, Thinking of You; Expected vs. Unexpected
6.	Doesn't listen to what others say.	Body & Brain In or Out of the Group; Good Thoughts vs. Weird Thoughts
7.	Gets angry easily.	Identifying Emotions; Big Problem vs. Little Problem
8.	Has temper tantrums.	Identifying Emotions; Big Problem vs. Little Problem

Problem behaviors scores were also calculated for each participant (Figure 6). Within the treatment condition, the first participant's problem behaviors score increased from one to five, per parent report. The problem behaviors score for the second participant decreased from three to two. That is, the frequency of problem behaviors decreased. In addition, the third participant's problem behaviors score decreased from three to one. The fourth participant's problem behaviors score increased from eight to 10. Within the control condition, the fifth participant's problem behaviors score decreased from eight to seven and the sixth participant's behavior problems score remained the same, per parent report. Although improvement in social skills was not evident, some improvements in problem behaviors were noted within the treatment condition.

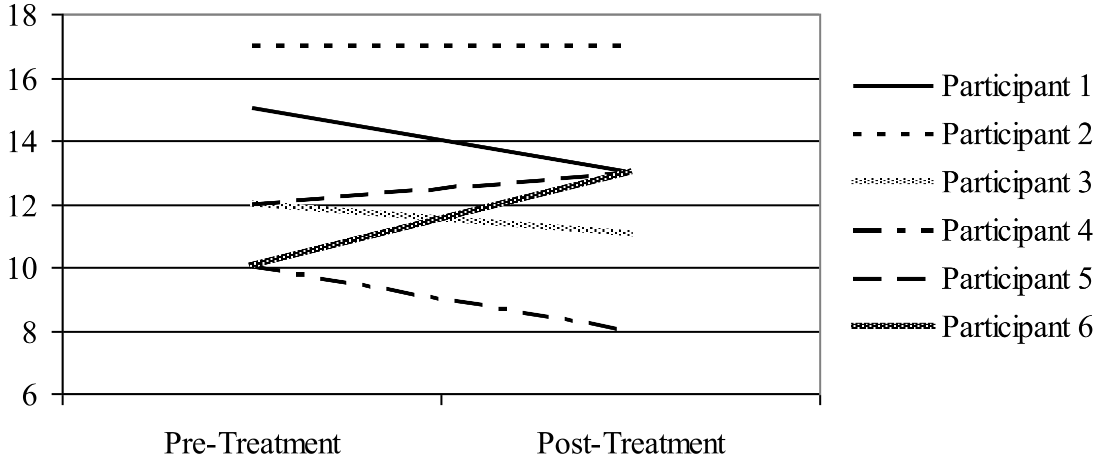

Figure 5. Pre- and post-treatment SSRS-P behavioral scores specific to items more closely aligned with skills targeted by the parent manual: Social Skills subscale. Participants 1 – 4 are treatment condition participants and 5 – 6 are control condition participants.

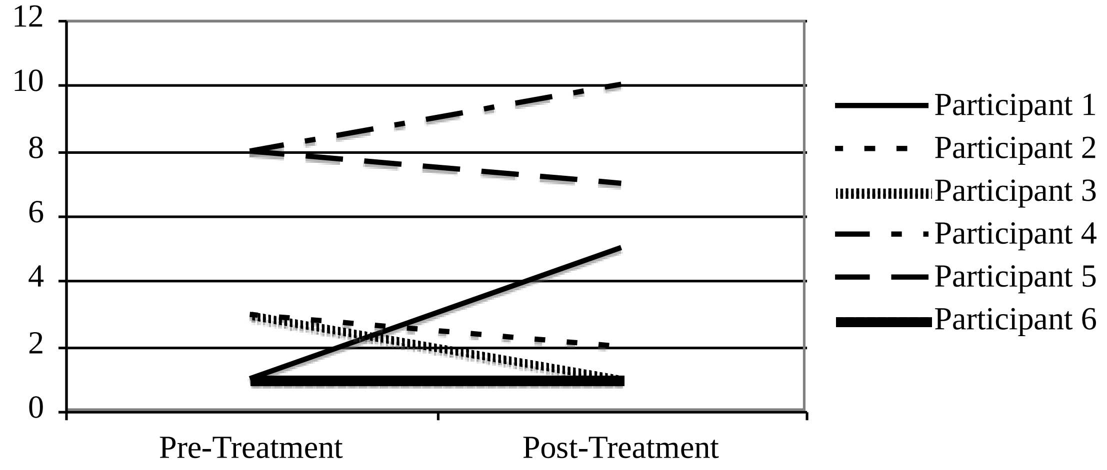

Figure 6. Pre- and post-treatment SSRS-P behavioral scores specific to items more closely aligned with skills targeted by the parent manual: Problem Behaviors subscale. Participants 1 – 4 are treatment condition participants and 5 – 6 are control condition participants.

On the Teacher-report form, 12 Social Skills items were closely aligned with skills targeted in the parent manual; therefore, a subscale maximum total score of 24 could be obtained (Table 4). Similar to the Parent Form, higher scores on the Social Skills subscale represent more prosocial behaviors. Eight Problem Behaviors on the Teacher Form were closely aligned with skills targeted in the parent manual; therefore, a maximum total Problem Behaviors score of 16 could have been obtained (Table 4). Similar to the Parent Form, lower scores on the Problem Behaviors subscale represent less problematic behaviors.

Social skills behavioral scores were calculated for each participant (Table 5). Within the treatment condition, the first participant's social skills behavior score decreased from 24 to 22, based on Teacher report. That is, the frequency of prosocial skills decreased. Both the second and third participants' social skills and problem behaviors score remained the same. The fourth participant's social skills behavioral score increased from 13 to 15 and the fourth participant's problem behaviors score decreased from six to four. That is, the frequency of prosocial skills increased. Improvements in social skills were noted in one treatment condition participant. Within the control condition, the fifth participant's social skills behavioral score decreased from 21 to 20 and the sixth participant's social skills behavioral score decreased from 23 to 22.

Table 4

SSRS – Teacher Form Items More Closely Aligned With Skills Being Targeted in the Parent Manual

Social Skills Items

1. Controls temper in conflict situations with peers.
2. Compromises in conflict situations by changing own ideas to reach agreement.
3. Invites others to join in activities.
4. Responses appropriately to teasing by peers.
5. Controls temper in conflict situations with adults.
6. Initiates conversations with peers.
7. Accepts peers' ideas for group activities.
8. Follows your directions.
9. Cooperates with peers without prompting.
10. Joins ongoing activity or group without being told to do so.
11. Responds appropriately when pushed or hit by other children.
12. Attends to your instructions.

Problem Behavior Items

1. Fights with others.
2. Threatens or bullies others.
3. Interrupts conversations of others.
4. Disturbs ongoing activities.
5. Doesn't listen to what others say.
6. Argues with others.
7. Gets angry easily.
8. Has temper tantrums.

Problem Behaviors scores were also calculated for each participant (Table 5). Within the treatment condition, the first participant's problem behaviors score decreased from one to zero. That is, the frequency of problem behaviors decreased. The frequency of problem behaviors for participant four decreased. In sum, two participants in the treatment condition decreased problem behaviors. Within the control condition, the fifth participant's total problem behaviors score remained the same and the sixth participant's problem behaviors score decreased from one to zero. Thus, the frequency of prosocial skills decreased for both control participants and the frequency of problem behaviors decreased for one.

Table 5

Pre- and Post-Treatment Social Skills Rating System – Teacher Form Behavioral Scores Specific to Items More Closely Aligned With Skills Targeted by the Parent Manual

	Social Skills		Problem Behaviors	
	Pre-Treatment	Post-Treatment	Pre-Treatment	Post-Treatment
1	24	22	1	0
2	22	22	1	1
3	19	19	1	1
4	13	15	6	4
5	21	20	0	0
6	23	22	1	0

Note. Participants 1 – 4 are treatment condition participants and 5 – 6 are control condition participants.

Social Responsiveness

The SRS is a rating scale of the severity of autism spectrum symptoms for children and adolescents ages 4-18 years old and includes five treatment subscales: Awareness, Cognition, Communication, Motivation, and Autistic Mannerisms. T-scores of 59 represent the Normal range, T-scores of 60 to 75 indicate the Mild to Moderate range of social impairment, and T-scores of 76 or higher indicate the Severe range of social impairment. Thus, higher scores indicate greater social impairment.

For this pilot study, at pre-treatment, participants1, 2, and 3 were rated to be in the Mild/moderate range, whereas participant 4 was rated to be in the Severe range. Participant 1 was rated to be in the Mild/moderate range on the Social Awareness, Social Cognition, Social Communication, and Social Motivation subscales, and in the Severe range on the Autistic Mannerisms subscale. Participant 2 was rated to be in the Mild/moderate range on the Social Awareness, Social Communication, and Autistic Mannerisms subscales and the Normal range on the Social Cognition and Social Motivation subscales. Participant 3 began in the Mild/moderate range across subscales. Participant 4 was rated to be in the Severe range on the Social Communication and Social Motivation subscales, and the Mild/moderate range for Social Cognition and Autistic Mannerisms subscales.

Within the treatment condition, analysis of standard scores revealed that overall, participant 1 remained in the Mild/moderate social impairment range (Figure 7). In a more specific analysis of the SRS subscales, participant 1 improved from the Mild/moderate range to the Normal range in Social Awareness and Social Motivation. Overall, participant 2 remained in the Mild/moderate social impairment range (Figure 8). More specifically, however, participant 2 improved in Autistic Mannerisms, moving from the Mild/moderate range to the Normal range. The second participant’s social communication worsened, moving from the Mild/moderate range to the Severe range. Overall, participant 3 remained in the Mild/moderate social impairment range for all areas (Figure 9). Participant 4 showed improvement in overall social responsiveness, moving from the Severe range to the Mild/moderate range (Figure 10). In a more specific review of the subscales, participant 4 improved in Social Communication, moving from the Severe impairment range to the Mild/moderate social impairment range. In sum, three participants in the treatment condition remained unchanged in overall social responsiveness;

however, one participant improved in overall social responsiveness. More specifically, one participant improved in social awareness and social motivation, one participant improved in social communication, and one participant decreased autistic mannerisms. One participant declined in social communication.

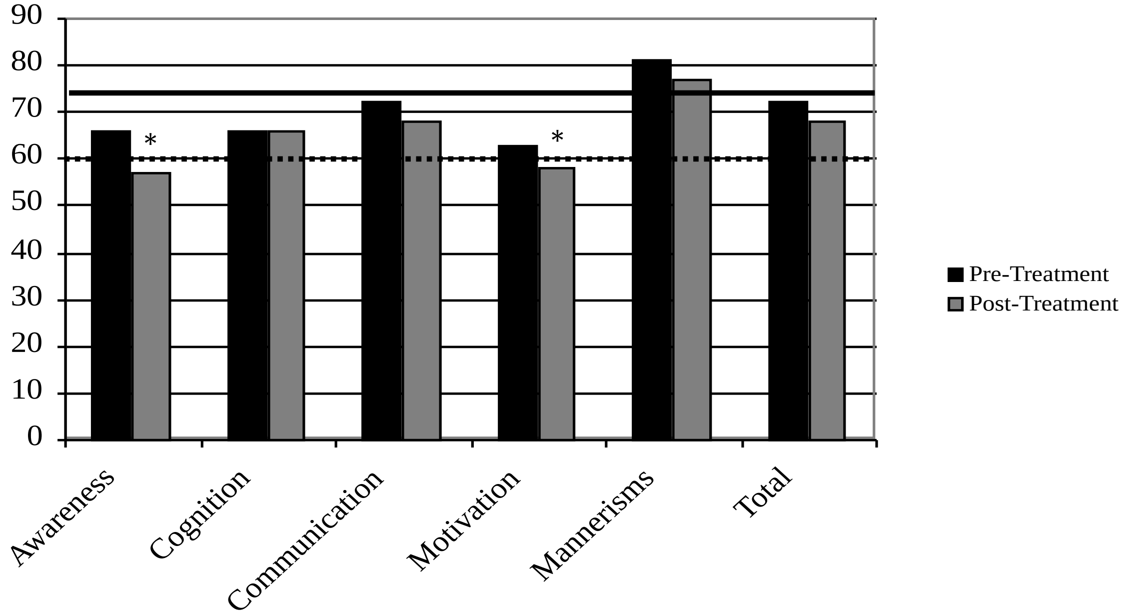

Figure 7. Pre- and post-SRS T-scores for participant 1 in the treatment condition. * Indicates clinical change from one social impairment level to another. Bold line indicates cutoff for the severe range and dotted line indicates cutoff for the mild to moderate range of social impairment.

Within the control condition, the fifth participant overall remained in the Severe social impairment range (Figure 11). In a more specific analysis, the fifth participant worsened in the area of Social Motivation, moving from the Mild/moderate impairment range to the Severe impairment range. However, the fifth participant improved in the area of Social Awareness, moving from the Severe impairment range to the Mild/moderate range. Lastly, the sixth participant remained in the Normal range in regards to overall social responsiveness (Figure X12). Thus, control condition participants remained unchanged in overall social responsiveness.

More specifically, one control condition participant improved in social awareness, but declined in social motivation.

Again, it should be noted that participants 3 and 5 were diagnosed with Intellectual Disability. As indicated by parent ratings, participant 3 was the only participant in the treatment condition to show no change across subscales. In addition, participant 5 began with more severe impairment than all other participants, and showed no overall change in social responsiveness.

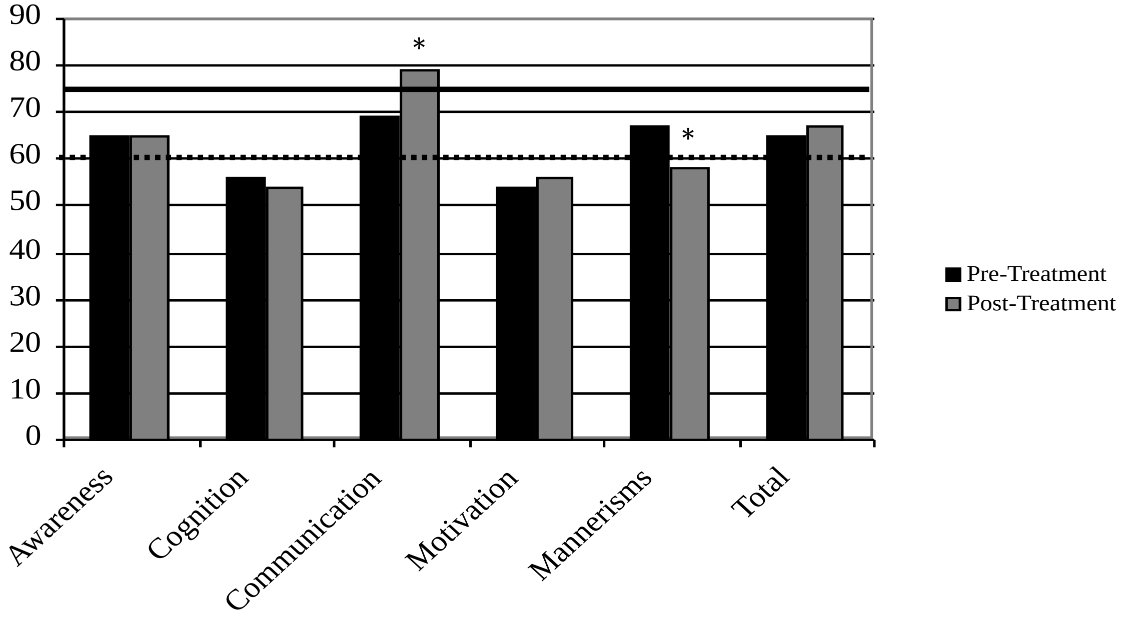

Figure 8. Pre- and post-SRS T-scores for participant 2 in the treatment condition. * Indicates clinical change from one social impairment level to another. Bold line indicates cutoff for the severe range and dotted line indicates cutoff for the mild to moderate range of social impairment.

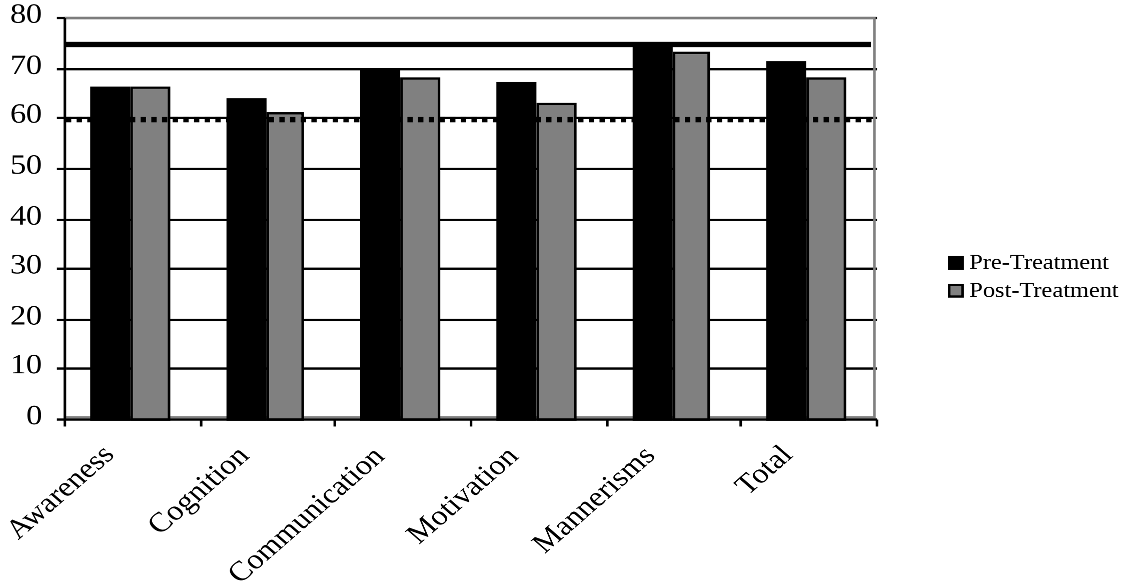

Figure 9. Pre- and post-SRS T-scores for participant 3 in the treatment condition. * Indicates clinical change from one social impairment level to another. Bold line indicates cutoff for the severe range and dotted line indicates cutoff for the mild to moderate range of social impairment.

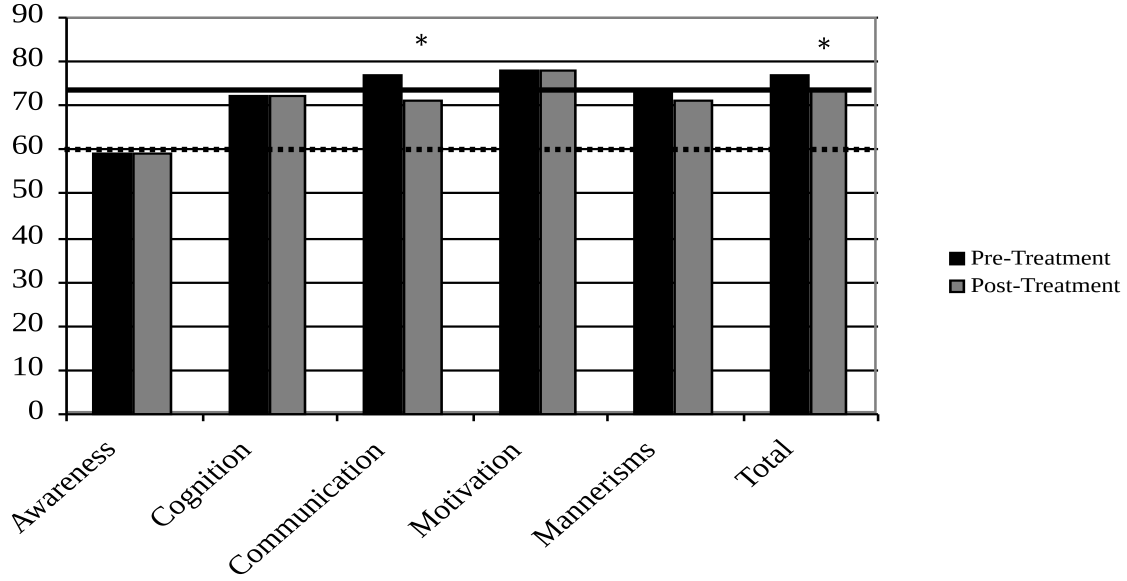

Figure 10. Pre- and post-SRS T-scores for participant 4 in the treatment condition. * Indicates clinical change from one social impairment level to another. Bold line indicates cutoff for the severe range and dotted line indicates cutoff for the mild to moderate range of social impairment.

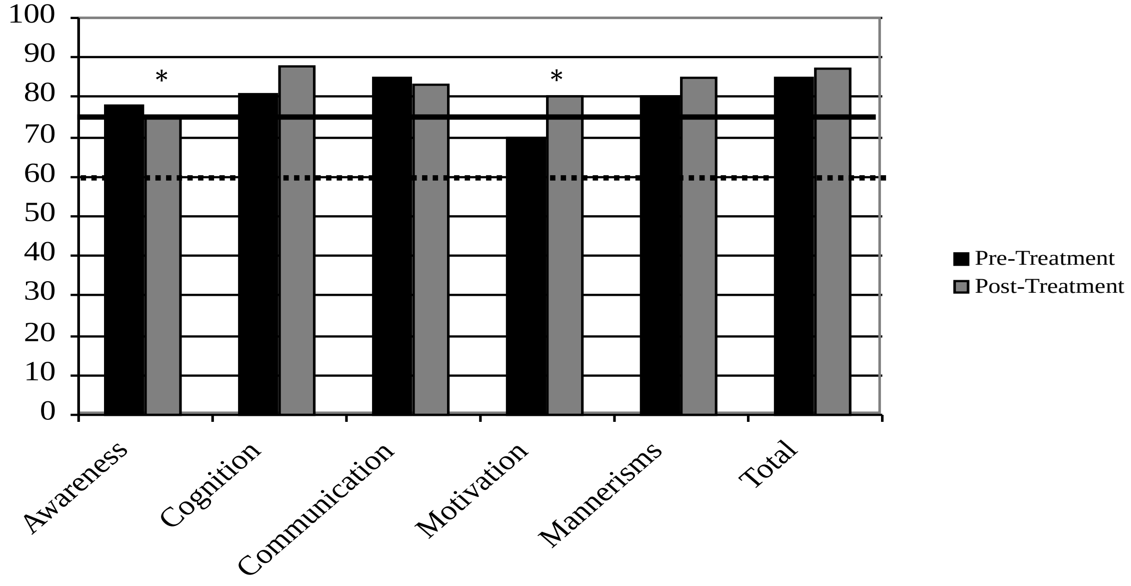

Figure 11. Pre- and post-SRS T-scores for participant 5 in the control condition. * Indicates clinical change from one social impairment level to another. Bold line indicates cutoff for the severe range and dotted line indicates cutoff for the mild to moderate range of social impairment.

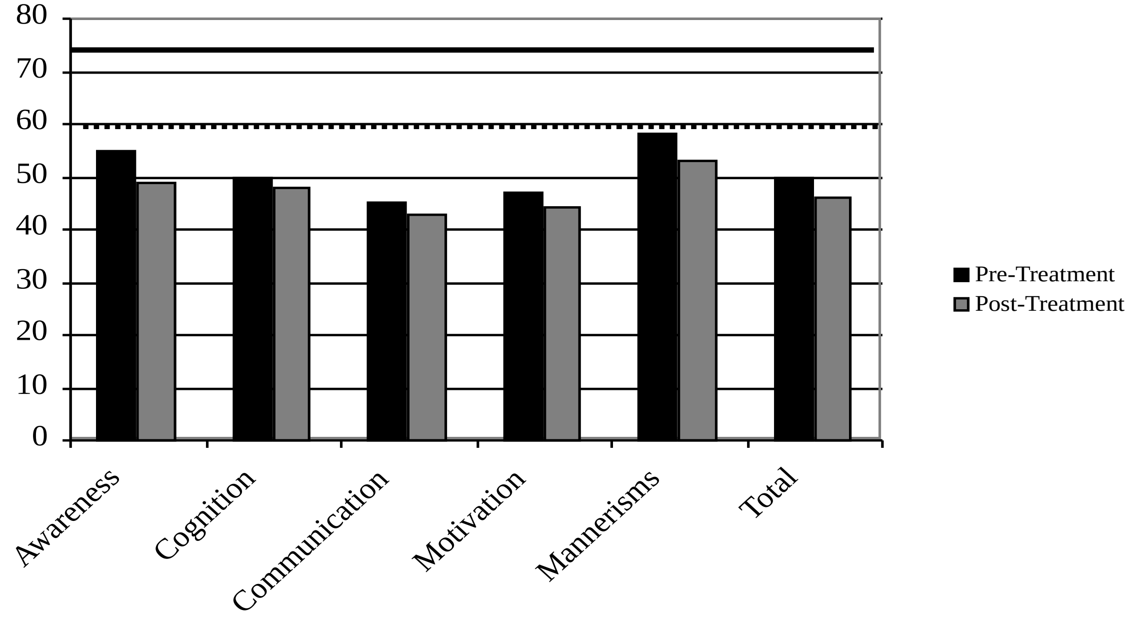

Figure 12. Pre- and post-SRS T-scores for participant 6 in the control condition. * Indicates clinical change from one social impairment level to another. Bold line indicates cutoff for the severe range and dotted line indicates cutoff for the mild to moderate range of social impairment.

Twenty-five Social Responsiveness items more closely aligned with skills targeted by the parent manual were combined into a separate subscale with a maximum total score of 75. Of these items, six items assessed Social Awareness, one item assessed Social Cognition, 10 items assessed Social Communication, four items assessed Social Motivation, and four items assessed Autistic Mannerisms (Table 6).

Pre- and post-treatment ratings of SRS items assessing behaviors targeted by the parent manual were computed (Table 7). Higher scores represent more deficiencies in reciprocal social behaviors. Within the treatment condition, pre- and post-treatment ratings indicate that two participants showed improvement in overall social responsiveness, one participant remained the same, and one participant slightly declined in overall social responsiveness. Within the control condition, pre- and post-treatment ratings indicate that both participants declined in overall social responsiveness.

Individual behavioral ratings for all SRS subscales were also compared (Table 7). Within the treatment condition, Participant 1 improved from pre- to post-treatment in social awareness, social communication, social motivation, and autistic mannerisms. Social cognition remained the same for participant 1 from pre- to post-treatment. From pre- to post-treatment, Participant 2 improved in social cognition and autistic mannerisms, declined in social communication, and remained unchanged in social awareness and social motivation. Participant 3 improved in social awareness and autistic mannerisms from pre- to post-treatment. However, social cognition, social communication and social motivation remained the same for Participant 3 from pre- to post-treatment. Participant 4 improved in social communication, declined in social cognition and social motivation, and remained unchanged in social awareness and autistic mannerisms from pre- to post-treatment. In sum, two participants improved and two participants remained the same on the social awareness subscale. On the social cognition subscale, one participant improved, two participants remained the same, and one participant slightly declined. Two participants improved, one participant remained the same, and one participant declined on the social communication subscale. One participant improved, two participants remained the same, and one participant slightly declined on the social motivation subscale. Lastly, on the autistic mannerisms subscale, three participants improved and one participant remained the same. Overall, one participant showed improvement in four areas, two participants showed improvement in two areas, and one participant showed improvement in at least one area of social responsiveness. Two participants declined in one area of social responsiveness and one participant declined in two areas of social responsiveness.

Within the control condition, Participant 5 improved in social communication, remained unchanged in social awareness, and declined in social cognition, social motivation and autistic mannerisms from pre- to post-treatment. Participant 6 improved in social awareness, remained unchanged in social cognition and autistic mannerisms, and declined in social communication and social motivation from pre- to post-treatment. Thus, both control condition participants improved in at least one area of social responsiveness. One control condition participant declined in three areas of social responsiveness and the other control participant declined in one area of social responsiveness.

Table 6

Social Responsiveness Items More Closely Aligned With Skills Targeted by the Parent Manual

1. Expressions on his or her face don’t match what he or she is saying. [Social Awareness]
2. Is aware of what others are thinking or feeling. [Social Awareness]
3. Has good personal hygiene. [Social Awareness]
4. Focuses his or her attention to where others are looking or listening. [Social Awareness]
5. Knows when he or she is talking too loud or making too much noise. [Social Awareness]
6. Walks in between two people who are talking. [Social Awareness]
7. When under stress, he or she shows rigid or inflexible patterns of behavior that seem odd. [Autistic Mannerisms]
8. Behaves in ways that seem strange or bizarre. [Autistic Mannerisms]
9. Things or talks about the same thing over and over. [Autistic Mannerisms]
10. Is regarded by other children as odd or weird. [Autistic Mannerisms]
11. Would rather be alone than with others. [Social Motivation]
12. Does not join group activities unless told to do so. [Social Motivation]
13. Avoids starting social interactions with peers or adults. [Social Motivation]
14. Stares or gazes off into space. [Social Motivation]
15. Is aware of what others are thinking or feeling. [Social Awareness]
16. Behaves in ways that seem strange or bizarre. [Autistic Mannerisms]
17. Is able to communicate his or her feelings to others. [Social Communication]
18. Avoids eye contact or has unusual eye contact. [Social Communication]
19. Plays appropriately with children his or her age. [Social Communication]
20. Offers comfort to others when they are sad. [Social Communication]
21. Responds appropriately to mood changes in others (e.g., when a friend’s or playmate’s mood changes from happy to sad). [Social Communication]
22. Wanders aimlessly from one activity to another. [Social Communication]
23. Has overly serious facial expressions. [Social Communication]
24. Is too silly or laughs in appropriately. [Social Communication]
25. Knows when he or she is too close to someone or is invading someone’s space. [Social Communication]
26. Is emotionally distant, doesn’t show his or her feelings. [Social Communication]
27. Is able to understand the meaning of other people’s tone of voice and facial expressions. [Social Cognition]

Table 7

SRS Behavioral Ratings Specific to Items More Closely Aligned With Skills Targeted by the Parent Manual

Participant	Awareness		Cognition		Communication	
	Pre-Treatment	Post-Treatment	Pre-Treatment	Post-Treatment	Pre-Treatment	Post-Treatment
1	9	7	2	2	13	12
2	7	7	2	1	13	16
3	10	9	2	2	13	13
4	8	8	1	2	17	13
5	11	11	1	2	19	16
6	6	4	1	1	3	4

(Table 7 continues)

(Table 7 continued)

Participant	Motivation		Mannerisms		Total	
	Pre-Treatment	Post-Treatment	Pre-Treatment	Post-Treatment	Pre-Treatment	Post-Treatment
1	4	3	6	5	35	29
2	5	5	4	3	31	32
3	6	6	6	5	38	36
4	6	7	5	5	38	38
5	6	7	5	7	42	46
6	1	0	3	3	13	14

Observational Data

Observation of participants' social behavior occurred prior to the completion of the first lesson in the parent manual. Therefore, day 1 of the pilot study served as a baseline to represent pre-treatment levels of social behavior. The final lesson of the parent manual involved self-monitoring of the participants. Thus, all skills were taught in the previous six lessons. Observation of participants' social behavior in the final week of the study represented post-treatment levels of social behavior. A total of 16 prosocial and 17 problem behaviors were identified for independent observation. The number of prosocial and problem behaviors demonstrated by each participant at pre- and post-treatment (day one versus the final day of observation) was calculated (Table 8).

Within the treatment condition, on day one, participant 1 demonstrated 6 of 16 prosocial behaviors and 3 of 17 problem behaviors. At the end of treatment, participant 1 demonstrated 8 of 16 prosocial behaviors and 2 of 17 problem behaviors. Thus, participant 1 demonstrated a 33.33% increase in prosocial behaviors and a 33.33% decrease in problem behaviors from pre- to post-treatment.

On day one, participant 2 demonstrated 2 of 16 prosocial behaviors and 4 of 17 problem behaviors. At the end of treatment, participant 2 demonstrated 5 of 16 prosocial behaviors and 2 of 17 problem behaviors. Thus, participant 2 demonstrated a 150% increase in prosocial behaviors and a 50% decrease in problem behaviors from pre- to post-treatment.

Participant 3 demonstrated 6 of 16 prosocial behaviors and 4 of 17 problem behaviors on day one, and at the end of treatment, participant 3 demonstrated 5 of 16 prosocial behaviors and 2 of 17 problem behaviors. That is, participant 3 demonstrated a 16.67% decrease in prosocial behaviors and a 50% decrease in problem behaviors from pre- to post-treatment.

On day one, participant 4 demonstrated 3 of 16 prosocial behaviors and 3 of 17 problem behaviors. At the end of treatment, participant 4 demonstrated 5 of 16 prosocial behaviors and 2 of 17 problem behaviors on day 14. Thus, participant 4 demonstrated a 66.67% increase in prosocial behaviors and a 33.33% decrease in problem behaviors from pre- to post-treatment. In sum, three treatment condition participants improved in prosocial behaviors and all treatment condition participants demonstrated fewer problem behaviors from pre- to post-treatment.

Within the control condition, participant 5 demonstrated 7 of 16 prosocial behaviors and 2 of 17 problem behaviors on day one. At the end of treatment, participant 5 demonstrated 6 of 16 prosocial behaviors and 1 of 17 problem behaviors. Thus, participant 5 demonstrated a 14.29% decrease in prosocial behaviors and a 50% decrease in problem behaviors from pre- to post-treatment. Participant 6 was absent for the final week of the study; therefore, prosocial and problem behaviors were calculated for day 12, participant 6's final day in the study. On day one, participant 6 demonstrated 10 of 16 prosocial behaviors and 1 of 17 problem behaviors. Participant 6 demonstrated 7 of 16 prosocial behaviors and 1 of 17 problem behaviors at the end of treatment. Thus, participant 6 demonstrated a 30% decrease in prosocial behaviors and problem behaviors remained the same from pre- to post-treatment. In sum, both control condition participants demonstrated fewer prosocial behaviors.

Table 8

Number of Prosocial and Problem Behaviors Pre- and Post-Treatment

Participant	Prosocial Behaviors		Problem Behaviors	
	Day 1	Day 14	Day 1	Day 14
1	6	8	3	2
2	2	5	4	2
3	6	5	4	2
4	3	5	3	2
5	7	6	2	1
6	10	7[a]	1	1[a]

Note. a Number of behaviors for Participant 6 were calculated for day 12

Participants 1 – 4 are treatment condition participants and 5 – 6 are control condition participants.

Observational data was further examined to determine whether specific behaviors were noted after introduction of the related lesson in the SSIG program and parent manual. Overall, demonstration of eye contact, following directives, and on task behaviors occurred for all treatment condition participants after the introduction of the first lesson, Expected vs. Unexpected Behaviors. Such behaviors were identified in the lesson as “expected behaviors.” In addition, all treatment condition participants demonstrated an increase in the behavior of joining peers. Joining peers requires an individual to think about the wants and needs of others in a group and play cooperatively within the group. These components were addressed in the second and third lessons of the SSIG program and parent manual, Body and Brain In and Out of the Group and Thinking of ME, Thinking of You, respectively.

Participant 1 showed a slight increase in overall prosocial behaviors from week 1 through week 3; however, a decrease in prosocial behaviors was present after this participant was absent from the SSIG program. The introduction of the third lesson in the parent manual, Thinking of ME, Thinking of You, coincided with a demonstration of the behavior offering help for both participants 1 and 2, a behavior that involves thinking of others' needs. However, this behavior was not maintained throughout the study for either participant. During the final lesson, Self Monitoring, participant 2 demonstrated the behavior of identifying unexpected behaviors. This behavior requires that an individual monitor his/her own behavior in order to identify the behavior as "expected" or "unexpected." After the completion of the sixth lesson, Big vs. Little Problem, participant 4 demonstrated in increase in appropriate coping skills. Skills taught in the sixth lesson include identifying the size of the problem and matching one's emotional response to the size of the problem. Using appropriate coping skills allows an individual to respond appropriately to a variety of problems, both big and small.

Parental Adherence

Parents rated their adherence to each lesson in the parent manual on a 1 to 5 scale (1 = completion of none of the assigned worksheets, 5 = completion of all of the assigned worksheets). After the first week, three out of five parents reported that they did not complete any of the assigned activities or worksheets. Participant 6 withdrew from the treatment condition after the first week, but agreed to continue to participate in the study in the control condition. After the second adherence check-in, three of the remaining four parents reported completing all of the assigned worksheets for weeks two through four (*M* = 4.75). At the final adherence check-in, two parents reported completing all of the assigned worksheets and two parents reported completing most of the assigned worksheets for weeks five through seven (*M* = 4.5). In addition, all parents in the treatment condition reported that they completed all seven lessons in the manual.

Parent Satisfaction

For all families, the parent who reported on adherence also completed the parent satisfaction questionnaire. On a 1 to 5 scale (5 = strongly agree), parents indicated that they felt confident in their ability to notice and encourage their child's social skills (*M* = 4.25), were happy about participating in their child's treatment (*M* = 4.25), wanted a workbook for other parts of the social skills program (*M* = 4.25), felt the program used to help them improved the social behavior of their child was very good (M = 4.25) and were very satisfied with progress made in social behavior (*M* = 4.25). Parents indicated that their ability to identify their child's expected and unexpected behaviors improved (M = 4.00) and they liked the parent manual (M = 4.00). Parents also indicated that they learned useful techniques (*M* = 3.75) and felt that the major social problem their child presented at *home* had somewhat improved (*M* = 3.75). Lastly, two parents indicated that the major social problem their child presented in the *community* stayed the same, while two parents indicated that the problem somewhat improved (*M* = 3.5).

CHAPTER V

DISCUSSION

In 2012, prevalence estimates for Autism Spectrum Disorders (ASD) were approximately 1 in 88 children aged eight years old (Centers for Disease Control and Prevention [CDC], 2012). However, more recent prevalence estimates reflect an increase, with approximately 1 in 68 children aged eight years diagnosed with an ASD (CDC, 2014). As the identification of and concern regarding ASDs increases, obtaining appropriate diagnostic, educational, and family support services has been difficult for some families, as demand outpaces availability (Curtin & Hargrove, 2010; Lishner et al., 1996; Rainer, 2010; Smalley et al., 2010). It was estimated that 10 years ago, fewer than 1 in 10 children were receiving appropriate treatment (National Research Council, 2001). Though the reauthorization of the Individuals with Disabilities Education Improvement Act (IDEA) of 2004 mandated that children with disabilities receive free and appropriate public education and related services, families have difficulty accessing services outside of the school regardless of geographical region (Murphy & Ruble, 2012). The need for treatments that are reliable and cost-effective is increasing.

One of the biggest changes to occur in the Diagnostic and Statistical Manual – 5th Edition (DSM 5) was to Autism Spectrum Disorders. The Neurodevelopmental Work Group recommended that a single disorder (i.e., Autism Spectrum Disorder) would better represent the broad characteristics of what was once Pervasive Developmental Disorder (American Psychiatric Association, 2012). Diagnostic criteria categories were reduced from the previous three (i.e., social interaction; communication; and restricted, repetitive, and stereotyped patterns of behavior) to two, focusing on social communication and social interaction deficits and restricted, repetitive patterns of behavior, interests, or activities. Onset was changed from before the age of

3 years to the “early developmental period.” In addition, potential sensory abnormalities and severity of impairments in the two core areas have been taken into consideration. Specifiers were included to account for the presence or absence of intellectual impairment and/or language impairment and medical, genetic, or environmental factors. The new DSM 5 criteria allow for a history of symptoms that may not be present currently, recognizing that through intervention or normal development, some children with autism may no longer present with some symptoms (American Psychiatric Association, 2012).

Behaviorally-based social skills interventions have emerged as a major component in the treatment of individuals with ASD. Regardless of changes in diagnostic criteria, difficulties in social communication and interaction are central to ASDs, and group formats are commonly used for social skills interventions to provide a “safe space” for practicing social interactions. Unfortunately, children and adolescents with ASD have difficulty generalizing learned skills from clinic-based programs to more naturalistic settings (Barry et al., 2003; Schreiber, 2011; Scott, 2002; Sim et al., 2006). Thus, empirically supported treatments for ASD rely heavily on parent involvement, which most social skills programs lack. Training parents of children with ASDs to provide additional practice using interventions in the home and the community may play a pivotal role in helping children generalize and maintain skills across settings (Ingersoll & Dvortcsak, 2006; Ingersoll & Wainer, 2011). Regrettably, families living in rural areas encounter barriers to receiving effective services to treat their child’s ASD, including limited resources, transportation difficulties and lack of available professionals (Curtin & Hargrove, 2010; Lishner et al., 1996; Rainer, 2010; Smalley et al., 2010).

The overall purpose of this study was to reduce barriers in accessing social skills training encountered by rural families of children with ASDs by providing a parent workbook with activities that parents could implement independently, without the need to arrange or finance transportation, travel long distances, or adhere to inflexible program times. The assumption of this study was that a parent manual supporting a classroom-based intervention would be appealing for families of children with ASDs, and that a parent manual would facilitate the generalization and maintenance of the social skills learned. This study pilot-tested a parent manual designed to augment the existing curriculum used in the Social Skills Intervention Groups (SSIG) at New Story in Indiana, Pennsylvania. The manual provided psychoeducation about ASD, as well as specific activities that parents could carry out in their home that reflected those skills their children were learning in the SSIG program (e.g., listening skills, emotional identification, and self-monitoring).

A non-experimental quantitative research design was used to examine the individual differences in the generalization of gains to the home environment between a self-selected treatment condition and a treatment-as-usual (i.e., SSIG alone) condition. Pre- and post-treatment measures assessing social behaviors and ASD symptoms were completed by parents and a SSIG supervisor; parent completed treatment adherence and satisfaction questionnaires, and behavioral data was collected from two independent observers, blind to treatment conditions. This pilot study was conducted over a period of seven weeks during September and October 2012. Six families of children with an ASD (4 males and 2 females), ages 11 to 18 years old (*M* = 14.67, *SD* = 2.52) participated. Four families self-selected to participate in the treatment condition and two families agreed to be in the control condition.

Feasibility

The first goal of this pilot study was to address the feasibility of a parent manual by examining parent adherence and satisfaction. In order to address barriers of parent attendance in a parallel parent group, including those related to transportation, scheduling, and childcare, this study assessed whether families would be able to, through a parent manual, obtain the necessary information, learn new skills, and practice with their children the social behaviors the children learned in the social skills group. The goal of this study was to replace attendance at a parent group with a self-taught parent manual.

The first hypothesis predicted that parents would be able to carry out the tasks outlined in the parent manual. This hypothesis was partially supported. All four families in the treatment condition completed all seven lessons in the parent manual and completed at least most of the worksheets. Completion of a lesson required that parents read the corresponding chapter in the manual, which introduced the vocabulary used in the lesson and reviewed what their child had learned in the SSIG program. Worksheets associated with that lesson were included in the chapter with activities to practice each new skill. To support completion of each lesson and the associated worksheets, weekly phone calls were made by the investigator to address any questions the parents may have had about the lesson. In addition, three separate adherence check-in calls were made by a research assistant during which parents were asked questions pertaining to the newly introduced terms and the number of worksheets parents completed was assessed. Adherence was poor during the first week, but increased in the second through third weeks, with three of four families completing all of the assigned worksheets and the fourth family completing most of the assigned worksheets. Adherence slightly decreased in the final three weeks, with half of the families completing all of the assigned worksheets and half of the families completing most of the assigned worksheets**.** At the start of the third week, one family dropped out of the treatment condition, but remained in the control condition.

Second, it was predicted that parents would be satisfied with the parent manual and would find it useful. The second hypothesis was also partially supported. Analyses showed that the majority of parents believed that they learned something from the parent manual. For example, all four parents indicated that their confidence in their ability to notice and encourage their child's social skills was at least "somewhat better than before." One parent indicated that their ability to notice and encourage their child's social skills was "very much better than before." Three parents were at least somewhat happy about participating in their child's treatment. All participants rated their ability to identify expected and unexpected behaviors as "somewhat improved." Similarly, all parents at least somewhat liked the parent manual for improving their child's social behavior. All parents at least somewhat agreed with a statement about wanting a parent manual for other parts of their child's social skills program.

Overall, parent satisfaction was relatively high across all participants in the treatment condition. Most notably, the more helpful parents believed the program was in improving the social behavior of their child, the more interested they were in receiving a manual for additional lessons in their child's social skills curriculum. This study demonstrates that parents had generally positive views of the manual and reported that they actually completed the worksheets and found them to be at least somewhat helpful.

Attrition rates have been a major concern in parenting interventions, with studies estimating that 5% to 60% of families of children and adolescents with disruptive behavior problems prematurely terminate treatment (Owens, Richerson, Murphy, Jageleweski, & Rossi, 2007); however, limited research exists regarding parent training attrition rates for children and adolescents with ASD. Studies evaluating parent training for pre-school age children with developmental disabilities and parent training for children with ASDs yielded attrition rates of

11%, and 9%, respectively (McIntyre, 2008; R. Solomon, Necheles, Ferch, & Bruckman, 2007), suggesting that families of children with developmental disorders may be more motivated to participate in treatment. In the current study, only one of six families "terminated" treatment, resulting in a comparable attrition rate of 20%. Given that completion of manual activities was relatively high for this pilot study, it appears that the more families enjoy a program and find it beneficial, the more likely they are to attend/participate.

Though this study's purpose was to provide an alternative method for rural families of children with ASDs to participate in their child's treatment, adherence was initially low and may indicate that participation in treatment is not a strong concern for some families of children with ASD. It is also possible that initial adherence was low because families did not know what to expect from the treatment manual or had questions before beginning the activities in the manual. Families may have needed time to adjust their schedules in order to accommodate these new activities and, therefore, implementing this change took some time. To address these issues, providing the manual further in advance may allow more time for parents to review the manual. Though no parents requested an individual meeting with the examiner to further explore the parent manual, an explanation beyond the initial presentation of the manual may have assisted in helping the parents to understand the purpose and requirements of the manual. Parents also may prefer to complete activities at their own pace, rather than at the pace set by the investigator. Favorably, completion of lessons and practice activities increased after the first week, suggesting that parents were able to adjust their schedules to include the activities and were sufficiently motivated to carry them out. Overall, results of this study suggest that inclusion of rural families in social skills treatment for children with ASDs is feasible through the use of a parent manual.

Individual Change in Social Behavior

The second goal of this pilot study was to examine differences in social behaviors between the self-selected treatment condition and the SSIG-only group (control condition). The third hypothesis predicted that parent/guardians of children in the self-selected treatment condition would rate their children as more socially skilled compared to children in the control condition. This hypothesis was not supported. While some improvements in behavior would be expected for both groups, as all children participating in this study regularly attended the SSIG program, the hypothesis that the parent manual would lead to additional gains for the treatment condition that would be reflected in parent ratings was not supported.

Pre- and post-treatment comparisons of the Social Skills subscale of the Social Skills Rating System (SSRS) – Parent Version indicated that all of the participants in both the treatment and control conditions remained the same in social skills from pre- to post-treatment. Review of the Problem Behaviors subscale of the SSRS – Parent Version indicated that one child decreased problem behaviors, and three children remained the same. One of the control participants increased problem behaviors and one control participant remained the same. Thus, no general pattern of improvement or decline in parent-reported social skills was observed.

Pre- and post-treatment comparisons of the Social Skills subscale of the SSRS – Teacher Version indicated that all participants in the treatment condition and both control participants remained the same with regard to social skills. Pre- and post-treatment comparison of the Problem Behaviors subscale of the SSRS – Teacher Version indicated that no participant increased problem behaviors. One participant in the treatment condition decreased problem behaviors and three of four participants in the treatment condition remained the same. One of the control participants decreased problem behaviors and one control participant remained the same.

Further pre-and post-treatment comparisons of specific SSRS items more closely aligned with the skills targeted by the parent manual were conducted to evaluate whether change in specific behaviors might be masked by the use of total scores. These analyses again revealed no consistent patterns of improvement or decline in social behaviors across informants. More specific exploratory analyses of the Social Skills subscale of the SSRS – Parent Version indicated that both participants in the control condition improved in social skills from pre- to post-measurement. Three of the four participants in the treatment condition decreased in social skills from pre- to post- measurement and one of the participants in the treatment condition remained the same in regards to social skills. More specific exploratory analyses of the Problem Behaviors of the SSRS – Parent Version indicated that two of the participants in the treatment condition increased their problem behaviors, whereas two participants decreased problem behaviors. One of the control participants decreased problem behaviors and one control participant remained the same.

However, more specific pre-and post-treatment comparisons of the Social Skills subscale of the SSRS – Teacher Version indicated the opposite of parent reports: both control participants decreased in social skills. In addition, two participants in the treatment condition remained the same, one participant in the treatment condition improved in social skills, and one participant in the treatment condition decreased in social skills. Comparisons of the Problem Behaviors subscale of the SSRS – Teacher Version indicated that no participant increased problem behaviors. Two of the participants in the treatment condition decreased problem behaviors and two of the participants in the treatment condition remained the same in regards to problem behaviors. Similar to parent report, one of the control participants decreased problem behaviors and one control participant remained the same.

Pre- and post-treatment comparisons were also conducted for the Social Responsiveness Scale (SRS). These results indicated that three treatment condition participants and one control condition participant showed clinically significant improvement in at least one dimension of interpersonal behavior, communication, or stereotypical/repetitive behaviors, as reported by parents. One participant in each condition also showed clinically significant decline in one dimension of interpersonal behavior, communication, or stereotypical/repetitive behaviors, as reported by parents. One participant in the treatment condition and one participant in the control condition remained the same, as reported by parents.

Further pre-and post-treatment comparisons of specific SRS items more closely aligned with the skills being targeted by the parent manual were also conducted. These results indicated that all participants showed improvement in at least one dimension of interpersonal behavior, communication, or stereotypical/repetitive behaviors, as reported by parents. One participant in the treatment condition showed improvement in four of five dimensions of interpersonal behavior, communication, or stereotypical/repetitive behaviors. One participant in the treatment condition showed improvement in three dimensions, two participants in the treatment condition showed improvement in two dimensions, and one participant in the treatment condition showed improvement in one dimension. One participant in the treatment condition showed a decline in one dimension of interpersonal behavior, communication, or stereotypical/repetitive behaviors, as reported by parents. One participant in the treatment condition showed a decline in two dimensions of interpersonal behavior, communication, or stereotypical/repetitive behaviors, as reported by parents.

One participant in the control condition showed improvement in one dimension of interpersonal behavior, communication, or stereotypical/repetitive behaviors, as reported by parents, and the other participant in the control condition showed improvement in two dimensions. One participant in the control condition showed a decline in three of five dimensions and the other participant in the control condition showed a decline in one dimension of interpersonal behavior, communication, or stereotypical/repetitive behaviors, as reported by parents.

Inconsistencies were found between measures used, with more positive results indicated by the SRS. According to the SRS, all but two participants (one in each condition) showed clinically significant improvement in at least one dimension of interpersonal behavior, communication, or stereotypical/repetitive behaviors. It is noteworthy that all participants also improved in at least one dimension of interpersonal behavior, communication, or stereotypical/repetitive behaviors in an analysis of items more closely aligned with skills targeted in the parent manual. It is possible that no changes were found between measures in this study because of lack of room for improvement, a possible response bias, lack of opportunity for parents to observe such behaviors regularly, and the SSRS specifically may not be appropriate for assessing the influence of social skills interventions for children with ASD.

In regards to the social skills subscale on the SSRS, all participants were rated to be in the Average range according to both parent and teacher pre-treatment ratings. Deficits in social skills are a key feature of ASDs (MacKay et al., 2007; Ryan & Charragain, 2010; Schreiber, 2011); therefore, it is notable for participants to begin in the Average range for social skills. Unfortunately for this study, it was not likely that participants would improve beyond the Average range over a period of seven weeks. All participants in this study were exposed to this curriculum, absent of a parent manual, for approximately one year prior to the start of the study. Such exposure may have influenced their progress and, in turn, impacted the results of this study.

Parents and the lead MHP complete the SSRS on a regular basis as required for a child's enrollment in the SSIG program. Thus, it is possible that frequent completion of this measure resulted in a response bias. Parents may have provided socially desirable responses by over-reporting their child's social skills and under-reporting their child's problem behaviors. Further, completion of the measures may have been fast-paced and more thoughtful consideration of presence or absence of certain behaviors may not have occurred. Thirty-five children and adolescents were enrolled in the SSIG program at the time of this study and the lead MHP was responsible for completing the SSRS and additional paperwork (e.g., treatment plans) for each of those children and adolescents. Therefore, time constraints may have influenced the manner in which the lead MHP completed the SSRS.

Symptoms of ASD may depend on differences in environment (Ozonoff, Goodlin-Jones, & Solomon, 2005). Similarly, behaviors that participants in this study demonstrate in the SSIG program may differ from those they demonstrate at home or in the community. Thus, parents may not have the opportunity to observe some of the behaviors addressed in the SSIG program and parent manual regularly. Therefore, parents may not notice a change in such behaviors and would be unable to rate these behaviors accordingly on parent report measures.

Reliability of the SSRS has been stated to be good with the Parent Form, but best with the Teacher Form (F. Gresham & Elliot, 1990). Furthermore, reliability coefficients for the Social Skills subscale were greater than those for the Problem Behaviors subscale (F. Gresham & Elliot, 1990). The SSRS is commonly used in the measurement of social skills; however, most studies that utilize the SSRS do not show change in social skills with the addition of treatment (White, Koenig, & Scahill, 2007). The SSRS was designed to measure broad-based social skills, but does not assess the difficulties associated with social reciprocity with which children with autism most struggle. The SSRS was developed to assess change in social skills of children with disruptive behaviors and not in children with ASD (White et al., 2007). This study attempted to address this concern by creating subscales that closely aligned with intervention components, but still did not find consistent differences between participants in the treatment and control conditions. The SSRS was used in this study because it was an already existing measure in the Social Skills Intervention Group's data collection.

The fourth hypothesis predicted that independent observers would rate participants in the self-selected treatment condition as more socially skilled than participants in the control condition. This hypothesis was supported, as observations suggested that all but one participant in the treatment condition increased prosocial behavior and all participants in the treatment condition decreased problem behaviors from the start of the study to the end. In contrast, both participants in the control condition decreased prosocial behaviors; one control participant also decreased in problem behaviors, while the other remained the same. The only participant in the treatment condition to not show improvement in prosocial behaviors had been diagnosed with an Intellectual Disability. While it was expected that the treatment condition would show gains above and beyond that of the control condition, week-to-week observation showed inconsistent behaviors. While increase in some specific behaviors was noted, other behaviors were not maintained, and still others remained the same. Some behaviors may be more difficult to change and may require more direct attention than what was provided in this study.

The parent manual may have contributed to the improvements noted by supporting the skills learned in the SSIG program through practice and rehearsal in the home setting. All participants in the treatment condition demonstrated the use of eye contact, following directives, and on task behaviors after the introduction of the first lesson, Expected vs. Unexpected

Behaviors. In addition, all treatment condition participants demonstrated an increase in the behavior of joining peers that coincided with the second (Body and Brain In and Out of the Group) and third (Thinking of ME, Thinking of You) lessons of the SSIG program and parent manual. An increase in these particular behaviors was observed in the setting in which the behaviors were taught. The parent manual also allowed for more consistent use of language across settings (i.e., vocabulary utilized in the participants' SSIG program). It is also possible that parents felt more included in their child's social skills curriculum through the use of the parent manual. Based on parent satisfaction ratings, three of four parents in the treatment condition reported being happy about participating in their child's treatment and wanting a parent manual for other parts of the SSIG program. In turn, parents may have been more willing to attend to the skills their child was learning and use the parent manual to continue to strengthen those skills in the SSIG setting. This suggests that the addition of a parent manual assisted in social skill development.

Observational data is very important in the analysis of social behavior in children and adolescents with Autism Spectrum Disorders, as parent and teacher report forms may not capture the true nature of social skill development alone (Barry et al., 2003; Chung et al., 2007; Webb, Miller, Pierce, Strawser, & Jones, 2004; Yang, Schaller, Huang, Wang, & Tsai, 2003). As noted above, the SSRS was not designed to capture the nuances of social reciprocity lacking in children and adolescents with ASD (White et al., 2007). It is possible that parents may not have opportunity to observe the behaviors addressed in the SSIG lessons regularly, so do not notice changes in the home environment. In addition, it is possible that participants' behavioral difficulties may differ between settings. Those behaviors the participants most struggle with at home may not be present in the SSIG setting and, therefore, not addressed by the SSIG lessons/parent manual. It is also possible that during homework assignments, parents focused on behaviors specific to the SSIG setting and did not generalize or apply the skills to the home environment. In this study, observational data showed improvements in prosocial behaviors for all but one participant in the treatment condition. Parent and teacher report measures indicated no change across participants in the treatment condition in the area of social skills. Further, all but one participant in the treatment condition remained unchanged in overall social responsiveness, per parent report. Thus, the inclusion of observational data provided information that the parent and teacher forms did not.

Strengths of the Current Study

Social skills intervention research often lacks treatment manuals (Koenig et al., 2009) or randomized controlled trials (Gevers et al., 2006; Lopata et al., 2007), and few interventions have been based on a theoretical understanding of the mechanisms of ASDs (MacKay et al., 2007). Further, many intervention studies fail to assess generalization of gains (Gevers et al., 2006; MacKay et al., 2007; Schreiber, 2011; Sim et al., 2006), do not use direct observation in assessment (MacKay et al., 2007), and have limited demographic representativeness, such as limited variability in ethnic/racial identification, IQ, family context, and socioeconomic level (Lopata et al., 2007). This study took steps to address many of these limitations. Specifically, this study included both a treatment and a control condition and investigated a manualized social skills curriculum that was developed based on the understanding of the mechanisms of ASDs (Garcia Winner, 2008). This study included parent report of social skills to assess generalization of skills to home and community settings. In addition, independent observers, blind to the child's study condition, coded children's behaviors in the social skills classroom to assess change in the frequency of prosocial and problem behaviors from pre- to post-intervention.

The inclusion of parents in their child's treatment is crucial to the generalization and maintenance of learned social skills to naturalistic settings. Parent-training programs have proven to be a powerful extension of behavioral treatment without simply lengthening the time of the treatment program (Anan et al., 2008; Coolican et al., 2010; McDiarmid & Bagner, 2005). To promote generalization, social skills must be taught where the skills will be used. However, if teaching these skills cannot occur in a natural setting, teaching self-monitoring skills and role-playing skills in a classroom or clinical setting is important. Further, using parents to support their child's lessons can reinforce appropriate social skills (Elksnin & Elksnin, 2000). In attempts to promote generalization in this study, the SSIG curriculum included role-plays in the teaching of new skills and the final lesson in the curriculum/parent manual was that of self-monitoring. In addition, the parent manual required parents to review each lesson and complete assignments with their child at home in order to reinforce the skills their child learned in the SSIG program.

Previous literature reviews of studies utilizing group-based social skills training have indicated that those that included observational data showed beneficial effects (Cappadocia & Weiss, 2011; White et al., 2007). In an attempt to measure behaviors that may not have been addressed through parent or teacher report, this study included the use of independent coders. Improvements were observed through observational coders; however, inconsistencies were found between parent and teacher measures. Thus, this study suggests that observational data provides information that parent and teacher reports do not.

Much of the parent training research involving children with ASDs has been conducted at universities with middle-class, well-educated parents (Ingersoll & Dvortcsak, 2006; Scott, 2002). This point has led to criticisms that traditional parent training models for parents of children with ASDs may not be appropriate for all families, particularly those with high levels of stress or socioeconomic disadvantage (Ingersoll & Dvortcsak, 2006). Treating families living in rural communities presents a distinct set of challenges, as issues such as limited resources, lack of professionals, poverty, and transportation difficulties must be addressed. These challenges create and sustain mental health problems in rural communities (Smalley et al., 2010). This study specifically targeted families from a rural area, with parents ranging in socioeconomic status and educational level. This study demonstrated that the addition of a parent manual to a children's social skills group is a feasible option for including parents in their children's treatment, when barriers otherwise might prevent their participation. More importantly, parents completed the activities in the manual, found them to be useful, and were generally satisfied with their outcomes. Overall, this study had relatively high adherence and retention rates as compared to other studies of parent-training treatment groups, with only one participant withdrawing from the treatment condition over the 7-week course of the study.

Limitations of the Current Study

There are several limitations to this study that merit attention. The sample size used in this study was very small. There was a small sample from which to draw participants and the number of families electing to participate was small. Families were self-selected to the treatment or control condition; therefore, participants were not randomized to a group. The sample size was too small and the groups were too heterogeneous for statistical analyses to yield significant results. Thus, due to small sample size and heterogeneity of the sample, non-statistical methods of data analysis were used. It is possible that statistical significance could be obtained with a larger, randomized sample.

Another limitation of this study includes the demographic differences of the sample. The groups in this study were not equivalent and differed on important demographic variables that might have also contributed to differences in the outcomes. Participants varied in symptom presentation, cognitive level, age and length of time in the SSIG program. Parents of participants in the treatment condition had higher levels of education than the control condition and all four participants in the treatment condition had parents who were married, whereas only one of the two control condition participants had parents who were married. In addition, this pilot study was conducted with residents of Indiana, Pennsylvania, who are not representative of all rural populations.

The sample of children recruited was selected because the curriculum being utilized by the SSIG program is most effective for children and adolescents with average to high average intelligence. However, two participants, one in each condition, were diagnosed with Intellectual Disabilities, one mild and one unspecified. Due to parental interest in participating in the study, the examiner did not turn these families away. This is a limitation of this pilot study, as the manual and the SSIG program were both developed for children and adolescents with at least average intelligence. Participants in this study with an Intellectual Disability were reported to have more severe impairment as indicated by pre-treatment parent and teacher ratings. In addition, these participants benefited the least as indicated by parent and teacher report measures. Lower cognitive functioning may have impacted what the participants could have gained from the SSIG lessons and parent manual. For example, these participants required further, individual instruction of the lessons, which was not always possible given group time constraints. If further, individual instruction was not possible, it is unclear if the participants understood the material presented, impacting their ability to practice the skills in and out of the SSIG program.

One participant withdrew from the treatment condition, but agreed to participate in the control condition. This same participant was also not present for the final week of the study.

Further, this participant "graduated" from the SSIG program shortly after the conclusion of this study. Participants differed in many important ways, including age, severity of symptoms, impairment in functioning, and length of time in the SSIG program. Thus, significant variability existed within and between the treatment and control conditions. This variability likely impacted the results of this study as multiple factors may have impacted participants' gains.

New Story SSIG procedures contributed to variance in the time of completion for some pre-treatment measures. That is, some participants' pre-treatment SSRS measures were completed closer to the beginning of the study than other participants' SSRS pre-treatment measures. Both treatment and control conditions' SSRS-T were completed within two weeks from the start of the study. Within the treatment condition, SSRS-P pre-treatment measures were completed between one and four months from the beginning of the study. Within the control condition, one participant's SSRS-P pre-treatment measure was completed eight months from the start of the study and the second participant's SSRS-P pre-treatment measure was completed 20 months from the start of the study. Such variability in the completion of the parent measures likely impacted the results of this study. Thus, it is likely that the results of the SSRS also reflected gains made by the control participants prior to the start of the pilot study. In addition, all participants were previously exposed to this curriculum; therefore, it is unclear what effect prior exposure to social skills lessons may have had on the improvement or decline of prosocial or problem behaviors. This study also lacked longer-term follow-up measures, which would provide information on the maintenance of treatment gains.

Another limitation of this study is the lack of training time available for the independent observers. These individuals were trained for only one week prior to the beginning of the study, due to the timing of the start of the study as it coincided with the start of the fall semester, when students were available to serve as coders. Although adequate inter-rater reliability was obtained prior to observational data collection, it is possible that additional training time may have resulted in greater reliability between independent observers (kappas were .75 for coder 1 and .80 for coder 2). Efforts were made to increase reliability during the study, including changes to the code to simplify the presence and absence of behaviors and adjustments to increase specificity of operational definitions. Thus, observational data collected in the beginning of the study was coded differently than data collected at end of the study, which likely impacted the outcomes as assessed by observational data. Excellent agreement was found between coders at the end of the study (kappa was .83). Further, observations were made in the same setting in which the skills were learned. Thus, the observational data in this study does not show if the skills were generalized to home or community settings.

Directions for Future Research

The results of this study suggest a number of potential implications for future research. Future studies in this area should include randomized control trials and a greater representative sample of the ASD population. There is need to study heterogeneous samples with regard to a range of symptom presentations and functioning levels in order to gain understanding of feasibility of social skills programs for individuals with ASDs, as well as a better understanding of characteristics of individuals who benefit from different types of social skills programs. Attempts were made to examine a heterogeneous sample in this study. For example, participants in each group varied in symptom presentation, cognitive level, age and length of time in the SSIG program. This study suggested that individuals with average intelligence might benefit more than those with intellectual disabilities. Future studies in this area should also examine implementation of social skills curriculums across a variety of settings (i.e., community outpatient settings) in order to gain a more broad understanding of variables that influence the effectiveness of social skills curricula and the influence of including parents or guardians of children and adolescents with ASDs on the maintenance or generalization of gains.

The lack of manualized treatments has been identified as a problem in much of the social skills research. This study suggests that manualized materials based on theoretical mechanisms of ASDs are feasible to implement and satisfactory to clients. For example, this study had relatively high adherence and retention rates as compared to other studies of parent-training treatment groups. This study also found that the inclusion of observational data greatly assists in analysis of the effectiveness of parent inclusion on acquired social skills. Observational data was important in this study, as parent and teacher report forms alone may not capture the true nature of social skill development or may capture different aspects of social behavior.

Greater involvement of parents in social skills treatment programs is important for children with ASD. Differing opinions exist regarding whether traditional parent training models for parents of children with ASD are appropriate for all families (Ingersoll & Dvortcsak, 2006). This study demonstrates that the inclusion of parents in a rural area is feasible when some barriers that may prevent their participation are addressed, such as using a home-based parent manual rather than requiring families to attend parallel parent training classes. In addition, this study demonstrates that parents were satisfied with the parent manual without great financial or personal costs.

Future research might include an assessment of parents' needs outside of the treatment program. The current study addressed skills identified in a manualized curriculum that were based on theoretical mechanisms of ASDs. This study did not address behavioral difficulties or skills that parents identified as most problematic for their child. Focus groups or interviews of parents may assist in identifying parents' needs outside of the treatment manual. Further, focus groups or parent interviews would provide a medium in which parents could provide feedback and/or recommendations for future treatment manuals or programs.

Research has shown that when parents are trained in behavioral methods, generalization and maintenance of behaviors to naturalistic settings improves over time (Brookman-Frazee et al., 2006; Ingersoll & Dvortcsak, 2006; Schreiber, 2011). Parents reported at least some improvement in the major social problem their child presented in the community and in the home at the conclusion of the study. Although parents reported improvement, without the implementation of a randomized control study, it is difficult to determine whether the manual developed for this pilot study contributed to the improvement. The pattern of results for this study suggests that the parent manual may not have contributed to generalization of gains, as the gains were only noted in the same environment where the skills were learned. It is possible that parents may observe generalization of their child's skills with additional lessons. Many children and adolescents on the autism spectrum are rigid in their thinking and prefer routine and structure (Lord & Bishop, 2010; Volkmar et al., 2004). Learning new skills is difficult for children and adolescents with ASDs, and time is required for over-learning to occur so that new skills may become part of a routine (Fisher & Avci-Wolf, 2007). The more consistency in language and behavioral supports across settings, the more likely skills learned in one setting will transfer across settings. Longer-term use of the parent manual may increase generalization of such behaviors beyond the home and into community settings. Thus, length of interventions with parent manuals should also be examined in future research with social skills interventions. The parent manual may have assisted in improvements in social skills, at least in the setting where the skills were learned. To assess for maintenance of gains, however, longer-term follow-up would be required and should be considered in future research.

Careful consideration should be given to the use of the SSRS alone given the differences in reliability between the Parent and Teacher Versions. The SSRS has been commonly used in research regarding social skills in children and adolescents with ASD; however, most studies did not show change in social skills with treatment (White et al., 2007). Further, the SSRS was developed to assess change in social skills of children with disruptive behaviors and not in children with ASD (White et al., 2007). Therefore, the SSRS may not be appropriate in measurement of social skills for children and adolescents with ASD and may not be sufficiently sensitive to detect changes in behavior over the typically short intervention period. It is suggested that researchers use additional parent measures in future studies to assess for change in prosocial and problem behaviors. Further, symptoms of ASDs may vary depending on the environment; therefore, it is important to gather information from multiple sources and across contexts (Ozonoff et al., 2005).

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Appendix A

Michelle Garcia Winner Email

Subject: **research on social thinking**
From: Michelle Winner <michelle@socialthinking.com>
Date: 05/30/12 07:12 PM
To: rvql@iup.edu
Cc: 'Pam' <pcrooke@socialthinking.com>, vzysk@socialthinking.com

Hi Julie,
Thanks so much for your letter. We were pleased to see you are preparing to do research on parent training and generalization of the Social Thinking ® concepts through the University of Indiana Pennsylvania. We will be very interested in learning more about your project and how the data turns out.

We were interested to read that as part of this you have created a parent training manual from our Think Social curriculum. We really like the idea of people independently researching our work.

Would you like one of us (core therapists through Social Thinking) to look at the manual to provide any additional feedback to assure the concepts are being shared in the manner intended?

Once your research is complete, please know that you will need to work with us directly if you would like the possibility to share the manual you have created with others. Given that Social Thinking is trademarked and our concepts are copyrighted, this will not be a product to share or publish independent of our involvement.

Please let me know if you have any questions or would like us to look at your manual prior to the research.

Respectfully, Michelle

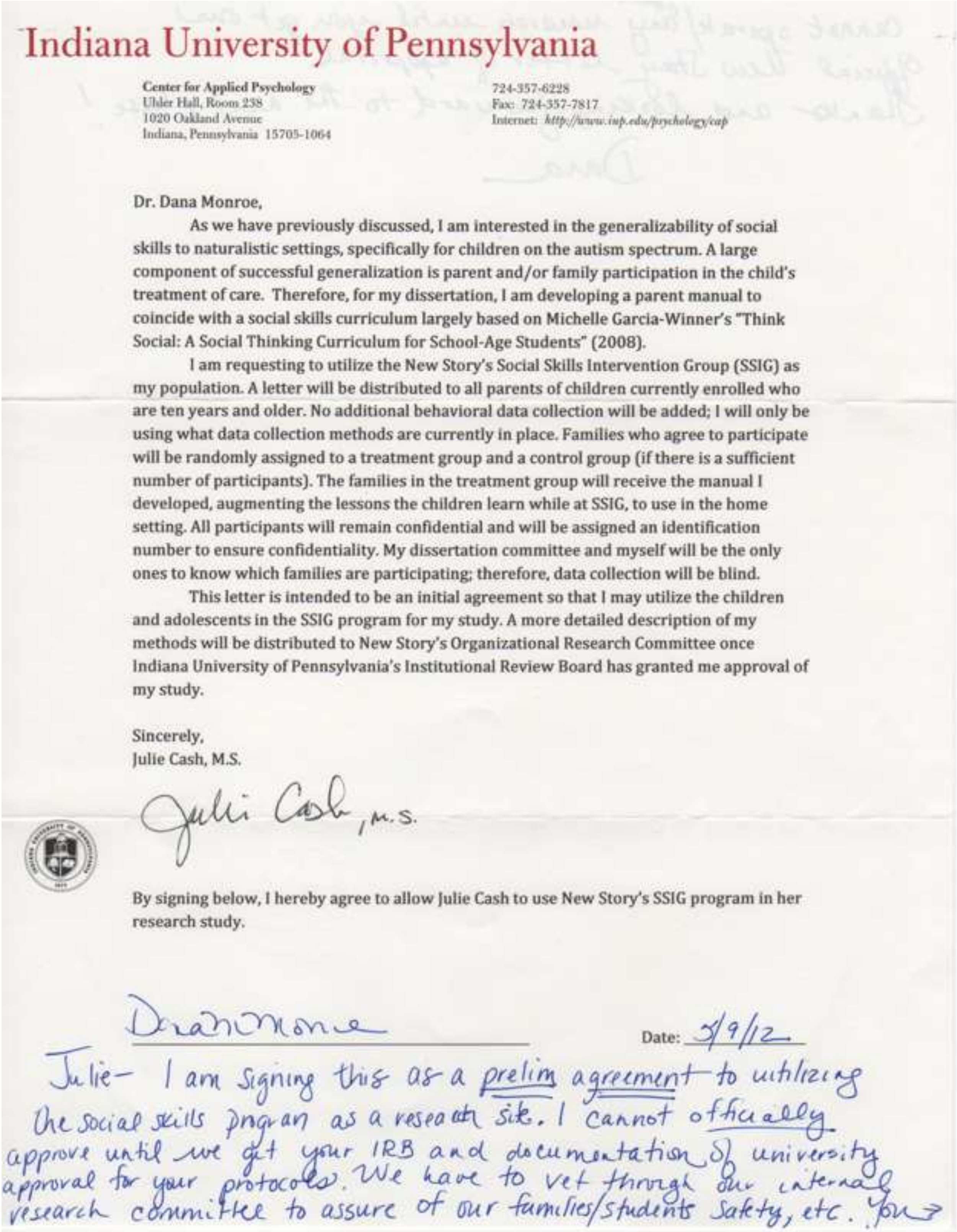
Michelle Garcia Winner
Founder of Social Thinking®
http://www.socialthinking.com
Social Thinking Publishing
3031 Tisch Way, suite 800
San Jose, Ca 95128
(408) 557-8595 ext 200

Please feel free to link to our website! We enjoy sharing our information through a link.

If you would like to receive occasional newsletters from my clinic, please go to the top of my webpage and register to be on our email list.

Appendix B

New Story Letter of Agreement



Indiana University of Pennsylvania

Center for Applied Psychology
Uhler Hall, Room 238
1020 Oakland Avenue
Indiana, Pennsylvania 15705-1064

724-357-6228
Fax: 724-357-7817
Internet: *http://www.iup.edu/psychology/cap*

Dr. Dana Monroe,

As we have previously discussed, I am interested in the generalizability of social skills to naturalistic settings, specifically for children on the autism spectrum. A large component of successful generalization is parent and/or family participation in the child's treatment of care. Therefore, for my dissertation, I am developing a parent manual to coincide with a social skills curriculum largely based on Michelle Garcia-Winner's "Think Social: A Social Thinking Curriculum for School-Age Students" (2008).

I am requesting to utilize the New Story's Social Skills Intervention Group (SSIG) as my population. A letter will be distributed to all parents of children currently enrolled who are ten years and older. No additional behavioral data collection will be added; I will only be using what data collection methods are currently in place. Families who agree to participate will be randomly assigned to a treatment group and a control group (if there is a sufficient number of participants). The families in the treatment group will receive the manual I developed, augmenting the lessons the children learn while at SSIG, to use in the home setting. All participants will remain confidential and will be assigned an identification number to ensure confidentiality. My dissertation committee and myself will be the only ones to know which families are participating; therefore, data collection will be blind.

This letter is intended to be an initial agreement so that I may utilize the children and adolescents in the SSIG program for my study. A more detailed description of my methods will be distributed to New Story's Organizational Research Committee once Indiana University of Pennsylvania's Institutional Review Board has granted me approval of my study.

Sincerely,
Julie Cash, M.S.

Julie Cash, M.S.

By signing below, I hereby agree to allow Julie Cash to use New Story's SSIG program in her research study.

Dana Monroe

Date: 5/9/12

Julie- I am signing this as a prelim agreement to utilizing the social skills program as a research site. I cannot officially approve until we get your IRB and documentation of university approval for your protocols. We have to vet through our internal research committee to assure of our families/students safety, etc. You →

Cannot operate/conduct any research until you get our
Official New Story letter of approval.
Thanks and looking forward to the next phase!

Dara

From: Dana Monroe <dmonroe@sbhmgmt.com>
To: Julie Cash <julcash7@yahoo.com>
Sent: Friday, August 17, 2012 2:39 PM
Subject: Re: Dissertation

Hey Julie
You are approved to move forward. I will be sending you a letter once I return to the office next week. In the meantime, you are good to begin what you need to! Best wishes!!!!
Dana

On Aug 21, 2012, at 2:32 PM, Dana Monroe <dmonroe@sbhmgmt.com> wrote:

Julie,
I won't be sending a letter as something is wrong with my Microsoft program and can't get a decent letter together for you. Just use my email as any approval letter that you need to reference. Thanks and keep me posted on your progress. Best of luck!
Dana

Dana Monroe, NCC, LPC, D.Ed.
<image001.jpg>
VP/COO West Region
724.463.5390 ext 222
724.463.5393 fax
www.newstory.com

Appendix C
Recruitment Letter

Indiana University of Pennsylvania

Dear <Name>,

You and your child are invited to take part in a research study about improving social skills in home and community settings for children with autism or Asperger's Syndrome. You are being invited to participate because your child is enrolled in the Social Skills Intervention Group (SSIG) at New Story in Indiana, Pennsylvania. The purpose of this research study is to find out whether parents find it helpful to use a new parent workbook written for this study that goes along with 7 weeks of your child's lessons in the SSIG program.

You may know me, Julie Cash, M.S. as one of the MHPs at New Story. I am also a graduate student at Indiana University of Pennsylvania and in my graduate student role, I am conducting this research study at IUP under the supervision of Dr. Laura Knight. For this project, I will be working with parents as a researcher, in addition to an MHP during the SSIG program.

As you know, children with autism or Asperger's Syndrome have difficulties with social skills. After all, that's why your child is in the SSIG! By doing this study, I am hoping to learn more about how children can improve their social skills and show those improvements in other settings besides New Story. A big part of helping children improve their social skills is **parent or guardian participation** in their child's social skills treatment. This study will look at whether using the parent workbook in between your child's SSIG sessions helps to improve your child's social skills at home.

It is your choice if you would like to take part in this research and you do not have to participate. Your child can still participate in the Social Skills Intervention Group at New Story even if you decide that you don't want to participate in this study.

If you decide that you would like to take part in this study, I will:

- Review the study with you, in person on by phone, at a time convenient for you, before September 1, 2012.
- Talk to your child about what it means for their parent or guardian to take part in this study. If your child is 14 years or older, I would like to explain the study to your child and ask for his/her agreement about participating.

- Provide you with a parent workbook that contains suggestions about how to encourage at home the social skills that your child will learn during 7 weeks of the social skills curriculum at SSIG.
- Collect information about your child’s social behaviors.
- Call you each week of the study to answer any questions or concerns you may have about the parent workbook or your child’s treatment.

Your participation in this study will be kept **confidential**. All information collected for this research study will be locked in Dr. Knight’s office at IUP and will not be included in your child’s file at New Story; no one from New Story will have access to any of the information that you provide for this study.

By taking part in this study, you may learn new ways to help increase your child’s social skills at home and improve your child’s behavior in public. There is no cost to participate in the study.

In case you have any questions about this study, I will call within the next few days to talk with you about the study and answer any questions you may have about participating. You may also call me if you have any questions as you read over this material. I am happy to review any of this with you and answer any questions you may have. If you would like to speak with me, please call **Julie Cash** at New Story at (724) 463-9841.

Again, please understand that taking part in research is voluntary and it is up to you to decide if you want to do it. You and your family may choose not to participate in this study, and your decision will have no effect on any care your child now receives or may receive in the future at SSIG at New Story.

Thank you for your time.

Sincerely,

Julie Cash, M.S.	Laura Knight, Ph.D.
Graduate Student	Assistant Professor
Principle Investigator	Faculty Advisor
Indiana University of Pennsylvania	Indiana University of Pennsylvania

Appendix D
Informed Consent Form

You are invited to participate in a research study conducted by Julie Cash, M.S. of Indiana University of Pennsylvania (IUP) and supervised by Dr. Laura Knight. The following information is provided to help you to make an informed decision whether or not to participate. If you have any questions, please do not hesitate to ask. You are eligible to participate because your child is enrolled in the Social Skills Intervention Group (SSIG) at New Story in Indiana, Pennsylvania.

The purpose of this study is to find out whether parents find it helpful to use a new parent workbook written for this study that goes along with 7 weeks of your child's lessons in the social skills program. This study will look at whether using the workbook improves your child's social skills at home. If you would like to participate in this study, you will be given a parent workbook and instructions on how to use it. You will be asked to read the chapter that goes along with what your child is learning in the SSIG and complete worksheets or home assignments with your child. We are also interested in your opinion about the workbook and will call you each week of the program to ask you some questions.

It is your choice whether or not you participate in this study and your choice will not affect your child's participation in the SSIG program at New Story. If you choose to participate, you will be asked to complete two questionnaires about your child's social behaviors before the SSIG program begins in September. Next, you will be given a parent workbook that goes along with 7 weeks of your child's social skills lessons. Each lesson your child is taught during those 7 weeks has a corresponding lesson in your parent workbook. At the end of each week, the researcher will contact you to talk about the lesson and to answer any questions you may have. Also, a research assistant will contact you at three separate times during the program to ask about your use of the parent workbook. Another research assistant who is not a part of New Story will observe your child's behavior in the social skills group and keep track of specific social skills that are covered in the workbook. This information will show if the parent workbook is helpful and will not have any affect on the services your child receives at New Story. At the end of the 7-week study, you will be asked to complete questionnaires about your child's social behavior and your experiences with the parent workbook.

As a thank you for participating, you will have the opportunity to select a gift card that has been donated from a local business and you will receive a summary report of your child's progress in the SSIG.

Your participation in this study is voluntary. If you choose not to participate, your child's treatment in the SSIG program at New Story will not be affected. If you and your child choose to participate, you may change your mind and drop out of the study at any time by notifying the primary investigator, Julie Cash, and all information that you have provided for this study will be destroyed. If you and your child choose to participate, all information that you provide for this study will be held in strict confidence and will not be shared with anyone at New Story. All forms for this study will be kept in a separate file from your child's New Story information and will be locked in Dr. Knight’s office at IUP. Whether or not you choose to participate in this study will have no bearing on the services your child receives from New Story. The information obtained in the study may be published in scientific journals or presented at scientific meetings, but yours and your child’s identity will be kept strictly confidential.

The data collected in this study is to evaluate your child’s social skills and to see whether skills improve more for children whose parents use the parent workbook; you are not being evaluated. At any time, you have the option of skipping any item on any form that you are not comfortable completing or stopping your participation in this study.

If you are willing to participate in this study, please sign the statement below and return one copy of this form to Julie Cash at the start or end of the SSIG program at New Story. Please keep the extra copy for your records. If you choose not to participate, please return the unsigned copy to Julie Cash at the start or end of the SSIG program.

Julie Cash, M.S.
Graduate Student
Principle Investigator
Indiana University of Pennsylvania
1020 Uhler Hall
Oakland Ave.
Indiana, PA 15701
(724) 463-9841

Laura Knight, Ph.D.
Assistant Professor
Faculty Advisor
Indiana University of Pennsylvania
1020 Uhler Hall
Oakland Ave.
Indiana, PA 15701
(724) 357-4526

This project has been approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (Phone: 724-357-7730).

(Informed Consent Form continued on next page)

VOLUNTARY CONSENT FORM:

I have read and understand the information on the form and I consent to volunteer to be a subject in this study. I understand that my responses are completely confidential and that I have the right to withdraw at any time. I have received an unsigned copy of this informed Consent Form to keep in my possession.

Name (PLEASE PRINT):

Signature:

Date:

Phone number or location where you can be reached:

Best days and times to reach you:

I certify that I have explained to the above individual the nature and purpose, the potential benefits, and possible risks associated with participating in this research study, have answered any questions that have been raised, and have witnessed the above signature.

Date Investigator's Signature

Appendix E

Child's Informed Consent Form

I would like you and your parent/guardian to help me with a research study. I am going to tell you about my research study so you can decide if you want to help me or not help me with this study. It is OK for you to ask me questions while I explain my study to you. I would like you and your parent/guardian to help me because you are part of the Social Skills Intervention Group (SSIG) at New Story.

I would like to know if having your parent/guardian help teach you social skills lessons at home would help you even more. Your parent/guardian will be given their own book that explains what you are learning in the social skills group so they can help you at home. You will get to read, write, and talk with your parent at home about the skills you learn at SSIG. Your parent/guardian's book will only go along with 7 weeks of your SSIG program – it will not last all year. I will ask your parent/guardian questions each week in case they, or you, have questions. That way, we can all work together to help you reach your goals.

You should have a nice time when you work with your parent/guardian. The things I will learn from talking to your parent/guardian will help people like me to be able to work better with children and teens like you.

No one is making your parent/guardian help me with this research study and they don't have to help if you don't want them to. If you do not want your parent/guardian to help, you can still come to New Story and have fun. If you decide later that you don't want your parent/guardian to help, you and/or your parent/guardian can tell me by calling or telling me at New Story and I will throw away any information your parent/guardian gives me and not include you in my study. If you do want your parent/guardian to be in my study, I will not tell anybody. You can pick a pretend name to use, or I will pick one for you if you want. I will be talking to a bunch of different parent/guardians about the social skills lessons you and your friends learn at New Story and my talk with your parent/guardian will just be a little part of the bigger research study. When I finish my research study, I might talk about what I learned with other people, or write it down so other people can read it, but I will always use your pretend name as your secret identity.

If you would like your parent/guardian to help me in my study, please put your name on the bottom of this sheet. I have a copy of this form to give you to keep, as well as one for your parent/guardian to keep. If you don't want your parent/guardian to help me in my study, do not sign this sheet.

Julie Cash, M.S.
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<u>This project has been approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (Phone: 724-357-7730).</u>

PARENT/GUARDIAN VOLUNTARY CONSENT FORM:

My child understands the information on the form and agrees to participate with me in this study. I am in agreement that my child and I may participate in the study. I understand that my child may be observed as part of this study, but all information pertaining to my child will be kept completely confidential. I also understand that I have the right to withdraw myself and my child from the study at any time. I have received an unsigned copy of this informed Consent Form to keep in my possession.

Child's Name (PLEASE PRINT)

____

Parent's/Guardian's Name (PLEASE PRINT)

____

Parent/Guardian Signature

____

Date

Phone number or location where you can be reached

Best days and times to reach you

I certify that I have explained to the above individual the nature and purpose, the potential benefits, and possible risks associated with participating in this research study, have answered any questions that have been raised, and have witnessed the above signatures.

Date   Investigator's Signature

Appendix F

Social Responsiveness Scale (attachment)

Appendix G

Child and Family Information Form

Child's name ____ **Male/Female**

Date of Birth _________________ **Age** _______ **Ethnicity** ______________

Parent/Guardian's name ____

Date of Birth _________________ Home phone ( ) ________________________

Cell phone ( ) ________________________

Highest level of education: ___ High School
___ Some College
___ Bachelor's Degree
___ Graduate Degree

2nd Parent/Guardian's name ____

Date of Birth __________________ Home phone ( ) ________________________

Cell phone ( ) ________________________

Highest level of education: ___ High School
___ Some College
___ Bachelor's Degree
___ Graduate Degree

Is the child adopted? Yes No

Are parents/guardians married? Yes No

Are parents/guardian living in the home together? Yes No

Is the child taking any medication? Yes No

If yes, please list all medications:

____

____

____

Please list all other members of the household:

Name	Relation	Age

Please list all other members of the household who would be participating in your child's care:

Name	Relation	Age

Appendix H

Parent Manual adapted from *Social Thinking! A Social Thinking Curriculum for School-Aged Students* (Garcia Winner, 2005; attachment)

Appendix I

Operational Definitions of Coded Behaviors

POSITIVE

EYE CONTACT: looking at person who is talking or when he/she is talking to someone else. Scored once per interaction with another individual. A new cycle is counted when pause in conversation occurs for *more than 3 seconds.*

FOLLOWING DIRECTIVES: compliance after directive (communicated instruction) given first time.

ASKING PERMISSION: asking to leave the room or go get something.

GOOD MANNERS: saying, "please," "thank you," "excuse me," "you're welcome," "I'm sorry"

ON TASK: attending to current task/directives.

COMPLIMENTING: giving compliments or giving encouragement (i.e., "good job," "well done").

OFFERING HELP: asking another if they can assist the person in any way or nonverbally offering help such as handing something, picking up something someone dropped.

SHARING: sharing with or without a request from someone else.

APPROPRIATE EMOTIONAL EXPRESSION: At any given time, he/she is expressing an emotion (positive or negative). Is the emotion appropriate to the situation?

USING APPROPRIATE COPING SKILLS: emotional description, counting to 10, taking deep breaths, asking for a break, talking to an adult, or journaling.

MATCHING REACTION TO SIZE OF THE PROBLEM: having a big reaction for a big problem; having a small reaction for a small problem.

IDENTIFYING UNEXPECTED BEHAVIORS: acknowledging the behavior they are engaging in is unexpected in the particular setting.

CHANGING UNEXPECTED BEHAVIOR TO EXPECTED BEHAVIOR: realizing the behavior they are engaging in is unexpected and replacing that behavior with the expected behavior for that setting.

JOINING PEERS: joining peers in activities/games or conversations [during unstructured time].

REQUESTING HELP: asking a peer or adult for assistance.

INITIATING CONVERSATION: starting a conversation with a peer or adult.

NEGATIVE

NO EYE CONTACT: not looking at person who is talking or when he/she is talking to someone else. A new cycle is counted when pause in conversation occurs for *more than 3 seconds*.

NON-COMPLIANCE: not following directive given first time or saying “no” to a given directive.

POOR MANNERS: not saying, “please,” “thank you,” “excuse me,” “you’re welcome,” “I’m sorry” when situation calls for it (i.e., burp, fart, run into someone, etc.).

OFF TASK: not attending to current task/directives.

CRITICIZING: saying negative things about a peer, staff, or self.

INTERRUPTING: speaking while another person is speaking.

NOT WAITING TURN/PUSHING: either physically pushing or moving to be ahead of another.

RETALIATION BEHAVIORS: raising a fist, making a face after a directive/statement, using obscene hand gestures, sticking one’s tongue out.

SCREAMING/TANTRUMING: raising voice; crying, kicking, hitting, etc. when limits are placed or when individual does not get what they want.

OVERREACTING: having a big reaction for a small problem.

INVADING PERSONAL SPACE: not respecting an approximate arm’s length distance from someone or not moving when another individual has asked for space/looks uncomfortable.

CONTINUING UNEXPECTED BEHAVIOR DESPITE FEEDBACK: continuing to engage in an unexpected behavior even after a peer or adult has pointed out that the behavior is unexpected and should be changed.

PLAYING ALONE: not engaging with other children, refusing invites to play [during unstructured time].

PHYSICAL AGGRESSION: hitting, kicking, biting, pushing, slapping, pinching, jabbing another individual.

IGNORING: not responding when another person is speaking to him/her or asking him/her to follow a directive.

DISTRACTING OTHERS: engaging in behaviors that purposely distract a peer from remaining on task or engaging in a behavior (ex: making loud noises, moving body) that prevent peers from attending to task during structured time.

Appendix J
Independent Observer Form (attachment)

Appendix K

Social Skills Rating System – Parent Form (attachment)

Appendix L

Social Skills Rating System – Teacher Form (attachment)

Appendix M

Adherence to Treatment Questions

After the first week: "Hello, my name is ______. I am a research assistant for Dr. Knight at IUP and am assisting with Julie Cash's research study. I will be asking you a few questions about the manual and how you think your child is doing. Before we begin, I want you to know that your responses will be recorded and identified by a number, not your name. Your answers will be anonymous. Neither Julie, nor Dr. Knight will know what number is assigned to you or that you made these comments."

In the past week, how often did your child engage in expected behaviors?

Not at all   Some of the time   Most of the time   All of the time

How many of the worksheets did you complete with your child?

None of them   Some of them   Half of them   Most of them   All of them

After the fourth week: "Hello again, this is Dr. Knight's research assistant ______. I will be asking you a few more questions about the manual and how you think your child is doing. Please remember that no identifying information will be collected during this phone call. Only your responses will be recorded. Your answers will remain anonymous and go directly into a data file. Neither Julie, nor Dr. Knight will know what you have said and will have no way of tracing these responses to you."

In the last three weeks, how often did your child use whole-body listening, such as using their eyes and ear to attend to the speaker?

Not at all   Some of the time   Most of the time   All of the time

In the last two weeks, how often was your child a "Thinking of You" kid?

None of the time   Some of the time   Most of the time   All of the time

In the last week, how often did your child change his/her behavior so other people could have "good thoughts" about your child?

Not at all   Some of the time   Most of the time   All of the time

How many of the worksheets did you complete with your child?

None of them Some of them Half of them Most of them All of them

After the seventh week: "Hello again, this is Dr. Knight's research assistant ______. I will be asking you a few more questions about the manual and how you think your child is doing. Please remember that no identifying information will be collected during this phone call. Only your responses will be recorded. Your answers will remain anonymous and go directly into a data file. Neither Julie, nor Dr. Knight will know what you have said and will have no way of tracing these responses to you."

In the last three weeks, how often did your child express their emotions by appropriately using "feeling words?"

Not at all Some of the time Most of the time All of the time

In the last two weeks, how often did your child adjust his/her emotional response to the size of the problem?

Not at all Some of the time Most of the time All of the time

In the last week, how often did your child monitor and adjust his/her target behavior?

Not at all Some of the time Most of the time All of the time

How many of the worksheets did you complete with your child?

None of them Some of them Half of them Most of them All of them

Appendix N

Weekly Parent Questions

- Did you have any difficulties with any of the techniques you learned this past week?
- Do you have any questions about any of the techniques introduced this past week?
- Do you have any questions about a particular behavior [child's name] has shown this past week?

- Next week's lesson is ______.
- Do you have any questions about next week's lesson?

- Please don't hesitate to call me with any questions that you may have about the treatment manual or the techniques being introduced.

Appendix O

Parent Satisfaction Questionnaire adapted from Eyberg (1974)

Please circle your response.

1. Regarding techniques for teaching my child new social skills, I feel I have learned

a. Nothing
b. Very little
c. A few new techniques
d. Several useful techniques
e. Very many useful techniques

2. Regarding my confidence in my ability to notice and encourage my child's social skills, I feel

a. Much worse than before
b. Somewhat worse than before
c. The same as before
d. Somewhat better than before
e. Very much better than before

3. The major social problems that my child presented at <u>home</u> before the program started are at this time

a. Considerably worse
b. Somewhat worse
c. The same
d. Somewhat improved
e. Greatly improved

4. The major social problems that my child presented in the <u>community</u> before the program started are at this time

a. Considerably worse
b. Somewhat worse
c. The same
d. Somewhat improved
e. Greatly improved

5. I feel that my ability to identify my child's expected and unexpected behaviors is at this time

a. Considerably worse
b. Somewhat worse
c. The same
d. Somewhat improved
e. Greatly improved

6. Regarding the progress my child has made in his/her social behavior, I am

a. Very dissatisfied
b. Somewhat dissatisfied
c. Neutral
d. Somewhat satisfied
e. Very satisfied

7. I feel the type of program that was used to help me improve the social behavior of my child was

   a. Very poor
   b. Poor
   c. Adequate
   d. Good
   e. Very good

8. My general feeling about the parent manual for improving my child's social behavior is

   a. I disliked it very much
   b. I disliked it somewhat
   c. I feel neutral
   d. I liked is somewhat
   e. I liked it very much

9. I am happy that I participated in my child's treatment

   a. I strongly disagree
   b. I somewhat disagree
   c. I feel neutral
   d. I somewhat agree
   e. I strongly agree

10. I would like to receive a parent manual for other parts of my child's social skills program at New Story.

    a. I strongly disagree
    b. I somewhat disagree
    c. I feel neutral
    d. I somewhat agree
    e. I strongly agree