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An Exploration of the Generalization of Conversational Social Skills for Students with Autism Spectrum Disorder within a Self-Contained Educational Setting

by

Sara L. Parmeley

A Dissertation submitted to the Education Faculty of Lindenwood University

in partial fulfillment of the requirements for the

degree of

Doctor of Education

School of Education

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This dissertation has been approved in partial fulfillment of the requirements for the degree of

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at Lindenwood University by the School of Education

Dr. Lynda Leavitt, Dissertation Chair — 9/4/2015
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Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work here at Lindenwood University and that I have not submitted it for any other college or university course or degree here or elsewhere.

Full Legal Name: Sara Lynn Parmeley

Signature: Sara L Parmely Date: 9/4/15

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Abstract

The researcher taught students with autism 14 years in a public school. For years, her students were part of a social language class and a recess playgroup with typical peers. Though the therapists facilitating those groups observed progress, the researcher witnessed no real-life application outside of class.

Students with high-functioning autism had a diagnosis that included poor or lacking social skills and a language delay. Research stated that students on the autism spectrum must be taught social skills and could not be expected to ‘pick up’ skills through simple observation. In order for people to have relationships, go to college, obtain jobs, or marry, they must have adequate social skills.

The treatment in this study taught conversational skills using a structured *Conversation Game* (Brinton, Robinson, & Fujiki, 2004) paired with the LinguiSystems workbook, *Spotlight on Socials Skills (adolescents): Conversations* (LoGiudice & Johnson, 2008). The treatment took place in a self-contained setting to teach participants social skills, and then used scripts to aid the participants in generalizing the skills to unstructured settings. This study included four boys with an educational diagnosis of autism, who were at or near grade level. The treatment strived for generalization and maintenance of social skills to unstructured areas.

Data collection involved students’ individual educational program goals, parent interviews and surveys, student pre-and post-interviews, worksheets, homework, the Empathy and Social-Skills pre-and post-tests, and the JobTips Assessment. The researcher took data regarding individual conversation skills, such as the number of comments, introductions, and closings, and the number of off-topic remarks, while a paraprofessional tracked data on the physical aspect of conversation, including eye contact, body language, facial expressions, and emotions.

All participants completed the LinguiSystems workbook, phase 2 by displaying appropriate verbal and physical aspects of conversation with other participants, and phase 3 by adding typical peers to the conversation. Three of the four participants were able to generalize social skills in the cafeteria and one generalized to recess. Fifty percent of the treatment population maintained their social skills. The LinguiSystems workbook paired with frequent conversational practice and feedback helped to generalize social skills for students with ASD.

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Chapter One: Introduction

Autism has gained worldwide attention from media, parents, teachers, and researchers (Greenspan, 2010). In the researcher's experience as a special education teacher, society's awareness and perception of autism also evolved with the influx of cases diagnosed. Autism spectrum disorders (ASDs) were among the top disorders whose constituents received special education in the United States (U.S. Department of Education, 2010). The number of students with autism included in regular classrooms at least 80% of the time increased; rising from 37% in 2009 to 38% in 2010, and 39% in 2011 (U.S. Department of Education, 2015, p. 108). However, with an increase in functional students who attended regular academic classes, social skills were lacking and interventions or treatments needed to be further researched (Kasari, 2002; Safran, 2001; Wang & Parrila, 2008; Williams-White, Keonig, & Scahill, 2007). Due to the increase in the number of students diagnosed with ASD in local public schools, in September 2012 a speech pathologist in the district of study began a Teach and Learn Club, which grouped students with ASD with typical-peer volunteers who then played structured games at recess. Also, in September 2012, the same students on the spectrum began a social language class that addressed their feelings and reactions in dealing with people around them. The class was in session for two years prior to this dissertation, yet there was no evidence that students were able to generalize the learned social skills outside of the social language classroom. The researcher conducted a study to explore the extent to which conversation skills, taught during small group instruction with the use of scripts, resulted in social generalization to other settings.

Purpose of the Dissertation

The purpose of this study was to explore the use of a particular treatment, the *Conversation Game* (Brinton, Robinson, & Fujiki, 2004), with students diagnosed with ASD. The intervention directly related to their ability to participate in bidirectional, turn-taking conversation and exhibit the appropriate facial affect (or emotion), body posture (non-verbal language), and eye-gaze during a social meeting. The researcher also investigated the quality, duration, and degree of the generalization (the application of learned skills in a new setting/environment and/or the inclusion of new conversation partners) of social skills with typical peers in an unstructured setting; and measured parental involvement in the treatment. The researcher treated four adolescent boys on the autism spectrum at a Midwestern suburban elementary school, using the LinguiSystems workbook, *Spotlight on Socials Skills (adolescents): Conversations* (LoGiudice & Johnson, 2008). The workbook addressed skills, such as use of body posture, nonverbal body language, eye-gaze, and turn-taking, and was used in conjunction with the *Conversation Game* (Brinton et al., 2004). This research was supported by the social constructivist approach (Derry, 1999), in that learning was a social process (McMahon, 1997) and would be enhanced through the use of typical peers, hence in a more natural setting.

Brinton, Robinson, and Fujiki (2004) reported inconclusive results when they implemented the *Conversation Game* at their clinic with one student. The participant inconsistently identified emotion after a year of treatment and was able to label all the targeted strategies of conversation, but continued to require feedback from the clinician. After 24 months of treatment, the participant was responsive to his listener about 80% of the time (Brinton et al., 2004, p. 288, para #1). The participant's mother felt he was successful when using his conversational strategies. The researcher paired the *Conversation Game* (Brinton et al., 2004) with the LinguiSystems workbook (LoGiudice, & Johnson, 2008) to attempt an increase in successful outcomes. An exploratory case study methodology was employed, supported by the fact that 90% of the current intervention studies were case studies (Matson, Matson, & Rivet, 2007).

The number of students with autism annually increased (Lord & Bishop, 2010; U.S. Department of Education, 2012) and schools lacked research on how best to educate this special population to function in the world (Kasari, 2002; Wang & Parrila, 2008). Regardless of their intellectual knowledge, without social skills, these children were unable to function appropriately in public. For adults with high-functioning autism (HFA) or Asperger's syndrome, to acquire and maintain a job, they must learn appropriate social skills; imperative to their relationships, jobs, and their ability to function in society (Klin & Volkmar, 2003). The researcher believed, as a special education teacher, that students needed to learn social skills and needed to generalize these learned skills to other people, locations, and situations.

Rationale

At the time of this study, the researcher had 14 years of experience as a self-contained classroom teacher for students on the autism spectrum and repeatedly observed students who lacked the necessary social skills. Having observed the students' shortcomings paired with a failed curriculum, the researcher sought change through additional intervention(s). Students with ASD were unable to correctly identify verbal or nonverbal social cues, such as yawning, disinterest, sarcasm, emotions, body language, or someone trying to end a conversation (Morrison & Blackburn, 2008). Most typical children learned social etiquette and behavioral rules by observing others in their environment (Gralinski & Kopp, 1993; Rubin & Sloman, 1984); whereas, children on the autism spectrum often required direct instruction to learn these same skills (Laugeson, Frankel, Gantman, Dillon, & Mogil, 2012). When interviewed, all four of the students in a study reported by Klin and Volkmar (2003) said they wanted more friends, though they appeared content with their friendless status. Each student required basic social skills to function in society, in a workplace, in a school, or in a relationship (Klin & Volkmar, 2003). All four sets of parents to the research participants in the current study voiced concern about their children's social/conversation skills and believed them to be of the "utmost concern," even more so than academics. The researcher believed that students with ASD required direct instruction to acquire social skills and the lack of available research on how to teach these skills, in order to generalize to less structured settings, supported the need for this study. Little of the completed research examined social competence outside of the treatment setting (Laushey & Heflin, 2000).

When researchers questioned sets of parents in Scotland, parents repeatedly mentioned the need for relationships with friends and conversational skills (Knott, Dunlop, & Mackay, 2006). After an extensive review of the literature current at the time of this writing, the researcher found a gap regarding the generalization of conversational social skills (Jackson et al., 2003). This study intended to contribute to closing the gap regarding students with ASD, communication skills, and the generalization of those skills. During a review of social skills research, Garcia-Winner (2011), creator of the Social Thinking Curriculum for students with ASD, found that "social skills studies don't look at follow up to see stabilization of skills learned over time, if they do explore generalization" (para. 6).

Most research involving social skills consisted of populations of preschoolers and kindergartners with ASD; as the students aged their goals focused more on academics (Harper, Symon, & Frea, 2008). However, the problems with social skills remained. The students' lack of social skills was clear; what was unclear was whether the participants were taught social conversation skills, if they had the skills and lost them, or if their social skills were addressed and never completely developed.

Research Questions

RQ_1: How does the implementation of the instructional program, the *Conversation Game,* paired with LinguiSystems *Social Skills: Conversations* workbook help generalize conversational social skills of students with ASD to unstructured settings?

RQ_2: How does the instructional program, the *Conversation Game*, paired with LinguiSystems *Social Skills: Conversations* workbook increase/decrease conversational skills, eye gaze, body posture, and facial expression, of student's with ASD during conversations in structured and unstructured settings?

RQ_3: In an unstructured setting, is there observable evidence of change in the quality of interactions related to conversational skills between students with ASD and neurotypical peers? If there is an observable change, how do the quality (solo play, parallel play in proximity, trying to engage others unsuccessfully, partial engagement being in-and-out of the interaction, semi-involved, but not fully engaged, engaged with other and fully on-topic) of interactions change?

RQ_4: In an unstructured setting, will interfering problem behaviors change? If interfering problems do change, in what ways do they change?

RQ_5: As a researcher and educator, did my instructional design and lesson planning change in the implementation of the *Conversation Game* and in particular, my perceptions regarding the ability of the students to learn and generalize conversation skills? If it did change, how did it change?

RQ_6: How did the parents work with their child to increase their child's conversational social skills, throughout the duration of the study?

Limitations

This study used a small, convenience sample of four students who fit the criteria in a single public school; large, random, controlled studies were uncommon in the field of autism (Begeer et al., 2011). The number of students with autism, while growing, was a fraction of a typical school district's student population. In 2013-2014, the school of research educated a total of 368 students, with 23 of those having a diagnosis of ASD, while the district educated 3,490 students (Illinois Report Card, 2014, p. 1). The population of ASD was approximately 0.05% of the school's total study body. This was higher than the state's average ASD population of 17,895 (p. 37) in public schools, with a total of 1,455,660 (p. 8), or 0.01% of the population (Illinois State Board of Education, 2014). The number of participants was further limited by using a convenience sample, consisting of those students present in a single elementary school. The researcher also viewed this population with a positive attitude and perceived the students in the best light; because of the researcher's involvement and positive attitude, the study used blinded-observers in tandem with the researcher's observations to portray an unbiased outlook on the quality of generalization. Parent interviews also influenced the success of the program. When interviewed by Little and Clark (2006) parents reported happiness at seeing their children with ASD grow and succeed in life.

Another limitation to the current study was the length of treatment; participants received treatment twice a week for 30-minute sessions; from March 2014 to May 2015, taking a three-month break for the summer term. The researcher expected an amount of loss and regression of previously learned skills upon the students' return in September. The research results were further limited by using questionnaires, because they base information on informants' biases and opinions (Bellack, Brown, & Thomas-Lohrman, 2006). To overcome this bias, the researcher paired questionnaires with direct observation of student behavior.

Locke, Rotheram-Fuller, and Kasari (2012) feared burnout of or social rejection by typical peers used to model appropriate behaviors for students with ASD. Frequently, researchers used peers as models, mentors, or partners successfully in ASD studies (Kamps, Potucek, Lopez, Kravits, & Kemmerer, 1997; Laushey & Heflin, 2000). However, researchers found that the typical peer models remained popular and had more friendships following the study; the students were happy to participate and were more involved with children with special needs in later years, showing no negative impact to participation as peer models (Locke, Rotheram-Fuller, & Kasari, 2012).

Additional limitations of this study were the lack of reported reliability and validity for successful use of the *Conversation Game* (Brinton et al., 2004) or the

LinguiSystems conversation program (LoGiudice, & Johnson, 2008). Most interventions for students with ASD lacked validity and reliability measures (Gresham, Sugai, & Horner, 2001; Ozonoff & Miller, 1995). Qualitative, observational data showed positive effects in social skills improvement (Reichow & Volkmar, 2010); however, quantitative data was inconsistent (Krasny, Williams, Provencal, & Ozonoff, 2003; Ozonoff & Miller, 1995; Scahill & Lord, 2004; Williams-White et al., 2007; Wolery & Garfinkle, 2002).

After treatment, the participants remained with deficits defined by their disability. This particular group of students may never desire to be in a crowd of people or launch conversations with strangers. The participants may not have exponentially increased their friendship base, but after treatment appeared more capable of navigating the social world with less discomfort.

Definition of Terms

Asperger's syndrome, a form of autism at the higher IQ end of the autism spectrum; if there was no problem with early development or language, the diagnosis was likely to be Asperger's syndrome as opposed to autism (Attwood, 2007).

Autism, a neurological condition present prior to the age of three and characterized by delayed or lack of appropriate communication and socialization, an impairment of nonverbal behaviors (eye gaze, facial expressions, etc.), lack of shared enjoyment, repetitive language, inflexibility, and repetitive motor movements (American Psychiatric Association, 2000).

Autism spectrum disorder (ASD), a neurological disorder with diagnostic criteria of social communication deficits, deficits in nonverbal behaviors, deficits in understanding and maintaining relationships, and restrictive and repetitive behaviors and interests; symptoms must be lacking in early childhood and must not be explained by a cognitive or greater developmental delay (American Psychiatric Association, 2013).

Blinded observer, for the purpose of this study, referred to observers who did not have a working relationship and who had very little knowledge of the participants and lacked a bias towards the outcome of the study. A school psychologist and social worker observed, due to the fact they were knowledgeable about ASD and had experienced observing student behavior. When observing, the researcher pointed out the participants, simply labeling the observation rubric with a code, such as student 1, etc.

The Conversation Game taught the steps of reciprocal conversation, keeping on-topic with another individual (Brinton et al., 2004). The different phases of the game were: a) one comment + one question + listen; b) two comments + one question + listen; c) two comments + one question + listen + comment; d) two comments + one question + listen + comment + related question + comment; and e) multiple repeats of the sequence (Brinton et al., 2004).

The small group data sheet also denoted if the conversation was only between the researcher and participants or if typical peers were involved.

Conversation skills, for the purpose of this research, referred to the ability to speak interactively with another individual, using an opening, remaining on-topic, and having an appropriate closure, along with use of the correct facial expression, vocal expression, and body language.

Empathy, the ability to understand another person’s emotions and thoughts (Auyeung et al., 2009).

Engagement, actively involved in the educational setting and attending to the topic at hand consistently (Bagatell, 2011; National Research Council, 2001; Ornstein, Pajak, & Ornstein, 2011).

Experiential learning, occurred through the enhancement of educational experiences through reflection and critical analysis, and where the learner was impacted emotionally and intellectually to produce genuine learning (The Association for Experiential Education, 2013).

Generalization, for the purpose of this research, was the application of learned skills in a new setting or environment and/or the inclusion of new conversation partners.

High-functioning autism (HFA) was

> the term used to describe children who had the classic signs of autism in early childhood but who, as they developed, were shown in formal testing of cognitive skills to have a greater degree of intellectual ability, with greater social and adaptive behavior skills and communication skills than is usual with children with autism (Attwood, 2007, p. 349).

Professionals place students in the high-functioning bracket if the IQ was in the normal range (Smith, 2008). For the purpose of this study, students with HFA had an educational diagnosis of autism on their individual education plan (IEP) and were functioning academically at or near their grade level.

Individualized education program (IEP), a legal document stating specific educational goals and accommodations for students with special needs, based on their areas of weakness and aided in assessing and tracking progress over time (U.S. Department of Education, 2006). Each participant had goals regarding the increase of appropriate conversation skills, body language, expression, generalization, and the decrease of interfering behaviors.

Interfering problem behaviors, behaviors that negatively affected the attainment or ability to perform acceptable social skills (Gresham, 1992), such as verbal insults, walking away from a speaker, or aggression.

JOBTIPS Social Skills Assessment, copyrighted by Do2Learn to assess readiness for job skills; however, questions regarding conversations, body language, topics, greetings and farewells, and others, made it an appropriate tool for measuring changes in the participants (see Appendix A) (Do2Learn, 2011).

Joint attention emerged developmentally between 6-12 months and referred to the sharing of attention between an infant, another individual, and an object or action. The term included eye gaze, pointing, and following a point (Charman, 2003).

Neurotypical peers (typical peers), students who did not have autism (Wagner, 2008).

Scripts, for the purpose of this study were predetermined phrases to guide the students through a conversation.

Social communication skills, "the capacity for a child to respond to bids for interaction from a communication partner and the frequency of initiating social interactions" (Jones & Schwartz, 2009, p. 432).

Social competence, the ability to have successful outcomes from interactions with other people (Spence, 2003; Spence & Donovan, 1998) and learned over a lifetime from birth to death (Garaigordobil, 2009).

Social skills, the ability to act out those behaviors that would help one achieve social competence (McFall, 1982; Spence, 1995, 2003).

Spotlight on Social Skills: Conversations, a book written by LoGiudice and Johnson (2008) and published by LinguiSystems that taught conversational social skills and included worksheets with each lesson. The worksheets were used to check for understanding of the concepts and assist in data tracking for IEP goals.

Structured setting, an established place of routine, physical organization, schedules, and a defined space to facilitate learning (Safran, 2001).

Theory of Mind (ToM), the "ability to make inferences about what other people believe to be the case in a given situation allows one to predict what they will do" (Baron-Cohen, Leslie, & Firth, 1985, p. 39).

Unstructured setting, for the purpose of this research, the amount of time spent outside of academic structure, generally recess, lunch, or break time.

Conclusion

With no cure for autism on the forefront and the population steadily increasing, the researcher believed educators must find a method to increase the likelihood that these children could become functional adults, employees, neighbors and spouses. The literature implied that students with autism could learn appropriate socials skills in a clinic or classroom (Barry et al., 2003; Bauminger, 2002; Feng, Lo, Tsai, & Cartledge, 2008; Kamps et al., 1992; Sansosti & Powell-Smith, 2006; Solomon, Goodlin-Jones, & Anders, 2004; Tse, Sturlovitch, Tagalakis, Meng, & Fombonne, 2007; Webb, Miller, Pierce, Strawser, & Jones, 2004). However, little of the research mentioned the application of those social skills to other settings or peers. None of the research gave explicit details on how to help students generalize their social skills to other settings. As a cornerstone study in 1962, Taba (1962) found that “since no program, no matter how thorough, can teach everything, the task of all education is to cause a maximum amount of transfer” (p. 121), we must help these students generalize their social skills. The researcher met with four students on the autism spectrum, twice a week for 30 minutes. With the use of small-group intervention in a natural setting, peer modeling, parental support at home, and scripts, the researcher set out to accomplish the “maximum amount of transfer” of conversation skills (Taba, 1962, p. 121).

Chapter Two: The Literature Review

This research study examined the value of an instructional strategy related to conversational social skills of students with autism spectrum disorders (ASD). The review of literature presented in this chapter includes a history of autism, its prevalence and possible cures, and the importance of social skills, as related to communication. At the time of this writing, autism was researched for the previous 70 years. Though much of the research on social skills and autism was completed in the early 2000s, as often as possible more recent studies were referenced in this paper. Garcia-Winner (2011) mentioned that autism traits were researched more than social abilities of those with autism.

History of Autism and the Diagnosis

Bleuler first mentioned autism in 1908, a term from the Greek *autos* (as cited in Feinstein, 2010). As a Swiss psychiatrist, he used the term to describe patients who were withdrawn and intensely concerned about themselves (Mandal, 2014). Witmer published the first case report about a psychotic child in 1920. Using criteria current at the time of Feinstein's writing, the child described by Witmer would have been labeled autistic (as cited in Feinstein, 2010), though Witmer never mentioned the term autism. In the 1940s, Kanner, at Johns Hopkins University, wrote about children with the same withdrawn behavior, also labeling them autistic, and at the same time Asperger, in Germany, diagnosed a disorder similar to autism, defined as Asperger's syndrome (WebMD, 2005).

Asperger used the term autistic in 1934, in written letters to colleagues and began treating children with similar characteristics as early as 1930 (as cited in Feinstein, 2010). In the 1940s, Asperger observed and diagnosed children in Europe with an autistic personality disorder, while Kanner, located in the U.S., described children with the same characteristics. Both individuals used the term autism, yet had no correspondence with each other (Attwood, 2007) and both of their descriptions included characteristics of children who exhibited severe language impairments, social and cognitive delays, and described the patients as oddly aloof children (Attwood, 2007; Kanner, 1943). It was believed that both Asperger and Kanner studied Bleuler's 1930 textbook, *Lehrbuch der Psychiatre,* which could explain the use of the same term, autism (Feinstein, 2010).

Wing (1981, 1990, 2005), a British psychiatrist who helped found the National Autistic Society (2014), first used the term Asperger's syndrome after Hans Asperger died in 1980. Wing (1981) described 34 children and adults whose characteristics were more compatible to Asperger's description than to Kanner's, hence the coining of the term 'Asperger's syndrome' (Attwood, 2007; Feinstein, 2010; Wing, 1981). Wing (2005) intended that Asperger's syndrome be included in the autism spectrum and not classified as a disorder of its own. Since Wing's 1981 paper, the lines between autism, high-functioning autism, and Asperger's becsme hazy; the diagnostic criteria widened to include more symptoms and overlapped other disorders (Leekam, Libby, Wing, Gould, & Gillberg, 2000; Wing, 2005).

Although Asperger, Kanner, and Wing wrote at length about cases they studied, there were no diagnostic criteria made available for future diagnosis (as cited in Attwood, 2007). The term autism appeared in the *Diagnostic Statistical Manual of Mental Disorders* (DSM) in its third revision (American Psychiatric Association, 1980) where it listed the criteria for infantile autism (American Psychiatric Association, 1980; Grinker, 2007). In 1987, the DSM-III-Revised listed criteria for autistic disorder (American

Psychiatric Association, 1987; Grinker, 2007). After a 1988 conference in London, professionals and researchers agreed there was a need for separate criteria for Asperger's syndrome (Attwood, 2007). The first published diagnostic criteria were in the DSM-IV (American Psychiatric Association, 1994; Attwood, 2007; Gillberg, 1991; Gillberg & Gillberg, 1989), which noted separate diagnostic criteria for Asperger's syndrome and autism. However, the DSM-V (American Psychiatric Association, 2013) dropped the criteria for Asperger's and listed both terms (autism and Asperger's) under autism spectrum disorder (ASD), with the diagnostic criteria indicated in Table 1. The World Health Organization's (WHO) International Classification of Diseases, 10th revision (ICD-10), retained the criteria for Asperger's syndrome, until potential revision in 2015 (as cited in Woods, Mahdavi, & Ryan, 2013).

Wing (1981) used the term Asperger's syndrome, while DeMyer, Hingtgen, and Jackson (1981), from the Indiana University Institute of Psychiatric Research, used the term high-functioning autism (HFA) (Attwood, 2007). Both described children who exhibited the common characteristics of autism at a young age and developed a greater intellectual ability as they matured (DeMeyer, Hingtgen, & Jackson, 1981). At the time of this study, diagnostic criteria for Asperger's syndrome and autism existed with no criteria included for diagnosing a child with high-functioning autism (Attwood, 2007); all children received the diagnosis of ASD.

Table 1

DSM-V Criteria for ASD Diagnosis

A. Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the following, currently or by history (examples are illustrative, not exhaustive, see text):
   1. Deficits in social-emotional reciprocity, ranging, for example, from abnormal social approach and failure of normal back-and-forth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interactions.
   2. Deficits in nonverbal communicative behaviors used for social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures; to a total lack of facial expressions and nonverbal communication.
   3. Deficits in developing, maintaining, and understanding relationships, ranging, for example, from difficulties adjusting behavior to suit various social contexts; to difficulties in sharing imaginative paly or in making friends; to absence of interest in peers.
   4. B. Restricted, repetitive patterns of behavior, interests, or activities, as manifested by at least two of the following, currently or by history (examples are illustrative, not exhaustive; see text):
   5. Stereotyped or repetitive motor movements, use of objects, or speech (e.g., simple motor stereotypies, lining up toys or flipping objects, echolalia, idiosyncratic phrases).
   6. Insistence on sameness, inflexible adherence to routines, or ritualized patterns or verbal nonverbal behavior (e.g., extreme distress at small changes, difficulties with transitions, rigid thinking patterns, greeting rituals, need to take same route or eat food every day).
   7. Highly restricted, fixated interests that are abnormal in intensity or focus (e.g., strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interest).
   8. Hyper- or hypo-reactivity to sensory input or unusual interests in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement).

C. Symptoms must be present in the early developmental period (but may not become fully-manifest until social demands exceed limited capacities, or may be masked by learned strategies in later life).

D. Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning.

E. These disturbances are not better explained by intellectual disability (intellectual developmental disorder) or global developmental delay. Intellectual disability and autism spectrum disorder frequently co-occur; to make comorbid diagnoses of autism spectrum disorder and intellectual disability, social communication should be below that expected for general developmental level (American Psychiatric Association, 2013, p. 50-51).

Note: DSM - *Diagnostic and Statistical Manual of Mental Health Disorders*. Information printed with permission from the American Psychiatric Association (2013). (Appendix B)

There was a gray area in terminology and criteria for each label; however Safran (2001), teaching at Ohio University, painted a clearer picture when he stated that only a fraction of people with autism could be called high-functioning, meaning they scored in the normal IQ range and not the mentally-handicapped range. Whereas, all individuals with Asperger's had average, or usually above average intelligence (Safran, 2001).

Ghaziuddin and Gerstein (1996), in their study on pedantic speech, found 76% of participants with Asperger's were 'lecture speakers,' fondly called 'little professors' because they tended to lecture people on their favorite topics, not allowing others time to speak (p. 591). Only 31% of the participants described as HFA were pedantic speakers, or lecturers (p. 591). With a change in DSM criteria, there appeared to be an observable difference in the different areas on the autism spectrum (Attwood, 2007; Ghaziuddin & Gerstein, 1996).

Prevalence

Using DSM-IV (American Psychiatric Association, 1994) criteria for Asperger's syndrome, autism or pervasive developmental disorders, the reported prevalence rate was between 0.3 and 8.4 per 10,000 children (Chakrabarti & Fombonne, 2001, p. 1135; Morris, 2008a, para. 5; Sponheim & Skjeldal, 1998, p. 217; Taylor et al., 1999, p. 2027). According to research, the reported anticipated rate for Asperger's syndrome was at one in 1200 and one in 33,000 children, and Attwood (2007) believed that clinics were only diagnosing about half of the Asperger population that existed (p. 46). Upon parent reports, the Centers for Disease Control and Prevention (CDC) revised the prevalence rate for a diagnosis of autism from 1 in 88 children in 2008 to 1 in 50 children in 2012 (Blumberg et al., 2013, p. 2; CDC, 2013, p. 2; Pearson, 2012, para. 2; Willingham, 2013, para. 1). The prevalence of one in 50 included a combination of every form of autism on the spectrum, including the most high-functioning individuals. Wing (2005) explained there were discrepancies in the rate of prevalence due to the lack of aligned criteria between the disorder Asperger wrote about and diagnosed, the criteria listed under the DSM-IV-R (American Psychiatric Association, 2000), and the ICD-10 (Fombonne, 2001; Wing & Potter, 2002). Using the DSM-IV-R (American Psychiatric Association, 2000) criteria for Asperger's syndrome, Ehlers and Gillberg (1993) diagnosed three children out of 200 with the disorder (p. 1343). Leekam, Libby, Wing, Gould, and Gillberg (2000) observered the same group of 200 children and diagnosed almost half of the group with Asperger's syndrome (p. 24). Due to this researcher's experience with diagnostic criteria, she could see how the prevalence rate varied depending on the diagnosing physician.

The key diagnostic criteria for ASD (including autism and Asperger's syndrome) were delayed social skills and communication (American Psychiatric Association, 2013; Carter, Davis, Klin, & Volkmar, 2005; Happé, 1994; Kanner, 1943; Laushey & Heflin, 2000; Volkmar, Carter, Grossman, & Klin, 1997; Wing, 1990). Kanner (1943) observed that children labeled autistic "failed to develop the usual amount of social awareness" (p. 242). Social skills were the process by which children initiated and responded to their peers (Shores, 1987), and children with autism exhibited an extreme dearth of joint attention (Lewy & Dawson, 1992; Mundy, Sigman, & Kasari, 1990; Sigman, Mundy, Sherman, & Ungerer, 1986; Stone & Caro-Martinez, 1990; Ungerer, 1989; Wetherby & Prutting, 1984) and cooperative behavior skills or social skills (Cohen & Volkmar, 1997).

Social skill deficits that appeared in most cases of ASD included sharing enjoyment, empathy, inferring the interests of others, maintaining eye contact, reciprocity, and initiating interactions (American Psychiatric Association, 2000, 2013). Researched reported a link between feeling empathy and initiating joint play skills with social competency (Travis, Sigman, & Ruskin, 2001). Parents often noted concerns around 18 months of age (Bolton, Golding, Emond, & Steer, 2012; Howlin & Asgharian, 1999) when their child was unable to babble or focus on those around them. Many children received a diagnosis of ASD around age three and a diagnosis for Asperger's syndrome around age seven (Mandell, Novak, & Zubritsky, 2005).

At the time of this research, no medical test existed to diagnose autism; neurologists and physicians used autism-specific behavioral assessments when autism was suspected (Autism Speaks, 2014). Tests for diagnosing autism included, but were not limited to: the Autism Diagnostic Observation Schedule (Lord, Rutter, DiLavore, & Risi, 2012), the Modified Checklist for Autism in Toddlers-Revised (Robins, Fein, Barton, & Green, 2001), and the Autism Spectrum Screening Questionnaire-Revised (Kopp & Gillberg, 2011). A medical eligibility of autism was recieved by obtaining a diagnosis from a medical professional using the DSM-V criteria (American Psychiatric Association, 2013). An educational eligibility was received from the school if an evaluation was requested and completed by a school psychologist, who used one of the autism diagnostic screenings to rate the child's behaviors and/or academic skills and an eduational team agreed on eligilbility (Autism Society, 2014).

Etiology and Possible Cures

Asperger believed there was a genetic factor in autism, obvious mostly generated by fathers (Wing, 1981). Wing (1981) reported that almost half of her cases involved stressful birth conditions before, during, or after the delivery. Research on genetic factors and autism or ASD revealed a positive genetic link, meaning autism was likely to be passed down genetically (Constantino, Zhang, Frazier, Abbacchi, & Law, 2010). Constantino, Zhang, Frazier, Abbacchi, and Law (2006) considered the autism spectrum to be a “highly heritable” disorder (Lichtenstein, Carlstrom, Rastam, Gillberg, & Anckarsater, 2010, p. 294). Heritability was defined as “the proportion of variation in the total population that was due to genetic factors” (Lichtenstein et al., 2010, p. 1357) or “inherited genetic factors” (Lichtenstein et al., 2010, p. 1359).

The puzzle piece was a perfect symbol to represent ASD, as this disorder was continually puzzling researchers and doctors as they searched for a cause and cure. Between 1950 and the 1970s doctors used the term Refrigerator Mother to describe the mother of a child with ASD and therein placed blame (Feinstein, 2010). In 1967, Bettelheim further entrenched the term when he published *The Empty Fortress*, blaming cold mothers for their children’s autism (Bettelheim, 1967; Feinstein, 2010); this belief was later widely discredited (Morris, 2008b).

In 1985, Bauman and Kemper, at the Boston University School of Medicine, viewed for the first time the brain of a 29-year old man with autism, where they found autistic-related abnormalities at the cellular level, which signified that autism began early in development. Cells in three different parts of the brain were smaller and housed closely together. Because of this research doctors treated autism as a biological disorder

(Amaral & Corbett, 2002; Bauman & Kemper, 1985; Feinstein, 2010). Due to the lack of cadavers donated by autistic individuals, replication of Bauman and Kemper's research (1985) was not possible (Amaral & Corbett, 2002). In the 1990s, Casanova et al. (2006), at the University of Louisville, discovered that individuals with autism had an increased number of mini-columns of neurons (Casanova et al., 2006; Feinstein, 2010); tiny cells that processed information (Casanova et al., 2006; Feinstein, 2010) and created an amplified effect to the stimuli received (Parker, 2006). This occurrence explained the sensory issues, to noises, flavors, textures, etc., often co-morbid with ASD and experienced by a large number of children with autism (Gillberg & Billstedt, 2000; Volkmar, Cook, Pomeroy, Realmuto, & Tanguay, 1999).

Constantino et al. (2010), from Washington Univeristy School of Medicine in St. Louis, Missouri, found in a study of siblings that 10% of the families had at least two children on the specturm (p. 1351). Constantino et al.'s (2010) research also found that 20% of the research participants' siblings, though not diagnosed with ASD, showed signs of language delay and 54% spoke with autistic characteristics (Constantino et al., 2010, p. 1351). Other research by Constantino et al. (2006) found that families with pervasive developmental disorders (which included ASD) had a 10-fold increased risk of having multiple children diagnosed (p. 296). Other research estimated the heritability of ASD at around 90% (Freitag, 2007, p. 5; Losh, Sulllivan, Trembath, & Piven, 2008, p. 2). The research of Lichtenstein et al. (2010) suggested the heritablilty of autism spectrum disorders was 80% (p. 1360). The data were consistent with impressions this researcher experienced with students and their siblings.

A number of causal factors were reported, such as heavy metal poisoning, measles, mumps, and rubella vaccines (MMR) (Feinstein, 2010), and plastics, specifically bisphenol A or BPA (Braun et al., 2011). Wakefield (1998), a Canadian, reported a link between the MMR vaccine and autism (Hope, 2008), though a 1998 study in Finland followed three million MMR vaccination cases seeking a possible link to autism, and researchers found no relationship between the vaccine and autism (Feinstein, 2010; Madsen & Vestergaard, 2004). In 2001, the Institute for Child Health reported the MMR vaccine was safe (Hope, 2008) and in 2002, the British Medical Association looked for a link between the MMR vaccine and autism among 180 countries and found no connection (Feinstein, 2010; Honda, Shimizu, & Rutter, 2005). *The Lancet* retracted Wakefield's article linking the MMR vaccine to autism. In her book *Mother Warriors*, McCarthy (2009) explained that biologically a child was like a loaded gun carrying the ability to exhibit autism and the MMR vaccine could pull the trigger. This researcher believed McCarthy's theory was possible and was curious if the trigger could also be bisphenol A, heavy metals, and/or environmental influences.

Even with improved research, no cure for autism existed at the time of this writing. Research revealed that treatment for autism could include behavioral interventions, such as the Treatment and Education of Autistic and Related Communication Handicapped Children approach (TEACCH) founded by Schopler (Autism Speaks, 2013a; Feinstein, 2010). Structured 'TEACCHing' included understanding autism, establishing a plan for the child and the family members, using a structured environment, and using visual supports to aid the students' understanding and giving them predictability (University of North Carolina, 2014). Researchers and literature noted that empirical research supported the TEACCH approach (Bristol & Schopler, 1983; DeMeyer et al., 2003; Onur & Parsons, 2009; Potter & Wittaker, 2002; Siaperas & Beadle-Brown, 2006; The Thompson Foundation for Autism & Division of Developmental Services, 2012; Tsang, Shek, Lam, Tang, & Cheung, 2007).

Applied behavioral analysis (ABA), a behavior modification program, which stemmed from the research of Watson (1914), Pavlov (1927), and Skinner (1957), developed from the philosophy of Lovaas during the 1960s. Lovaas spent the majority of his career working in the UCLA department of psychology, spending almost fifty years dedicated to the study of how to teach children with autism to communicate (Smith & Eikeseth, 2010). The principles of ABA included increased positive behaviors, teaching new behaviors, maintaining and generalizing behaviors to other people or settings, and decreasing negative/interfering/or self-injurious behaviors (Center for Autism and Related Disorders, 2014). ABA used intense, discreet-trial training to educate students with ASD to help them perform in a more neurotypical pattern (Autism Speaks, 2013a; Feinstein, 2010; Lovaas, 1981). ABA was the most commonly used treatment for ASD and had support of empirical evidence as to the effectiveness of the intervention (New York State Department of Health [NYSDH], 1999; The Thompson Foundation for Autism & Division of Developmental Services, 2012).

Pivotal response training (PRT) developed by Koegel and Schreibman (1977), stemmed from ABA and was play-based and child-initiated (Autism Speaks, 2013c). PRT used clear instructions, child-centered tasks, reinforcement, and maintenance to teach new skills to children with ASD (Schreibman & Ingersoll, 2005). PRT was also an approved research-based treatment, according to the National Standards Report (2009) and the Missouri Autism Guidelines Initiative (as cited in The Thompson Foundation for Autism & Division of Developmental Services, 2012).

Other ASD treatments, which lacked empirical evidence, included Floortime, founded by Greenspan at the National Institute of Mental Health, which involved a child leading the play therapy, while the therapist, teacher, or parent was on the floor, literally at the child's level (Autism Speaks, 2013a; Greenspan & Weider, 2007). Floortime built relationships and connections between parents and children with ASD, using play to develop the child and not the disability (Greenspan, 2014). Circle of Friends, founded in North America, paired typical students with a small number of children with ASD and trained the typical peers to understand the unexpected behaviors exhibited by the target (ASD) students, while the typical students modeled expected behaviors (Frederickson, 2002; Kalyva & Avramidis, 2005; Shotton, 1998; Whitaker, Barratt, Joy, Potter, & Thomas, 1998). In conjunction with the aforementioned treatments, most children on the autism spectrum also received speech therapy for a range of communication needs that may have included communication devices, learning to speak, learning articulation, or how to increase vocabulary. Many children also received occupational therapy for fine motor planning and/or physical therapy for gross motor planning. Doctors prescribed medications to treat co-morbidity in children with autism, such as attention, aggression, or hyperactivity (Autism Speaks, 2013a). However, literature failed to agree on successful outcomes of many of these interventions (Lord et al., 2005; Odom, Boyd, Hall, & Hume, 2010; Rogers & Vismara, 2008; Smith et al., 2007), and there were discussions over the criteria used to deem these treatments as evidence-based (Rogers & Vismara, 2008).

Results from an internet survey by Green et al. (2006) found that parents of children with ASD tried 108 different treatments for their children and parents implemented four to seven treatments at the same time (Bowker, D'Angelo, Hick, & Wells, 2011). Treatment appeared to change with age; for younger children interventions were more behavioral, educational, and/or alternative, and as the children aged the treatments became more medication-related (Goin-Kochel, Myers, & Mackintosh, 2007). Parents tried numerous treatments, with almost no efficacy, to treat their children’s ASD, such as vitamin supplements, detoxification, alternative diets, and auditory integration therapy (Dawson & Watling, 2000; Goin-Kochel et al., 2007; Green et al., 2006). Efficacy and validity did not appear to concern parents who were trying to cure their children’s ASD (Bowker et al., 2011).

The Reason for the Increase

Newspapers, magazines, and television media questioned whether autism was an epidemic (Masland, 2005; Nauert, 2012; Roithmayr, 2012). One could not argue that the prevalence rate of one in 88 children diagnosed with ASD was a devastating statistic (Blumberg et al., 2013, p. 2; CDC, 2013, p. 2; Pearson, 2012, para. 8; Willingham, 2013, para. 2). Researchers sought to find the cause of the increase in prevalence and questioned whether ASD increased or if society just perceived a change in diagnoses (Bishop, Whitehouse, Watt, & Line, 2008; Newschaffer, 2006; Nygren et al., 2012; Posserud, Lundervold, Lie, & Gillberg, 2010; Rutter, 2005). Groups of researchers appeared to agree, though this researcher was unable to find any of their suggested answers backed by researched evidence.

Bishop et al. (2008), from the University of Oxford, conducted a study for the Welcome Trust in Britain and suspected changes in diagnosis played a part in the rise of autism (Feinstein, 2010). These researchers investigated 38 adults diagnosed with developmental language disorders as children (Bishop et al., 2008, p. 341). Bishop et al. (2008) believed that changes in diagnostic criteria played a role in the increase in autism, since 25% of the adult participants met the then-current criteria for autism (p. 342). Bishop et al. (2008) also stated that, due to the limitations of her small sample size, she could not conclude that autism cases were on the rise. Other researchers believed a widening of diagnostic criteria created a rise in cases of autism (Maguire, 2013; Neggers, 2014). Matson, Hattier, and Williams (2012) expected the DSM-V to have an opposite impact on future prevalence rates. Researchers expected the change in diagnostic criteria to result in a 33.77% decrease of ASD cases (Matson et al., 2012, p. 1555), as 30-45% of people diagnosed with ASD, at the time, no longer met the requirement under DSM-V (Matson et al., 2012, p. 1550).

Researchers listed additional reasons that could attribute to the continuous rise in ASD diagnoses, including: increased detection, increased diagnostic testing, more awareness for families and professionals (Newschaffer, 2006; Nygren et al., 2012; Posserud et al., 2010; Rutter, 2005), easier acceptance of autism and its ability to coexist with other disorders, and better methodology for studying autism (Baron-Cohen et al., 2009). Another camp of researchers argued that potential causal factors of autism included prenatal issues, complications of the pregnancy, environmental toxins, paternal age, and genetics (Grandjean & Landrigan, 2006; Kolevzon, Gross, & Reichenberg, 2007; Palmer, Blanchard, Jean, & Mandell, 2005; Reichenerg et al., 2006; Wing, 1981).

Previous studies also looked at premature or breech births, lowered APGAR scores, and demographic areas (Croen, Grether, & Selvin, 2002; Larson et al., 2005). Researchers appeared to mistake a correlation for a cause between autism and the aforementioned ideas (Liu, Zerubavel, & Bearman, 2010).

More recently, research supported a link between parents' ages at birth and autism (Liu et al., 2010). Liu, Zerubavel, and Bearman (2010) stated that new mutations in the human gene pool within one or two generations was implausible, and if autism contained a genetic link and increased 10-fold in 40 years (Cohen, Klin, Paul, & Volkmar, 2005) there had to be an environmental change. Liu et al. (2010) extracted data on twins and siblings in California and surmised that new gene mutations had a positive correlation with parental age and autism diagnosis.

Global Prevalence

Countries outside the U.S. lacked the extreme number of diagnosed cases of ASD; however, many other developed countries reported a rise in prevalence (Maguire, 2013). China, during the 1980s, was the first nation in East Asia to diagnose a child with autism (Dai, Jia, & Tao, 2008; Sun et al., 2013). During 2000 to 2010, prevalence rates varied for China, which housed over one billion people, ranging from 1.8 per 10,000 to 424.6 per 10,000 in Hong Kong and Taiwan, and 2.38 per 10,000 to 30.41 per 10,000 on the mainland (Wan et al., 2013, p. 73). Other countries in East Asia reported cases of autism after China. As ASD became a popular term in the U.S., in South Korea an autism diagnosis was devastating enough that many parents and doctors were unwilling to use the term (Maguire, 2013). South Korea estimated their prevalence rate at 264 per 10,000 children (Kim et al., 2011, p. 903). Less developed countries continued to report extremely low prevalence rates, such as India with one in 250 and Mexico with six in 1000 (What is the global incidence of autism?, 2009).

When asked, citizens in Africa reported, “autism does not exist at this time” (Nyarambi, Enwefa, & Enwefa, n.d., p. 472). Though there was no empirical evidence, researchers noted that people with autism existed in Africa, but were not accepted and were most likely placed in psychiatric hospitals or institutions and medicated (Akande, 1999; Mankoski et al., 2006). Libya reported its ASD rate doubled over a two-year period, from 84 new cases in 2009 to 166 new cases in 2011 (Zeglam & Al-Bloushi, 2011, p. 36). Zeglam and Al-Bloushi (2011) agreed that Libya did not have concrete reasons for the increase in ASD; however, they stated similar explanations as those previously listed, such as changes in diagnostic criteria, increased knowledge of autism, and improved testing.

The United Kingdom experienced an increased number of children diagnosed with autism (Baron-Cohen et al., 2009, p. 500) by 56% from 2007 to 2012 (Maguire, 2013, para. 1), with the South East Thames region reporting a prevalence of 1 in 64, or 1% of its population (Baron-Cohen et al., 2009, p. 500). The U.K. incidence rate was 157 autism diagnoses per 10,000 children (Baron-Cohen et al., 2009, p. 506). However, incidence rates in the U.K. appeared to plateau, as Jick at the Boston University School of Medicine reported the numbers differed from the CDC’s report in 2012 (as cited in Brauser, 2013, para. 5).

Maguire (2013) posited several reasons for the variance between prevalence rates in the U.S. and U.K. and less developed countries. Developed countries had more doctors and better tools for diagnosing neurological disorders, unlike South East Asia, where there was only one to three psychiatrists available for 100,000 people (Fernandes, Citero, Nogueira-Martins, & Mari, 2013, p. 488; Maguire, 2013, para. 2). When surveyed, parents in the U.K. were reluctant to share the diagnosis with school staff, out of fear that the label would hinder their children for life (Maguire, 2013), and in East Asia cultural norms, like downcast eyes and respectful quietness, possibly impaired the diagnosis (Maguire, 2013), as those expected behaviors were diagnostic criteria for ASD. Bowker, D'Angelo, Hicks and Wells (2011) found that more parents in North America sought treatment for their children's ASD. The researchers stated the specific reason for this behavior could be a lack of treatment availability outside of North America, or the fact that most of the participants in the study came from the U.S., which may have biased the results (Bowker et al., 2011).

The Importance of Social Skills

Evidence suggested that many people on the autism spectrum liked being alone and were happier when left alone (Hall, 2001; Jackson, 2002; Kim, 2015; Willey, 2015); Kanner (1943) called this characteristic "a powerful desire for aloneness" (p. 249). Gresham, Sugai, and Horner (2001) said, "The ability to interact successfully with peers and significant adults was one of the most important aspects of a students' development" (p. 331). Very few researchers studied how students with ASD felt about being alone. Bauminger and Kasari (2000) conducted research that suggested students on the autism spectrum had a feeling of loneliness, and there was a desire for relationships in children with ASD. Their study defined two levels of loneliness: emotional, when the student felt sad, depressed, and empty; and social-cognitive loneliness, when the student felt alone when left out of a social group (Bauminger & Kasari, 2000, p. 447). Prince-Hughes

(2004) explained that when she got “homesick and cried, it was because she missed times and places and not . . . individual people” (p. 2), which coincided with the emotional loneliness suggested by Bauminger and Kasari (2000). Prince-Hughes (2004) also wrote that people with autism had deep feelings about many things and were very emotional; however, they may not have shared those feelings with others. Kim (2015) stated that she “felt lonely and isolated” at times in her life, though she had usually been with a group of people at those times, and when she was alone she hardly ever experienced loneliness (p. 55).

Typical students defined loneliness as having no one to play with and being sad together (Bauminger & Kasari, 2000). Bauminger and Kasari’s (2000) study reported that children with autism connected less of an emotional feeling to their loneliness; they felt alone and nothing else. Students who lacked social interactions were at greater risk of being lonely (Asher, Parkhurst, Hymel, & Williams, 1990; Bauminger, Shulman, & Agam, 2003). However, students with ASD often misinterpreted any verbal dialog as friendship (Winter & Lawrence, 2011).

The idea of friendship for children with autism and Asperger’s syndrome, was usually delayed about two years, when compared to their same-aged peers (Attwood, 1997, 2003; Botroff, Bartak, Langford, Page, & Tong, 1995). For many people on the spectrum, a friend was someone they sat next to, said hello to, or shared a few minutes a day with (Attwood, 1997; Willey, 1999). Typical children defined a friend as someone with whom they had affection and companionship (Buhrmester, 1990; Gottman & Parker, 1986; Howes, 1996; Sullivan, 1953; Weiss, 1974). When compared with neurotypical friendships, children with high functioning autism (HFA) and their typical peers both believed their friendship had less intimacy and closeness than other relationships in the study (Bauminger et al., 2008b).

Children on the spectrum who had social skill deficits may have been affected in their mental health functioning (Gresham, 1986; Parker & Asher, 1987), peer acceptance (McConnell & Odom, 1986; Parker & Asher, 1987), school adjustment (Walker & McConnell, 1990), teacher and parental acceptance (Gresham & Elliot, 1990; Werry, Methven, & Fitzpatrick, 1983), and their ability to adapt to environmental demands (Gresham et al., 2001). Students who exhibited better social skills appeared to have more friendships (Buysse, 1993). Adults with ASD who lacked social skills were deeply affected in their relationships, careers (Attwood, 2007), daily living, career success (Barnhill, 2007; Howlin, 2000), and mental health (Howlin, Goode, Hutton, & Rutter, 2004). Gresham (1992) classified social skill deficits as acquisition deficits or performance deficits. An acquisition deficit referred to skills the child lacked and performance deficits were skills children had, but were unable to perform (Gresham, 1992). This researcher believed, for the purpose of this study, that with social skills training, the participants would learn to use and generalize the skills in their arsenal.

Without learning proper social skills, Guralnick and Weinhouse (1984) found that children with disabilities in early childhood classes interacted less often, had fewer relationships (Guralnick, Gottman, & Hammond, 1996c; Guralnick & Groom, 1988), were less successful when trying to interact (Guralnick, Connor, Hammond, Gottman, & Kinnish, 1996a), and led the group less frequently (Guralnick, Connor, Hammond, Gottman, & Kinnish, 1996b). Kopp, Baker, and Brown (1992) agreed; when observing preschoolers, they found that students with disabilities played less, had less affect, and were more disruptive when playing. Lieber (1993) also noticed that students with disabilities were more disruptive when entering a playgroup, in comparison with their typical peers. Odom, Zercher, Li, Marquart, and Sandall (1999) noted that peers socially rejected 30% of children with disabilities (p. 76). The rate of bullying towards students with ASD was four times higher than that of their typical peers (Attwood, 2007, p. 98), and the assault rate for children with ASD was eight times higher than the national average (Little, 2002, p. 49). When surveyed, over 90% of the mothers of children with ASD responded that their children had been victims of bullying (Attwood, 2007, p. 98; Little, 2002, p. 49).

Students with ASD were also at risk of exhibiting socially interfering problem behaviors, such as depression, aggressive behaviors, oppositional defiance, inattention, noncompliance, (Bauminger et al., 2003; Hauck, Fein, Waterhouse, & Feinstein, 1995; Myles & Southwick, 1999; Volkmar, 1987), distractibility (Gresham & Elliott, 1990), impulsiveness, repetitive behaviors (Peeters, 1997), and anxiety (Bellini, 2004; Tantam, 2000). Students with ASD were frequently unable to identify verbal or nonverbal signals, in particular when a person had finished a conversation (Golan, Baron-Cohen, & Hill, 2006; Mesibov, Shea, & Schoper, 2007; Winter & Lawrence, 2011). Individuals on the spectrum may have appeared rude or disrespectful by having used the incorrect tone of voice (Golan et al., 2006; Jackson, 2002; Mesibov et al., 2007; Winter & Lawrence, 2011). The student’s apparent disinterest may have also discouraged future attempts at interactions with peers, teachers, and/or family (Charlop & Trasowech, 1991; Liber, Frea, & Symon, 2008).

Typical Child Development

Students need verbal and non-verbal skills to begin a conversation, give or receive a compliment, enter a playgroup (Gresham et al., 2001), or simply play a game without being in control of the game (Winter & Lawrence, 2011). These skills were a natural progression of development for typical children (Harper et al., 2008), not needing to be taught, so much as modeled a few times. MacDonald et al. (2006) noticed that all of the typical participants between the ages of two and four used initiation behaviors of eye contact, hand motions, and speech. Only half of their participants with autism initiated, using only one of the three behaviors (MacDonald et al., 2006). Regular elementary teachers rarely needed to address social skills with their classes (Harper et al., 2008). Myles and Simpson (2001) wrote about the hidden curriculum, referring to those unspoken social behaviors that most individuals independently learned through observation before they entered into school.

According to Hall and Smith (1996) “Proximity alone was not sufficient to promote positive social interactions between children with autism and their peers” (p. 83); the skills had to be taught. For students with autism to acquire social communication skills, adults must provide interventions and prompts to teach the skills (Harper et al., 2008; Kim, 2015; Licciardello, Harchik, & Luiselli, 2008; Willey, 2015). Even when students with ASD were placed in happy environments, surrounded by stimulating toys and in the midst of peers to imitate, the students with ASD were not prone to interact appropriately with peers or toys, if they interacted at all (DiSalvo & Oswald, 2002). Researchers recorded that children with ASD played less with toys and used toys more inappropriately in comparison to their typical counterparts (Stone, Lemanek, Fishel, Fermamdez, & Altemeier, 1990).

As stated previously, students who lacked verbal and non-verbal communication skills were willing and preferred to be alone, and not motivated by the thought of a friend (Brown & Murray, 2001). Students with ASD benefited from instruction in the process of initiation, response, play, and interaction (Barhill, Cook, Tebbenkamp, & Myles, 2002; Barry et al., 2003; Gerber, Brice, Capone, Fujiki, & Timler, 2012). This researcher witnessed that students on the spectrum were able to learn social skills after teaching, repetition, and prompting.

Effects on the Family

Having a child with special needs was a strain on most families (Estes et al., 2009; Schieve, Blumberg, Rice, Visser, & Boyle, 2007; Schieve et al., 2011); however, having a child on the autism spectrum was even more stressful (Duarte, Bordin, Yazigi, & Mooney, 2005; Hoffman, Sweeney, Hodge, Lopez-Wagner, & Looney, 2009; Rao & Beidel, 2009). About 85 % of adults diagnosed with ASD and a cognitive deficit were unable to live independently and needed care or supervision from family members (Volkmar & Pauls, 2003, p. 1137). In Seltzer, Greenberg, Floyd, Pettee, and Hong 's (2001) study, 50 % of parents who were 50 years or older reported they still lived with their child with a developmental delay, compared to 17 % of parents aged 50 and over of typical children (p. 277). When an adult with ASD left the family home, he or she often resettled in a community residental home, which enabled the parents to remain key decision-makers and maintained the stress level (Seltzer, Greenberg, Krauss, & Hong, 1997). Adults with ASD who lived with their parents proved to have fewer relationships outside the home and participated in fewer social or recreational events (Orsmond, Krauss, & Selzter, 2004). This researcher found, in working with parents, that they carried the burden of caring for their child for the child's entire life and worried about their other children having to care for their sibling(s).

Because of their children's behaviors (Hartley, Barker, Baker, Seltzer, & Greenberg, 2012) or the stress (Abbeduto et al., 2004; Smith et al., 2010) surrounding their children with autism, many parents changed life plans and/or isolated themselves from friends and family (Wolf, Noh, Fisman, & Speechley, 1989). Parents of children with ASD also had a higher divorce rate (Brobst, Clopton, & Hedrick, 2009; Freedman, Kalb, Zaboltsky, & Stuart, 2012; Hartley et al., 2010), almost double the rate of parents with typical children (Hartley et al., 2010). Parents of young children with autism had a divorce rate equivalent to parents of typical children; however, the divorce rate for parents of teens or adults with autism was higher than average (Hartley et al., 2010). Single mothers of children with autism exhibited even more stress than women living with a partner (Olsson & Hwang, 2001). Regardless of the increased stress, parents of children with ASD reported increased closeness in relationships with their children than were reported by typical parents (Montes & Halterman, 2007).

In their younger years, typical siblings reported good relationships with their siblings on the autism spectrum (Rivers & Stoneman, 2003), though the positive relationships appeared to deteriorate over time (Karst & Vaughan Van Hecke, 2012). The typical siblings may have blamed themselves for the strain on the family and internalized negative feelings (Glasberg, 2000), possibly stressed by the thought of possibly having to raise their siblings for most of their lives.

Empathy and Autism Spectrum Disorders

Many professionals questioned whether students with ASD had empathy. Baron-Cohen (2005) believed empathy drove neurotypical people to show interest in others around them. The best way to test empathetic accuracy was through observation, between how the target person gauged their emotions against the perceiver's idea of the target's emotions (Ickes, 1997). The research showed a deficit in empathy for children with ASD. Sigman, Kasari, Kwon, and Yirmiya (1992) found that, when compared with typical control participants, the participants with ASD attended more to toys and less to an empathy-inducing behavior. Charman (2003) had similar results when less than half of the participants with ASD looked toward an upset person compared with all of the typically developed controls; none of the children with ASD showed facial concern.

Baron-Cohen (2009) suggested that students with ASD had a cognitive empathy deficit, but a higher ability for emotional (or affective) empathy (Shamay-Tsoory, 2011); this was equivalent with the concept Theory of Mind (ToM) (Baron-Cohen, 2003). ToM was the ability to understand what another person was thinking, feeling, and predictably going to do (Baron-Cohen, 2003; Frith, 1989). The difference between cognitive and emotional empathy was described as cognitive empathy being the ability to understand the emotions and feelings of others and predict what they may do or feel, and included the mental states of pretending, believing and guessing (Blair, 2005), while emotional empathy was the ability to share or mirror another's emotional state (Shamay-Tsoory, 2011). People diagnosed as a psychopath or schizophrenic showed a lack of affective/emotional empathy, but had typical cognitive empathy (Blair, 2005; Jones, Happe, Gilbert, Burnett, & Viding, 2010; Lawrence, Shaw, & Baker, 2007; Shamay-

Tsoory, 2011). On the contrary, people diagnosed with autism and bipolar disorder showed an impairment in cognitive empathy, but were able emotional/affective empathizers (Dziobek, Rogers, & Fleck, 2008; Harari, Shamay-Tsoory, Ravid, & Levkovitz, 2010; Kim, 2015; Shamay-Tsoory, 2011). This was consistent with Jackson's (2002) account that he did not disregard thinking about the feelings of others, but he honestly was not aware of how other people felt. Research revealed that people with ASD lacked the ability to understand the social occurrences of irony, deception, faux pas, white lies, or false belief (Baron-Cohen, 2000; Happe, 1994; Hill & Frith, 2004) under cognitive empathy. When self-ratings were compared with parent-ratings, the students with ASD rated their empathetic traits higher than their parents (Johnson, Filliter, & Murphy, 2009); results suggested youths were unaware of their lack of empathy.

Baron-Cohen (2002) stated the male-brain was better at systemizing than empathizing and individuals with ASD were not good empathizers, but were capable systemizers (Auyeung et al., 2009; Baron-Cohen, Richler, Bisarya, Gurunathan, & Wheelwright, 2004; Young & Posselt, 2011). Johnson et al. (2009) found that self-rated scores were identical to parent-rated scores for the systematic quotient, implying that students with ASD were accurate in their perceptions of their own systemizing. Statistically, four out of every five children with autism were boys, or 1 in 54 boys and 1 in 252 girls were affected by ASD (Fombonne, 2003; Nygren et al., 2012; Rice, 2007). Auyeung et al. (2009) reported that boys scored significantly higher than girls on the systemizing quotient, whereas girls were better at predicting the feelings of characters in books (Bosacki & Astington, 1999), due to their ability and need to see the world in patterns and rules. Baron-Cohen (2009) suggested that people with ASD preferred trains because they ran on tracks and were predictable in their movement patterns, unlike cars and planes that had the ability to move anywhere. In this researcher's experience, the majority of students with ASD did obsess over trains, which was why the *Conversation Game* (Brinton et al., 2004) used as a strategy in the research utilized train pictures for the conversation image. There was a noticable imbalance in the number of girls with ASD compared to boys and Kim (2015), a woman diagnosed with ASD, questioned whether the behavior of ASD in girls was more "socially accepable" and therefore less diagnosed than boys whose behaviors were more disruptive (p. 23).

Smith (2008) believed that children with autism exhibited social avoidance, specialized interests, and routines to compensate for their empathy imbalance. Attwood (1993) suggested that due to their overaroused emotional empathy, students with ASD took on the emotions of those around them and suggested the students would learn better from those who were calm and happy, rather than angry or exhuberant. Smith (2008) agreed, reporting that overly emotional people could cause the students with ASD to feel confused or uncomfortable.

Researchers believed that people with autism were so overly (emotionally) empathetic that it caused them pain (Caldwell, 2006; Magnee, De Gelder, Van Engeland, & Kemner, 2007). Williams (1996), an individual with ASD, spoke of an uncontrollable immense empathy to those around her. Researchers believed that people with ASD were so intensely sensitive and empathetic that it made them withdrawn, and unable to communicate how they felt (Ontario Adult Autism Research and Support Network, 2007; Smith, 2008). Individuals with ASD lacked understanding for other's emotions or perspectives, they reacted in a cold manner, or appeared not to care (Rogers, Dziobek, Hassenstab, Wolf, & Convit, 2007). Jones et al. (2010) believed that when emotions were presented in ways that people with ASD found clear and understandable, they expressed concern and empathy equal to a typical person.

Grandin expressed herself as feeling like she was on Mars when she tried to comprehend people (Sacks, 1995). Sacks (1995) wrote of another couple diagnosed with Asperger's syndrome who felt like aliens living on Earth when they failed to understand other people and what they were feeling. Jackson (2002) expressed the same alien feelings in his book *Freaks, Geeks, and Asperger Syndrome.* The people in these accounts felt no pain, nor did they mirror others' feelings; they lacked an understanding of the people around them (Sacks, 1995). Sacks (1995) further wrote that the people also felt no loneliness. Jackson (2002) summed up the feeling when he wrote, "I really do feel as if I come from another planet and, to be quite honest, I like mine better" (p. 130). Prince-Hughes (2004) wrote that she would ask her classmates why they did certain things and she would try to understand their behaviors. She likened her experience to being an "anthropologist" because they "lived among those whose ways . . . were totally foreign" (p. 46).

Adshead (1996) suggested that children developed their mental states through interactions with people surrounding them. Children with ASD were reportedly less attached to the people around them, which explained their limited ability for empathy (Adshead, 1996). Research suggested that students with ASD could improve their ability for cognitive empathy (Schwenck et al., 2012).

Verbal and Nonverbal Communication

Some children with autism lacked verbal language altogether (Aarons & Gitten, 1992; Frith, 1989) and many had a language delay. When students with autism did use verbal skills, used the language primarily to answer questions or obtain desired items, not to enter into conversations (Messer, 1994). Generally, high-functioning people with autism who developed more language used their vocabulary functionally and were not conversationalists (Attwood, 1998; Baron-Cohen, 1988; Kanner, 1943).

Many sources have mentioned the lack of understanding of nonverbal communication for people on the autism spectrum (American Psychiatric Association, 1994; Attwood, 2007; Bellini, 2004; Kamps et al., 2002). Eye contact was an important feature of conversation and was interpreted in the U.S. as a sign of confidence and respect. Yet, an adolescent with Asperger’s syndrome commented that eye contact with another felt as if people’s eyes were burning into him (BBC Films & Landsman, 2003; Jackson, 2002). This comment coincided with Gernsbacher and Frymiare’s (2005) research, which noted that some people on the autism spectrum found it painful to look into the eyes of others. Klin, Jones, Schultz, and Volkmar (2003) wrote that participants on the autism spectrum focused on the mouth of their speaking partner twice as much as the control group and 2.5 times less on the eyes (p. 346). Jackson (2002) wrote that he suggested people with Asperger’s syndrome looked at peoples’ mouths to appease the conversation partner without having to look in anothers’ eyes. Kim (2015) wrote that she looked at a speaker’s mouth because she could gain a better understanding of emotion there, while the eyes were too “emotionally intense” (p. 44). When interviewed, one man stated "If you insist that I make eye contact with you, when I'm finished I'll be able to tell you how many millimeters your pupils changed while I looked into your eyes" (Bovee, 1999, para. 7) which meant, he was not making eye contact, but looking where he was expected to look. This was consistent with this researcher's experience, having students who would look at the reflection in one's pupils, in place of making eye contact.

While 16 children with ASD and 19 typical peers watched videos designed to garner empathy from viewers, Capps, Kasari, Yirmiya, and Sigman (1993, p. 447) analyzed the facial expressions of the participants. During the videos, which pictured a child feeling happy, prideful, sad, fearful, and angry, the students with autism had a more positive facial affect and more concentration (emotional empathy) than the typical peers (Capps et al., 1993). Clark, Winkielman, and McIntosh (2008) also used images (happy and sad) to elicit empathy from participants with ASD; however, the images were only shown for three seconds. The participants had difficulty identifying which emotion they witnessed, suggesting that the speed with which facial expressions changed further impaired those with ASD during social interactions (Clark et al., 2008). However, Camras (1986) and Egan et al. (1998) reported that as people with ASD matured, they used situtational cues more than facial expressions to guage emotion.

Teaching Social Skills

Jones and Schwartz (2009) stated that social skill deficits in children with ASD were "the most pervasive and difficult to remediate" (p. 432). The following research concluded that it was possible to teach social skills. Barry et al. (2003) conducted a social skills training group in a clinic for four children with high-functioning autism. The researchers scripted social skills group behavior and revealed an increase in the targeted skills of greetings, initiation, play, and responses (Barry et al., 2003). Bauminger's

(2002) study of 15 children with HFA in Israel showed positive results for high-functioning students in their ability to share, cooperate, understand emotions, express interest in others, and display better eye contact. Using the ecological treatment model, Bauminger (2002) completed the study in the regular school setting, which involved typical peers and parents. Zanolli, Daggett, and Adams (1996) used priming (reminding the target student of expected behaviors, prior to beginning treatment) to increase two preschool students' spontaneous initiations, responses to initiations and their rates of initiations. Priming involved the teacher modeling the expected vocabulary and behavior twice per session with students with ASD and two typical peers (Zanolli, Daggett, & Adams, 1996). Results showed the boys' initiations increased 64% and priming was effective in the self-contained setting and regular education classroom (Zanolli et al., 1996, p. 414).

Kohler, Strain, Hoyson, and Jamieson (1997) used naturalistic teaching without structured social groups to observe typical and ASD preschoolers at play. Twelve students on the spectrum played near typical peers while a teacher modeled the play skills (i.e. "give me a green block") or directed students to imitate the typical child in his or her play action (Kohler et al., 1997). Kohler et al. (1997) found success, as class peer interaction increased from 20% to 85% and reached 100% during maintenance (p. 201). Kohler et al. (1997) defined maintenance as sessions led by the teacher with no support or feedback from the research staff. Schleien, Mustonen, and Rynders (1995) completed an art program that paired disabled and non-disabled children at a local art museum. The students met for two hours, once a week and created a project together. Data revealed an improvement in social interactions between peers; however, this study reported no data on relationships outside the art program (Schleien et al., 1995). The study involved no intervention or treatment; the students simply worked together and built relationships while being observed (Schleien et al., 1995).

Feng et al. (2008) experimented with one student diagnosed with ASD, the sole participant in a ToM study based on socialization. Researchers taught the participant individually, and after achieving 80% accuracy on identifying emotions, basic belief, expressing his emotions, and controlling his anger, three students with learning disabilities from his learning resource classroom were included in his treatment group (Feng et al., 2008, p. 234). Using the same outcome probes, after the target student achieved 80% in small group sessions, the researchers observed small groups to evaluate maintenance; results showed that the participant’s ToM skills improved and his positive social interactions improved (Feng et al., 2008, p. 236). Brinton et al. (2004) used a clinical experience in their research to teach conversational skills to a child diagnosed with language impairment, not ASD. The participant was at the clinic twice a week for 50-minute sessions, for two years, during which they used video clips to analyze feelings, role-plays, and games (Brinton et al., 2004). The participant made great improvements with increased responsiveness to other speakers, conversed with clinicians, and attempted to bring others into the conversations (Brinton et al., 2004).

Rao, Beidel, and Murray (2008) conducted a search of social skills interventions for students with Asperger’s syndrome and found 10 studies that fit their criteria of: students 18 years or younger with Asperger’s syndrome or HFA involved in a social skills training (SST) group that used an experimental research design. The studies ranged from 6.5 weeks to an academic year (Rao et al., 2008, p. 355). Seven of the 10 studies found positive results (Barry et al., 2003; Bauminger, 2002; Kamps et al., 1992; Sansosti & Powell-Smith, 2006; Solomon et al., 2004; Tse et al., 2007; Webb et al., 2004, p. 358). Each study took place in a clinic or classroom, and though none of them focused on generalization (Rao et al., 2008), one study reported that seven of the eight students made a friendly connection, which the researchers believed would last past the experiment (Barhill et al., 2002, p. 357). Limitations of the studies included the lack of common definitions of social skills, a limited use of blinded observers, and low sample sizes; only three studies included more than 10 students (Bauminger, 2002; Solomon et al., 2004; Tse et al., 2007, p. 358).

Previously noted research supported the idea that children with autism required training to learn social communication skills. This researcher notated reluctance among this special group of people to learn the skills on their own, nor would they pick up the skills by watching those around them. However, this researcher believed that students with ASD could learn social skills. This researcher agreed with Garcia-Winner (2011) that there was not enough research to “support effective treatment” for children with ASD (para. 10).

Generalization of Social Skills

Maintenance of learned skills and generalization to other settings and people were necessary for students with ASD (Jackson et al., 2003; Klin & Volkmar, 2003). With 60 years of research since Kanner (1943) identified his first case of autism, many researchers recorded data on ASD. However, few researchers agreed on levels of maintenance or generalization. Researchers noticed that conversations with well-known adults did improve, while interactions between individuals with ASD and their typical peers became more difficult as they aged (Howlin, Mawhood, & Rutter, 2000; Orsmond et al., 2004).

Webb et al. (2004) conducted a study within a community center, using 10 participants on the autism spectrum. Typical peers were not involved in the treatment and no data were taken from real life observations; however, researchers wrote that skills generalized “as evidenced through role-play situations” (Jones, 2004, p. 61; Webb et al.); which were conducted by a researcher at a community center (Webb et al., 2004), not in a natural environment. Barry et al. (2003) used only students with ASD in their social language groups, because they predicted the skills would not generalize globally. Brinton et al. (2004) reported data on generalization, though they reported that the participant’s mother served as the researchers’ eyes and ears outside the clinic. The mother reported that the participant carried his new skills into their carpool; there was no generalization mentioned inside the clinic.

Bauminger (2002) conducted a study in Israel with 15 students fully included in a regular education setting, though treatment took place outside of school. Results showed that the students improved in their social interactions and social/emotional understanding, and parents, teachers, and peers took an active role in the mediation; however, the article lacked data on generalization (Bauminger, 2002). Terpstra, Higgins, and Pierce (2002) found that generalization or maintenance was more apt to occur when the intervention took place in a more natural setting. In 2007, Bauminger completed another study, done within the school setting and again, students showed progress in their abilities; however, the students with HFA showed no progress in spontaneous interactions.

Kohler et al. (1997) reported high percentages achieved during maintenance, 100% in two of the three classrooms observed; however, researchers noted that students were unable to transfer skills to other locations or people (p. 201). While using peer mentors at recess, Harper et al., (2008) were successful in teaching eight and nine-year-olds to play games such as basketball, nerf football, and jump rope. They also stated that when training was completed and interventions removed, the relationships continued throughout maintenance (Harper et al., 2008).

Barry et al. (2003) conducted a study similar to the researcher's; however, Barry and her colleagues treated children in a clinic, where they found the skills did generalize when the participants included other clinicians in their conversations. The researchers noted through parent interviews that the social skills lacked generalization outside the clinic (Barry et al., 2003). Zanolli et al., (1996) stated their participants generalized learned skills to the regular education classroom, a structured setting. Odom et al. (1999) completed a study treating 98 preschool children with disabilities, using five different interventions. One intervention (classroom activities) had the greatest amount of generalization within the classroom; two groups (peer mediation and social skills lessons) reported greater generalization in the students' interactions, and two groups (combined interventions) had a negative impact on peer interactions; generalization was all noted inside the classroom/treatment area (Odom et al., 1999).

Kamps et al. (2002) completed compelling generalization research when they observed five students with autism and used peer training in their intervention. According to the National Standards Report, interventions involving peers were established treatments for students on the autism spectrum (National Autism Center, 2009). Baseline was taken for two weeks, followed by four weeks of cooperative groups (Dugan et al., 1995), two weeks of baseline and another four weeks of cooperative groups (Kamps et al., 2002). After a 10-minute introduction and modeling, the social groups focused on initiating conversations and responded to others' initiations, cooperated in play, and had good interactions with others (Kamps et al., 2002). Researchers collected data on frequency and length of interactions and the frequency of initiations, with a three-second response limit (Kamps et al., 2002). All students with autism made progress in increased time engaged in social activities, though they were in the same environment with the same peers (Kamps et al., 2002, pp.176-78).

Kasari, Rotheram-Fuller, Locke, and Gulsrud (2012) provided direct instruction to students with ASD twice a week for 20-minute sessions during lunch; they also trained peers to look for isolated students and try to engage them in conversation or play. At the completion of treatment, researchers stated that peer-mediation provided better results than non-peer-mediated (Kasari et al., 2012). Kamps et al. (2002) completed further research on maintenance and generalization of the previously learned skills at tutoring, lunch, and recess with 34 students with autism from multiple public schools. After they interviewed over 100 typical peers, data reflected a positive attitude toward their participation and showed interest in continuing with the program (Kamps et al., 2002). McConnell (2002) stated that peer models were the best approach to treating students with ASD. The students with ASD did show improvement in the frequency of interactions with known typical peers and even (though less frequent) interactions with stranger peers (Kamps et al., 2002). Locke et al., (2012) surveyed 105 peer models and found that after treatment, 47 of them chose the student with ASD as a friend (p. 1901).

Kasari et al. (2012) also noted that peers had more friend nominations following treatment, even from peers that were not mediators.

Two groups completed a meta-analysis of research on social skills and children on the autism spectrum (Bellini, Peters, Benner, & Hopf, 2007; Williams-White et al., 2007). Williams-White et al. (2007) reviewed 14 studies and Bellini et al. (2007) reviewed 55 studies, and compared the methodologies of each study. Two studies revealed no improvement in social skills (Ozonoff & Miller, 1995; Webb et al., 2004), while two studies reported very little improvement (Cotter, 1997; Provencal, 2003). Barry et al. (2003) reported improvements in play skills and greetings, but little improvement in conversations. Solomon et al. (2004) found significant improvements in the participants' ability to recognize facial expression and solve problems; however, data were not included on students' typical daily functioning. The meta-analysis completed by Bellini et al. (2007) expressed that most of the studies lacked an adequate description for the length and duration of treatment. Many studies appeared to treat students in one thirty-minute session weekly. Gresham et al. (2001) recommended intense and frequent levels of treatment for teaching social skills (Stichter, O'Connor, Herzog, Lierheimer, & McGhee, 2012), though did not specify the meaning of intensity and frequency.

Gerber, Brice, Capone, Fujiki, and Timler (2012) reviewed eight studies regarding social language for children with language impairments and/or autism. The studies ranged in treatment from 30-minutes per week, to three, one-hour sessions per week (Gerber et al., 2012). Each study reported increased target language and decreased time dominating the conversation (Gerber et al., 2012). However, none of the reviewed studies completed maintenance or generalization within their research (Gerber et al., 2012). Reichow and Volkmar (2010) reviewed social skills intervention studies for children aged two to six and found that 28 of the studies included generalization or maintenance, though only 13 of those 28 were conducted in a school. Reichow and Volkmar (2010) found that social skills groups for children aged six to 16 were primarily conducted in a clinical setting (LeGoff, 2004; LeGoff & Sherman, 2004; Lopata, Thomeer, Volkmar, Nida, & Lee, 2008; Owens-DeSchryver, Carr, Cale, & Blakeley-Smith, 2008) and only one of those addressed generalization (Owens-DeSchryver et al., 2008). Jones and Schwartz (2009) also noted the lack of research on generalization.

Conclusion

A review of the literature current at the time of this writing appeared to support the theory that students with ASD could learn social skills with instruction that was clear and discreet. Having adequate social skills increased the quality of life for adults with ASD (Jean-Coussens, Magill-Evans, & Koning, 2006) and their ability to have friendships (Buysse, 1993); though as Safran (2001) stated, generalizing social skills for people with ASD would continue to be difficult for teachers and researchers. This researcher agreed with Rao et al., (2008) who stated, “empirical support for social skills training (SST) programs for children with ASD/HFA was in its infancy” (p. 359). The literature review showed a lack of research in the area of generalization and more so in researcher-observed generalization, as several researchers used hearsay to include data on levels of generalization (Barry et al., 2003; Brinton et al., 2004).

After a thorough review of the literature related to ASD and conversational social skills, this researcher was unable to find studies to support the effectiveness of utilizing the instructional method titled the *Conversation Game* (Brinton et al., 2004), intended to increase a student's communication skills. More research was needed utilizing the *Conversation Game* to report data that social skills training could potentially improve the general interactions, relationships, and ultimately the life of children with ASD.

In this researcher's experience as a special education teacher, schools, families, and individuals with ASD would benefit from further studies on the generalization of social skills to increase communication among varying locations and individuals with ASD.

Chapter Three: Methodology

Introduction

There was a gap within the existing literature, at the time of this writing, regarding the generalization of social skills among children with autism spectrum disorder (ASD). Many studies noted that these children could learn social skills or conversation skills (Barry et al., 2003). However, only Kamps et al. (2002) and Odom et al. (1999) mentioned the generalization of the social/conversation skills to other locations or times, such as home, school, or leisure times. Studies focused on the generalization of skills strictly analyzed anecdotal data from parents (Barry et al., 2003; Brinton et al., 2004), or mentioned that skills generalized to other students in the same clinic (Barry et al., 2003; Bauminger, 2002; Feng et al., 2008; Rao et al., 2008; Sansosti & Powell-Smith, 2006; Tse et al. 2007; Webb et al., 2004). The researcher was unable to find studies in the then-current literature focused on generalization of social skills for students with ASD or measured the quality of interactions outside the treatment group. This was in agreement with Garcia-Winner (2011), who also found data lacking.

This study originated after the researcher observed, as a special educator, that the language/social skills programs implemented by the district at the time were unsuccessful in the generalization of the students' social skills. During pre-observations completed by the researcher and an unbiased observer, and after two years in a social program from the district, the participants in this study played completely alone at recess, walked the perimeter of the playground completely alone, or sat alone. Anecdotal data from playground aides (personal communication, D. Horsey, April 2015, May 2015; personal communication, M. Norwood, April 2015, May 2015; personal communication, C.

Thorton, April 2015, May 2015) reported that the observed behaviors were accurate and consistent with daily performances. During observed lunches in the cafeteria, one participant sat alone and was silent; two ate with other students with ASD and were quiet, and one ate with typical peers who looked upon him strangely, because he engaged in a virtual world that did not include other real people. In agreement with then-current research, the students in the [pre-research] social language group made progress in the classroom setting regarding appropriate social behaviors, personal attitudes and learning to work with others (Barry et al., 2003; Bauminger, 2002; Kamps et al., 1992; Sansosti & Powell-Smith, 2006; Solomon et al., 2004; Tse et al., 2007; Webb et al., 2004). The researcher believed that application and generalization was the key to the students' future success. This study intended to contribute to the closing of the gap regarding students with ASD, their communication skills, and the generalization of those skills.

The researcher defined the students' success to be any of the participants speaking appropriately to another person or spontaneously playing with another child in an unstructured setting. Each of the participants' parents agreed the intervention was successful if they saw a change in their child's behavior, as simple as answered questions or conversations at the end of the day, which included turn-taking.

Purpose

The purpose of this study was to explore the use of a particular treatment, the *Conversation Game* (Brinton et al., 2004), with students diagnosed with ASD. The intervention directly related to their ability to participate in bidirectional, turn-taking conversation and the use of appropriate facial affect (or emotion), body posture (non-verbal language), and eye-gaze during a social meeting. The researcher also investigated the quality, duration, and degree of the generalization (the application of learned skills in a new setting/environment and/or the inclusion of new conversation partners) of social skills with typical peers in an unstructured setting, and measured parental involvement in the treatment.

Research Questions

RQ$_1$: How does the implementation of the instructional program, the *Conversation Game*, paired with LinguiSystems *Social Skills: Conversations* workbook help generalize conversational social skills of students with ASD to unstructured settings?

RQ$_2$: How does the instructional program, the *Conversation Game*, paired with LinguiSystems *Social Skills: Conversations* workbook increase/decrease conversational skills, eye gaze, body posture, and facial expression, of student's with ASD during conversations in structured and unstructured settings?

RQ$_3$: In an unstructured setting, is there evidence of change in the quality of interactions related to conversational skills between students with ASD and neurotypical peers? If there is an observable change, how does the quality (solo play, parallel play in proximity, trying to engage others unsuccessfully, partial engagement being in-and-out of the interaction, semi-involved, but not fully engaged, engaged with other and fully on-topic) of interactions change?

RQ$_4$: In an unstructured setting, will interfering problem behaviors change? If interfering problems do change, in what ways do they change?

RQ$_5$: As a researcher and educator, did my instructional design and lesson planning change in the implementation of the *Conversation Game* and in particular, my perceptions regarding the ability of the students to learn and generalize conversation skills? If it did change, how did it change?

RQ$_6$: How did the parents work with their child to increase their child's conversational social skills, throughout the duration of the study?

Research Context

The treatment facility was a public school in a Midwest suburban school district, specifically one school and one self-contained classroom. The researcher treated two separate groups, with two students in each group. From experience, the researcher believed that students with ASD were better equipped to learn in small groups. The researcher was also knowledgeable of the participants and their need for pairs, rather than a group of four, consistent with Ruble and Robson's (2007) study that described students with ASD as having better engagement in a small group, rather than one-to-one or in large groups.

Each group met two times per week for 30-minute sessions, with treatment held during lunch, so participants and typical peers were not missing academic time, and moved through five phases (Table 3). This environment provided an increased opportunity for generalization, as well as an incentive to eat in a quieter room and not miss recess, which district programs tried in the past. Research studies treated students ranging from 30-minute sessions per week (Webb et al., 2004), two 50-minutes session per week (Brinton et al., 2004), or 90-minute sessions once or twice a week (Marriage, Gordon, & Brand, 1995; Ozonoff & Miller, 1995; Tse et al., 2007). Previous studies noted treatment length that ranged from 7 or 8 weeks (Barry et al., 2003; Marriage et al., 1995; Ozonoff & Miller, 1995; Webb et al., 2004) to 20 weeks to a year (Kamps et al., 1992; Solomon et al., 2004), with the 90-minute sessions conducted within a clinical setting. A recommended frequency or duration for social skills treatment did not appear in the research. In Reichow and Volkmar's (2010) review, the studies conducted similar to the current study had a maximum treatment time of 60 minutes per week.

Research Participants

The researcher was the instructor of the research participants. The higher functioning persons with ASD were more aware of their social awkwardness (Tse et al., 2007), which was why this particular group of students were chosen to participate. All identities of the participants remained anonymous, referring to each participant as 'Student 1, Student 2, etc.' Each of the participants had an individualized education program (IEP), with social goals related to the research questions. No information was shared that would allow the reader of research results to gain an understanding of which student was being discussed.

The study included four male students between the ages of eight and eleven, which was consistent with the national statistic that four-out-of-every-five children with an autism diagnoses were boys (Fombonne, 2005; Nygren et al., 2012; Rice, 2007). Student 1 was a fifth-grade student fully integrated in regular education with a full-time individual care aide (ICA). He had a history of self-contained classroom participation, not having fully integrated in regular education until third grade. Student 1 was verbal, though generally quiet. When he spoke, his manner was frequently negative, relating that he did not want to answer a question or complete a task. His interfering behaviors included frequent crying when thing did not go his way. Student 1 was also very adept at quoting (with correct accents and intonation) TV commercials or documentaries. At the beginning of the study, Student 1 rarely engaged in conversation or showed any curiosity about another speaker. Student 1 did not appear to have friends, nor did he show concern on the lack of relationships.

Student 2 was a fifth-grade student partially integrated, attending two classes with a part-time aide, while spending the rest of his day in a self-contained autism classroom. Student 2 was verbal and enjoyed talking. He was in the category of a lecture-speaker, since he spoke about his topic with little or no regard to his listeners or their interest in the topic. When the listener attempted to change topics, Student 2 left the conversation or steered it back to his topic. Student 2 did not appear to have friends at school, though he related stories about friends he played with in his neighborhood.

Student 3 was a retained fifth-grade student, who in past years spent time in regular education, a resource room, and a cross-categorical class. During the study he spent all of his academic day in a self-contained autism classroom. Student 3 was verbal and engaged in conversations about his favorite topics. Student 3 appeared to have adequate eye contact, used hand motions when speaking, and occasionally played with one or two students at recess. Student 3 also had a best friend he sat with at lunch. In the past, Student 3 played with friends in the neighborhood, though he did share with the researcher that other children made fun of him and he missed having friends. It was difficult for Student 3 to maintain friendships because play had to be on his terms. He was almost a verbal bully, letting others know that they had to play what he wanted and how he wanted. Should his ‘friends’ play how they wanted to or choose to play something else, he often verbalized ‘no one loved him,’ ‘everyone hated him,’ or ‘they would not be his friends anymore.’

Student 4 was a fourth-grade student in a self-contained class for students with autism. He was verbal and generally told stories that moved away from reality as the duration increased. Student 4 answered questions and then steered the conversation back to his original topic. He also lacked friends at school, though he did play with other students on the autism spectrum in the self-contained classroom. Student 4 expressed a desire for friends. Other than being hard to follow in a conversation, he did not exhibit interfering behaviors.

Sample Size and Selection Criteria

Participant selection required an educational eligibility of autism, the ability to function on or near grade level in math and/or reading, and the student, at the time of this study, was on the researcher’s caseload. The study excluded three students based on the above criteria; one student was not on the researcher’s caseload and the other two were fifth graders in the spring of 2014 and would not be available to complete the study. The two females in the school, with ASD, did not fit the academic criteria.

The school and study included four students who fit the criteria. The researcher paired the participants, fearing a group of four would enable the quieter participants not to participate in conversation. Research noted that students with ASD worked better in small groups than one-to-one or in large groups (Ruble & Robson, 2007). Based on knowledge of the participants, the researcher believed groups of two would increase success of the intervention.

Relationship to Participants

The researcher served as the case manager of all four participants' individualized education plans (IEPs) and was the classroom teacher for three of the four participants. The researcher obtained written consent forms for all participants, which stated explicitly that parents could withdraw their children at any time during the study (Appendix C). The researcher led the interventions and recorded conversational data, with the assistance of another staff member to record data on physical aspects of conversation. Due to the close relationship of the researcher and the participants, a separate staff member completed the pre- and post-questionnaires. To reduce bias, the researcher observed participants in unstructured settings, in tandem with two blinded-observers, a social worker, and school psychologist. The researcher scored the observation logs for inter-rater reliability.

Methodology

The researcher obtained written permission from the superintendent of the researched school district and received signed consent forms from all participants' guardians (Appendix C). Prior to beginning treatment, a staff member, other than the researcher, interviewed each participant (Appendix D), specifically asking about his current friendships and the desire for more relationships. The same staff member also completed the social skills pre-test (Appendix E), and empathy pre-test (Appendix F). Additionally, in February 2014, before treatment began, paraprofessional staff at the school completed the pre-test JobTips Assessment (Appendix A), which pertained to social skills and empathy, the Empathy Assessment, and the Social Skills Assessment. The researcher interviewed parents about their children's social skills, conversation skills, and interfering behaviors (Appendix G) with a follow-up survey (Appendix H) after treatment. In May 2015, after phase 5 observations, paraprofessionals completed administration of the post-assessments. Due to student self-report inaccuracies (Tantam, 2000), social skills were usually rated via questionnaires completed by parents and teachers (Green, Gilchrist, Burton, & Cox, 2000; Koning & Magill-Evans, 2001; Williams-White et al., 2007).

Gillberg (1996) suggested using an empathy quotient to describe the degree of impairment an individual had in understanding another persons' thoughts and feelings. Empathy developed around the age of four in typical children, and psychologists believed children on the autism spectrum were delayed approximately five to ten years in their development of empathy characteristics (Cumine, Leach, & Stevenson, 1998; Safran, 2001), making the treatment group age of eight to eleven appropriate. For the purpose of this study, the student's IEP goals included eye gaze, body posture, facial affect and empathy, conversational skills, and generalization to unstructured areas.

In the qualitative research, the researcher brought to the study a personal stance towards the topic under investigation. Personal stance was defined by Savin-Baden and Major (2013) as a "researcher's position towards an issue that was derived from that person's beliefs and views about the world" (p. 70). The researcher believed that students who displayed the characteristics of ASD had the ability to learn conversational skills and generalize those skills to increase their ability to converse with others. The researcher maintained a journal throughout this study to reflect on this belief and the possible shifts that occurred during data collection that might alter her belief.

Pre- and Post-Assessments

The JobTips Assessment included 31 questions regarding items taught during phase 1, monitored and modified during phases 2 and 3, and observed in phases 4 and 5, such as responding to questions, initiating conversation, joining conversations, changing topics, speaking clearly, using appropriate body language, demonstrating listening behaviors, greetings, farewells, conversation topics, and avoiding unusual behaviors. The assessment also included questions about expressing frustration, disagreements, acknowledging mistakes, apologizing, working in groups, accepting feedback and others' ideas, tolerating being told 'no' explaining things to others, seeking assistance, respecting others, offering assistance, and keeping an appropriate speaking distance. Assessment answers included 'almost always,' 'sometimes,' or 'rarely.' For purposes of this research, the desirable outcome for each question was 'almost always.'

Phase One

After obtaining written informed consent, the implementation of phase 1 extended from March 2014 to May 2014. The researcher met with each participant, in groups of two, twice a week for 30-minutes during lunch. Each of the four participants completed the workbook LinguiSystems *Social Skills: Conversations* (LoGiudice & Johnson, 2008) daily lesson and corresponding worksheets. The program provided lessons, such as body language for speaking and listening, interesting topics, taking turns, and beginning and ending conversations. Each lesson utilized a data collection worksheet to measure the acquisition of the skill (Appendix I). After the day's lesson, the researcher graded the worksheets using the accompanying LinguiSystems (LoGiudice, & Johnson, 2008) answer key. When participants scored lower than 80% on the worksheet, the researcher reviewed the lesson at the next session and reissued the worksheet until the participants achieved an 80%. A need to repeat a third time did not occur during the study.

To practice student learning in the daily lesson, the researcher used the format of the *Conversation Game* (Brinton et al., 2004) to gather baseline data on the students' conversation skills. The *Conversation Game* involved drawing a topic from a box; the researcher then read the topic and laid a picture of the engine on a train and made a statement about the topic. The researcher wrote anecdotal notes during each treatment session, noting what worked, what necessary changes should take place, and the progress of each participant, along with observations of the researcher. The researcher documented student data on the conversation data sheet (Appendix J) and audio recorded the conversations during each session. Following each session, the researcher replayed the audio files and reflected on the session to make modifications as necessary, and applied them during the next lesson. All audio files were deleted after the session. This program was expected to extend from March 2014 to May 2014, when the students would break for summer and be ready to move to a new phase of the treatment, playing the *Conversation Game*.

To encourage parent involvement, the students completed conversation homework one night per week. Previous research revealed that when parent involvement was expected, parents were more apt to complete homework with their children (Balli, Demo, & Wedman, 1998; Hoover-Dempsey & Sandler, 1997); however, most of the social skills programs lacked parent involvement (Laugeson et al., 2012). The parents received a homework sheet (Appendix K) weekly, regarding the conversation skills observed and learned in the small group in the school setting. Parents could play an important role in interventions for their child(ren) with autism (Feinberg & Vacca, 2000; Lord & McGee, n.d.) and aid in the generalization of treatment to other settings (Krasny et al., 2003; Matson, Mahan, & Matson, 2009; Rocha, Schreibman, & Stahmer, 2007; Schreiber, 2010; Williams-White et al., 2007).

After completion of the lesson, the researcher engaged the participants in discussions to practice conversation skills. The researcher reflected with the participants on the conversation and changes for future conversations. Upon completion of the workbook, the dyads, or pairs of participants, played the *Conversation Game* (Brinton et al., 2004) with the researcher to gather baseline data for conversation skills. With each student having scored an 80% or higher on all lesson worksheets (Appendix I) at the close of spring semester, the pairs began phase 2 in the fall of 2014.

Phase Two

Upon the students' return to school in August, the ASD pairs began playing the *Conversation Game* (Brinton et al., 2004). The researcher met with the ASD dyads twice a week for 30-minute sessions during lunch. The researcher reviewed the lessons from the past year and reminded the participants what a conversation looked like, including use of eye contact, body posture, facial expressions, listening, and staying on-topic. The participants appeared to remember the skills and accurately answered questions about expected behavior.

Phase Two continued until the research participants achieved 80% on their conversational goals for four-out-of-five sessions. The game progressed with the participants succeeding through a set conversation pattern (Table 2).

Table 2

Conversation Pattern

One comment + one question + listening
Two comments + one question + listening
Two comments + one question + listen + comment
Two comments + one question + listen + comment + related question + comment
Multiple repeats of the sequence

Each on-topic statement and/or question added a car to the conversation train that was being ‘built’ (Appendix L); an off-topic statement and/or question would derail the conversation, picturing a derailed train car (Appendix M). Throughout treatment, classroom aides reported anecdotal data regarding the participants’ behaviors at lunch and recess, which the researcher recorded. The researcher analyzed the notes to measure the level of generalization of the participants’ conversational skills and to note interfering behaviors, to discuss appropriate alternatives during the small group sessions.

During the *Conversation Game* (Brinton et al., 2004), the researcher placed a topic card on the table and waited for the participants to begin speaking. The researcher was not included in the conversations. If the participants remained silent, the researcher tapped the topic card. The researcher recorded data on the conversation, including opening, staying on-topic, closing, negative talk, and compliments, while a classroom aide recorded data on the physical aspects of the conversation, including body posture, facial expression, eye contact, and interfering behaviors. The researcher also kept field notes on each session to record her impressions and reflections of the participants’ engagement and behaviors.

Phase Three

Phase 3 allowed the participants to engage in conversation with typical peers in a safe and controlled environment. An additional two typical peers were introduced to each ASD dyad and the participants suggested possible students they would like to ‘get to know better.’ The participants met with typical peers twice a week until their data revealed 80% success in four-out-of-five sessions on the conversation data sheet (Appendix J). The researcher contacted the parents of the typical peers and explained the conversation research. After receiving written parental consent forms for the peers (Appendix N), the typical peers joined the lunch group, since interactions were the principal social context for young people (Englund, Levy, Hyson, & Sroufe, 2000) and were vital to the social skills group. The researcher stated to the group of four, the direction to go ahead and begin a conversation, at which time the researcher took the role as observer of the student interactions. Research showed that typical peers could mediate for students with autism by providing prompts and support (Strain, Shores, & Timm, 1977), providing instruction and feedback (Delquadri, Greenwood, Stretton, & Hall, 1983; Kamps, Barbetta, Leonard, & Delquadri, 1994), modeling appropriate skills (Cooke et al., 1978), and sharing group experiences (Greenwood & Hops, 1981). Bauminger et al. (2008a) found that students with autism exposed to their typical peers increased in their social skills. Students #1 and #2 required phase 3 to last longer (12 sessions) to meet their goals, where Students #3 and #4 achieved their goal in five sessions.

The typical students who volunteered for the group were patient and kind to the participants. They frequently steered the conversation and asked questions when it was obvious the participants were unsure of what to say. The researcher feared that the typical students would only speak to each other, but that fear was unfounded as they continued to draw the participants into their conversations. The researcher expected to limit some topics, such as video games, or specific toys; however, that was not necessary, as the topics seemed to flow and transition seamlessly. When the participants achieved the 80% goal and moved to phase 4, as promised, the researcher issued a $10.00 Gamestop gift card to each typical peer volunteer.

Phase Four

Upon the successful generalization in a structured setting, through addition of typical peers to the conversation group, the small groups stopped activity. All four participants achieved their goals and moved up to phase 4, which included using scripts to gain entrance to conversation, when eating with typical peers at lunch.

After researcher reflection and review, in which the data collection measured 80% or higher achievement of the conversation goals, the participants utilized a script during their lunch period, such as ‘Hi is anyone sitting here?’; ‘Can I sit here?’; ‘My name is ____. What’s your name?’; and during recess ‘Hi, what are you playing?’; ‘My name is ___. What’s your name?’; ‘Could I play ___ with you?;’ Barry et al. (2003) believed teaching conversation skills benefited from the use of scripts. The researcher observed and prompted participants to participate in a conversation with the specific scripts noted above. All four participants were able to find other students to sit with on a regular basis.

The researcher completed an observation rubric (Appendix O) prior to phase one in January, during phase one in May, and during phase two in August, to gather a baseline for comparison. Each year, every grade level in the school of research received a presentation on autism. The presenter explained autism and gave suggestions to the typical peers on how to proceed if the students exhibited autism-specific behaviors. The students were able to ask questions following the presentation, and because of that training each of the past five years, the school of research included many typical students who were kind, patient, and willing to help the students on the spectrum.

Phase Five

After researcher reflection and a review of the data collection showing at least 80% achievement of the research goals on four-out-of-five days, the researcher removed scripts and prompting, and the participants were observed biweekly during lunch and recess, with no interference or prompting from the observers. The researcher and an unbiased observer completed the observation rubric (Appendix O) twice per month. Observations took place once per month in the cafeteria and once per month on the playground. Only the participants who achieved 80% or higher on four consecutive dates during phase 4 were observed. The then-current research lacked data on the generalization of social skills; the researcher believed every other week would be acceptable for data collection. Previous researchers mentioned that generalization data would be helpful in the field of educating students with ASD (Licciardello et al., 2008). The researcher utilized multiple informants and blinded-observers to reduce bias during the maintenance phase of data collection. All observers used the same observation-scoring rubric (Appendix O).

Upon completion of treatment, the parents and teachers completed a post JobTips questionnaire, social skills post-test, and empathy post-test. The parents completed a survey (Appendix H) regarding their perceptions on the progress of their children since their participation in the beginning interview. The researcher interviewed the participants and asked the same interview questions previously used about their desire for friendships.

Table 3

Phases of Implementation

Phase I	ASD dyads completed the LinguiSystems workbook *Spotlight on Social Skills: Conversations* (LoGiudice, & Johnson, 2008) and the researcher collected baseline conversation data.
Phase II	Upon 80% achievement of all LinguiSystems lessons (LoGiudice, & Johnson, 2008), ASD dyads played the *Conversation Game* (Brinton et al., 2004).
Phase III	Upon 80% achievement of the *Conversation Game* (Brinton et al., 2004), with appropriate turn- taking, adherence to topic, and facial/body language, two typical peers added to each ASD dyad.
Phase IV	Upon 80% achievement of the *Conversation Game* (Brinton et al., 2004) with two typical students paired with two students with ASD, the group treatments ended. The researcher introduced scripts and prompting at lunch and recess to enable success with generalization.
Phase V	Maintenance and observation of the learned skills at lunch and recess.

Data-Gathering Tools

Prior to treatment, an unbiased observer recorded observational data, using a researcher-designed rubric (Appendix O) to gauge the amount and quality of interactions the participants were involved in at lunch and recess and notated any interfering behaviors the students exhibited.

A classroom paraprofessional familiar with the students, though not involved in the research, completed three assessments. They were a) the Empathy pre-test (Appendix F), to measure the participant’s attitude toward conversational partners; b) the Social Skills pre-test (Appendix E), used to measure change in the participants’ ability to join a conversation, ask questions, introduce themselves, and listen to others; and c) the online Empathy and Social Skills Assessments.

The JobTips Assessment pre-test (Appendix A) was used to measure change in conversation, such as listening, initiating, changing topics, greetings, farewells, etc. The purpose of the JobTips Assessment was to look for personality strengths and weaknesses in order to find a recommended job that corresponded to an individual's strengths. The assessments described did not have reliability or validity measures. These assessments helped measure change for reporting results for research questions one and two, concerning generalization of conversational social skills and potential increase/decrease in conversational skills, eye gaze, body posture, and facial expression.

A paraprofessional, familiar to the participants, interviewed the students before and after treatment, using questions written by the researcher (Appendix D) to gather information about the desire for friends, the amount of friends, and social activities they were involved in, in order to measure change in these areas following treatment. The interview, combined with the other tools, assisted in answering research question three, concerning the quality of interactions related to conversational skills. Parents were questioned using a researcher-designed interview, (Appendix G) about their children's friendship status to answer research questions one, three, and five, concerning generalization of conversational social skills, the quality of interactions related to conversational skills, and change in instructional design and lesson planning.

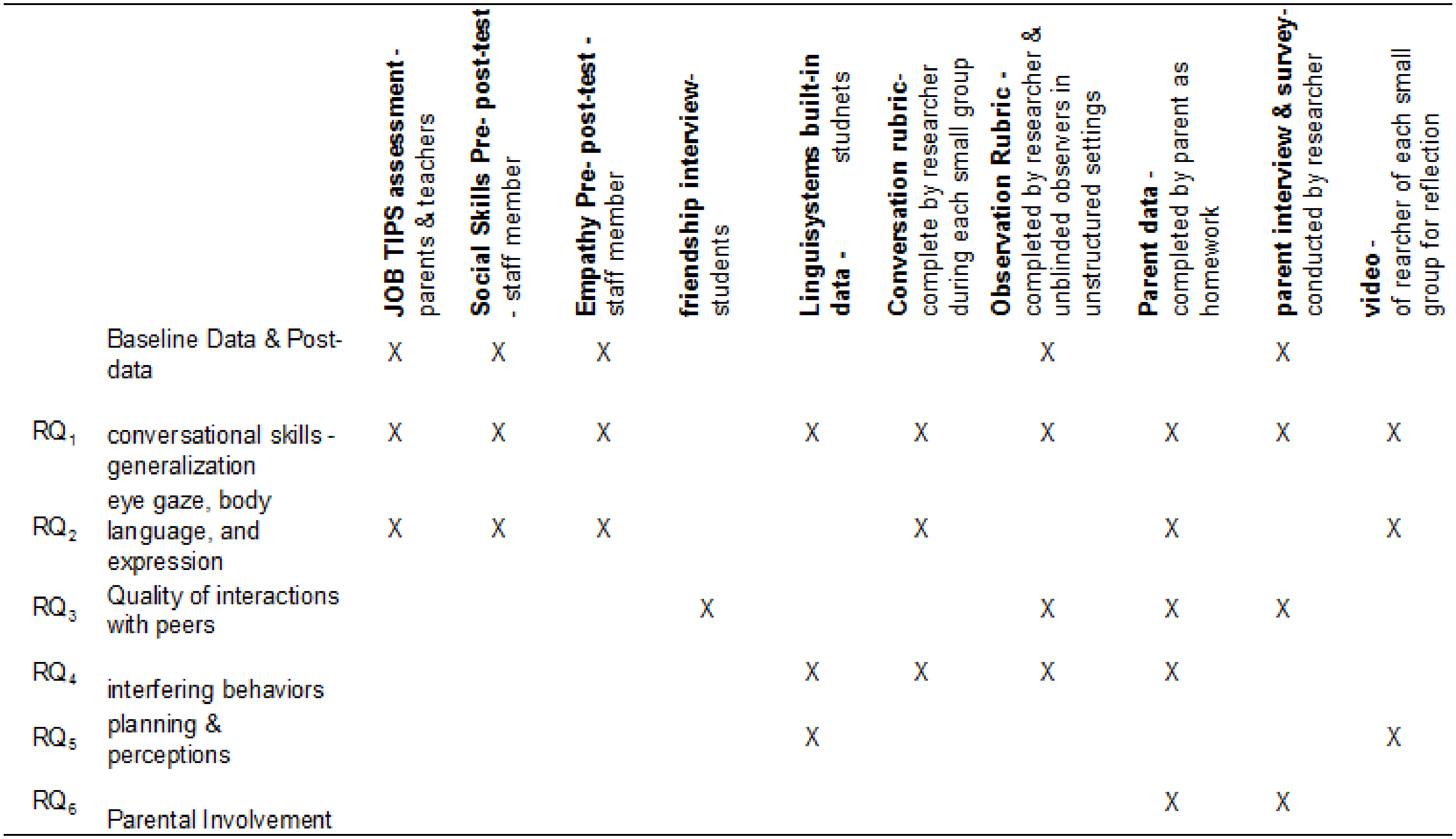
During treatment, the researcher measured the understanding of conversational understanding using the LinguiSystems worksheets (LoGiudice, & Johnson, 2008) built into the program activities (Appendix I), which corresponded to the daily lessons. The worksheets included a key to reduce scoring bias. LinguiSystems (LoGiudice, & Johnson, 2008) lacked information on reliability or validity.

Conversational data was scored on a rubric (Appendix J) designed by the researcher, regarding research questions one, two, and four, concerning generalization of conversational social skills, increase/decrease conversational skills, eye gaze, body posture, and facial expression, and potential change in interfering problem behaviors. An observational rubric (Appendix O), also designed by the researcher, was used during maintenance to answer research questions one, two, and four, concerning generalization of conversational social skills, increase/decrease conversational skills, eye gaze, body posture, and facial expression, and potential change in interfering problem behaviors.

A homework data sheet, also designed by the researcher (Appendix K), was sent home weekly in order to answer research questions one, two, four, and six, concerning generalization of conversational social skills, increase/decrease conversational skills, eye gaze, body posture, and facial expression, potential change in interfering problem behaviors, and how parents worked with their children. To answer research question five, regarding researcher reflection on change in instructional design and lesson planning, a journal was kept of each treatment session. This journal was a free-flowing work in which the researcher recorded her thoughts and feelings, and any changes in planning she thought were necessary. The researcher also recorded quotations from the participants to use as qualitative data. A visual of the data-gathering tools is provided in Table 4.

Table 4

Data –Gathering Measures



		JOB TIPS assessment - parents & teachers	**Social Skills Pre- post-test** - staff member	**Empathy Pre- post-test -** staff member	**friendship interview-** students	**Linguisystems built-in data -** studnets	**Conversation rubric-** complete by researcher during each small group	**Observation Rubric -** completed by researcher & unblinded observers in unstructured settings	**Parent data -** completed by parent as homework	**parent interview & survey-** conducted by researcher	**video -** of rearcher of each small group for reflection
	Baseline Data & Post-data	X	X	X				X		X	
RQ_1	conversational skills - generalization	X	X	X		X	X	X	X	X	X
RQ_2	eye gaze, body language, and expression	X	X	X			X		X		X
RQ_3	Quality of interactions with peers				X			X	X	X	
RQ_4	interfering behaviors					X	X	X	X		
RQ_5	planning & perceptions					X					X
RQ_6	Parental Involvement								X	X	

Data-Gathering Measures

The most common method for reporting on social skills for children with ASD were questionnaires completed by parents and/or school personnel (Matson & Wilkins, 2007), classroom staff completed the JobTips social skills assessment, social skills, and empathy pre- and post-tests. The researcher descriptively analyzed the data by comparing the pre-treatment data and the post-treatment data, looking for an increase in the understanding of social concepts. The researcher compared parent interviews taken before treatment with the parent surveys that followed treatment, to gauge the level of support from home and to check generalization of conversation skills at home. Using the key provided, the researcher graded the lesson worksheets from LinguiSystems *Spotlight on Social Skills: Conversations* (LoGiudice, & Johnson, 2008) to check for understanding of the session topics along with the corresponding small group data from corresponding sessions to analyze body posture, eye gaze, emotion, conversation parts, and in interfering behavior. The level of generalization was assessed based upon the data from the observation rubrics from all observers and parent data. To check for positive results and success of the program from the participant’s perception, the researcher utilized students’ pre- and post- friendship interviews. The researcher employed all the previously mentioned data, notes, and videos to reflect upon her instructional strategies, lesson planning, and perceptions during the treatment process. The use of descriptive statistics for all pre/post data and the journal data was analyzed for themes aligned with the research questions noted by Braun and Clarke (2006) in Savin-Baden and Major (2013) as:

> A method for identifying and reporting patterns in the data. The researcher can rely on intuition and sensing rather than being bound by hard and fast rules of analysis [and] includes the following steps: familiarize yourself with the data, generate initial codes, search for themes, review themes, define and name themes. (p. 440)

Conclusion

Two groups of two students providing a total of four research participants, progressed through five sequential phases of implementation to complete data gathering for this research study. The researcher taught specific conversational social skills to students with ASD, and with the use of scaffolding generalized the social skills to unstructured environments at the school. The students achieved an 80% on conversation skills assessment on four-out-of-five sessions in order to progress to the next phase of implementation. Using comparisons of the pre- and post-test student data and compiling field notes on participants, observations, rubrics, and parent information, the researcher analyzed the results. A comprehensive write-up of results is included in Chapter Four.

Chapter Four: Results

The purpose of this study was to explore the use of a particular treatment, or intervention, the *Conversation Game* (Brinton et al., 2004), with students diagnosed with ASD. The intervention directly related to their ability to participate in bidirectional, turn-taking conversation and exhibit the appropriate facial affect (or emotion), body posture (non-verbal language), and eye-gaze during a social meeting. The researcher also investigated the quality, duration, and degree of the generalization (the application of learned skills in a new setting/environment and/or the inclusion of new conversation partners) of social skills with typical peers in an unstructured setting; and measured parental involvement in the treatment.

Research Questions

Research questions considered in the research methodology of this study were:

RQ_1: How does the implementation of the instructional program, the *Conversation Game,* paired with LinguiSystems *Social Skills: Conversations* workbook help generalize conversational social skills of students with ASD to unstructured settings?

RQ_2: How does the instructional program, the *Conversation Game*, paired with LinguiSystems *Social Skills: Conversations* workbook increase/decrease conversational skills, eye gaze, body posture, and facial expression, of student’s with ASD during conversations in structured and unstructured settings?

RQ_3: In an unstructured setting, is there evidence of change in the quality of interactions related to conversational skills between students with ASD and neurotypical peers? If there is an observable change, how does the quality (solo play, parallel play in proximity, trying to engage others unsuccessfully, partial engagement being in-and-out of the interaction, semi-involved, but not fully engaged, engaged with other and fully on-topic) of interactions change?

RQ_4: In an unstructured setting, will interfering problem behaviors change? If interfering problems do change, in what ways do they change?

RQ_5: As a researcher and educator, did my instructional design and lesson planning change in the implementation of the *Conversation Game* and in particular, my perceptions regarding the ability of the students to learn and generalize conversation skills? If it did change, how did it change?

RQ_6: How did the parents work with their child to increase their child’s conversational social skills, throughout the duration of the study?

Four students with an educational diagnosis of autism spectrum disorder (ASD) received treatment within this action-research study, to attempt to increase their conversational social skills. The researcher divided the participants into two groups, which received the same treatment, separately. The two groups moved through a series of phases to accomplish the research goal of generalizing social conversational skills to unstructured environments, which included lunch and recess. After each group completed phase one, the two groups progressed independently of each other and on different time schedules.

Each group required initial membership changes to find the right fit for conversation. Initially, the researcher paired Students #1 and #2, because they were both included in regular education classes. However, in their separate pairs Students #2 and #3 hijacked the conversation, leaving Students #1 and #4 to sit quietly engaged in their own thoughts. The researcher then changed the groups to include Students #1 and #4 together and Students #2 and #3 paired together. Those pairs worked well together during conversations; however, Student #1 progressed more quickly than Student #4 and Student #2 made more progress than Student #3. When the students made sufficient progress to add typical peers in phase 3, the students regrouped, placing Students #3 and #4 back together. Students #3 and #4 were a difficult combination because Student #3 openly disliked Student #4.

To ease the group dynamics, the researcher revised her IRB application to include a ‘buffer student.’ After gaining approval and consent from the parent, the researcher added a self-contained classmate of both Students #3 and #4 to the group to enhance conversation, referred to here as the ‘buffer student.’ Similar to the participants, the buffer student was diagnosed with ASD, had high verbal skills, and was near academic grade level. With this inclusion, Students #3 and #4 made faster improvement and vocalized less disagreement with each other. Though data were not recorded for the buffer student, his social skills appeared to the researcher to be strengthened also. He began sitting with typical peers and having daily conversations at lunch.

For purposes of this study, the intervention proved successful if the researcher and unblinded-observers witnessed participants having on-topic, verbal exchanges in multiple settings, such as outside the treatment group, on the playground, in the cafeteria, or at home. Favorable outcomes also included interaction with multiple people, such as with typical peers, with family members, or students with ASD outside of the treatment group, and/or showing an increase in the quality and duration of verbal interactions. Positive changes also included a decrease in interfering behaviors and off-topic verbal exchanges.

Research Question 1

How did the implementation of the instructional program, The *Conversation Game,* paired with LinguiSystems Social Skills: Conversations workbook help generalize conversational social skills of students with ASD to unstructured settings?

The LinguiSystems workbook was a helpful tool to teach the targeted skills. The content covered all parts of conversation and included realistic example and role–play situations. At the completion of phase 1, the participants finished most of the LinguiSystems lessons, excluding lessons that covered vocabulary (LoGiudice, & Johnson, 2008, p. 9), phone conversations (p. 33), chat rooms (p. 34), and role-playing (p. 37), which were not necessary for the purpose of the study. The worksheets for each lessen were easy to use and included answer keys to keep consistency in grading throughout the study.

While the research study focused on the *Conversation Game* (Brinton et al., 2004), the structure of the game did not appear necessary to the research study. The format of the game helped outline a conversation for the participants, and participants were receptive to the photos (Appendix L), which pictured how a conversation looked. While the photos of a derailed train helped explain to the participants how to keep the conversations ‘on track’ and provided the participants a visualization of how upsetting a derailment in conversation could be, the visuals were distracting for Student #1. During initial conversations, he frequently shouted out, “Derailment!” if anyone transitioned or changed a topic. His shouts gave the opportunity for teachable moments, as the transitions were often appropriate, and the students needed to understand that conversations do flow into other conversations; however, there needed to be a common link to make the transition functional.

After the workbook lessons in phase 1, the researcher and participants attempted to play the *Conversation Game* (Brinton et al., 2004). The researcher provided a topic written on a card and made a statement followed with a question. Instead of making one comment, the participants began a whole conversation, making the game obsolete. After several sessions, the researcher realized the game was unnecessary and simply provided a topic card. The participants began and continued a conversation with the researcher without the need of a structured game. The researcher believed the game was valid and would be more useful for younger students, but did not help achieve the research goals of generalization.

Data to answer RQ_1 included the worksheets from *LinguiSystems* lessons (LoGiudice, & Johnson, 2008), data from baseline conversations, and data from phase 2 through phase 5, where the researcher observed in conjunction with another, unbiased, observer; taking data on engagement with peers and behaviors during maintenance. After analyzing data from phases 1 through 5 and observing the students' changes in social behavior, the researcher believed the treatment program facilitated the generalization of the participant's socials skills in a variety of ways, depending on the individuals. Data from the unbiased observer was consistent with regular observers, which showed the same mixed level of generalization for Student #1, and partial achievement for Students #2 and #4.

Student #1, who was fully included in regular education classes, showed the highest degree of generalization. Data from the observation rubrics showed that Student #1 generalized his conversational and social skill in the cafeteria and recess. Before the treatment program, Student #1 sat completely alone at lunch, with a three-foot berth around him at all times. During phase 4 (generalization) and phase 5 (maintenance), Student #1 sat with a group of typical students every single day and was in conversation with them at least 50% of the lunch period on most days. Even when not conversing, he followed the conversation with his eyes and looked alert.

During phase 3, one typical male student asked about an upcoming social studies test and Student #1 replied, “I’m nervous, I may not get a good grade.” On one observation during phase 4, Student #1 sat a couple of feet down from his peers. The researcher was disappointed at his lack of interest in conversation, but did not intervene. He arose to get a spoon, came back to the table and sat closer to his peers, and pulled his lunchbox closer to him. When others arrived from the hot-food line and filled in the seating gaps, he scooted closer and surrounded himself with typical peers. He then participated in animated conversation the rest of the lunch period.

The Social Skills Assessment included thirteen questions, involving the Likert scale of ‘almost never,’ ‘seldom,’ ‘sometimes,’ ‘often,’ and ‘almost always,’ with ‘almost always’ being the most desirable outcome for each question. The participants had mixed results, each showing areas of increase and decrease on the scale. Student #1 increased in the areas of speaking about topics that interested both parties, joining a group in an appropriate manner and expressing his feelings and emotions to others. Student #1 regressed in the area of asking questions of the correct person.

On the JobTips Assessment, each participant increased their number of ‘almost always’ and ‘sometimes’ and decreased the ‘rarely’ categories. Student #1 increased the number of ‘almost always’ from seven to 14. His areas of improvement included initiating conversations, joining conversations appropriately, changing topics, using appropriate body language, speaking from an appropriate distance, using farewells, apologizing, and working in groups. He had two areas of regression, which were tolerating being told ‘no,’ and offering assistance to others

The researcher observed Student #2 generalizing his social conversational skills at lunch during phase 4. However, during the maintenance phase, he usually sat near Student #4 and spoke only to him, which limited his success in phase 5. At recess, Student #2 seemed to flounder. He never played with typical peers and was frequently on the outskirts of games with his ASD counterparts. When playing with friends with ASD, he followed the group and attempted to join them. Student #2 appeared engaged because he was with the group and was talking to his friends. According to the data records, he achieved 80% interaction with his ASD peers; however, upon researcher reflection, he was not a full-fledged member of the games, he usually seemed to be a step behind, trying to figure out how he could participate.

On the Social Skills Pre-to-Post-Test, Student #2 improved in the areas of saying thank you, introducing himself, and helping others. He decreased on the scale in listening to others, asking questions of the appropriate person, knowing his feelings, and expressing his feelings appropriately. Student #2 increased his number of ‘almost always’ from nine to 15 and decreased his number of ‘rarely’ from nine to two on the JobTips Assessment. Student #2’s areas of improvement were initiating conversations, joining conversations, changing topics, demonstrating listening behaviors, using greetings and farewells, avoiding inappropriate topics, expressing frustration, accepting others, accepting feedback, and avoiding unusual behaviors. Student #2 showed no areas of regression.

When Students #3 and #4 entered phase 3, the researcher wrote of her surprise at some of the conversations, since they struggled during phase 2. Student #3 opened one conversation with, “What is something you wish you’d never done?” Next, Student #3 asked, “What was your first Marvel movie that you ever saw?” The researcher was shocked and impressed, though concerned about #4, as he was quiet during lunch. One session when Student #3 was absent, Student #4 participated in a lunch conversation with the typical peers. The researcher explained afterword that he could talk like that every time, and did not have to sit quietly letting Student #3 talk the whole lunch period. Following that session, Student #3 could barely fit a word in! Student #3 often tried to break in the conversation or get the others’ attention with an appropriate, “Hey guys.”

However, Student #3 made little improvement in generalization. During phase 4, he improved his social availability by sitting with typical peers. He began sitting with a group of boys, one of which volunteered in the treatment group. However, Student #3 continued displaying interfering behaviors, such as playing with food, telling odd stories, and making strange faces. The boys frequently laughed at him or moved away. The researcher prompted him to move around and find students with which he had common interests, which led to him to sit with two typical girls. With their kindness, Student #3 began achieving the goals required in phase 4, though not frequently enough to move into phase 5. He was unable to fully generalize nor maintain his social skills in the cafeteria. At recess, Student #3 played only with his peers on the ASD spectrum.

On the Social Skills Pre-to-Post-Test, Student #3 had many areas of improvement, which included listening to others and trying to understand what they were saying, talking about items of interest, initiating introductions, apologizing, recognizing his emotions, and trying to understand what others were feeling. Student #3 also regressed in several areas, including asking questions of the right person, deciding on the best way to enter a group activity, expressing his feelings, and helping others. Regarding the JobTips Assessment, Student #3 increased his number of ‘almost always’ from eight to 12 and decreased his number of ‘rarely’ from 10 to five. His areas of improvement included using greetings and farewells, accepting others’ ideas, accepting feedback or corrections, tolerating being told ‘no,’ showing respect for others, and avoiding unusual behaviors. Student #3 had areas of regression on the assessment, which included offering assistance to others, and engaging in appropriate activities during unstructured activities.

The researcher observed Student #4 reach both generalization and maintenance. He immediately connected with a group of students during lunch; which were not the typical peers who volunteered for the treatment group; he usually sat with the same groups of students. He was fully engaged in conversation, laughed, smiled, and kept eye contact during entire conversations. The typical peers appeared to accept Student #4 at the table and he did not stand out in any manner. According to anecdotal information from school staff, Student #4 played with typical students at recess approximately half the time, and the other half he spent with ASD peers. When officially observed, Student

#4 usually played with the other ASD participants, and so did not maintain social skills with typical peers.

Though the participants exhibited varying levels of generalization and maintenance, they all improved. During the pre-treatment observation, Students #1, #2, and #4 played completely alone, which was consistent with behaviors witnessed on a daily basis, according to recess monitors. Student #3 attempted interactions with typical peers, though was often inappropriate and rude. During maintenance observations, the participants spent every single recess playing either with children on the autism spectrum or with typical peers, which showed an observable improvement in their social skills.

Generalization and maintenance at lunch was 100% successful for two of the four participants. The students maintained the generalization of their social skills approximately 62% of the time during phase 5 observations. The researcher observed Students #1 and #4 exhibiting behaviors associated with having friends, such as frequent laughing and smiling by the participants and typical peers, bi-directional conversations, continuous eye contact, hand gestures, positive body language, and the fact that typical peers continued to sit near Students #1 and #4 and appeared happy to see them.

The other participants, Students #2 and #3, made improvements by sitting with typical peers and making verbalizations, though they did not appear to have ‘friends’ in the true sense. The typical peers sitting near #2 and #3 were not consistently the same students. These students sometimes appeared to be laughing at the participants more than laughing with them. Typical peers also occasionally ignored #2 and #3 when they tried to gain the typical peers’ attention.

It would be interesting to follow-up with the participants in the future to see if they maintained the learned social skills. Future research would benefit by including further documentation on the maintenance of skills. The researcher would also like to better promote generalization to areas outside of school. This study included homework to increase generalization at home, though parents only noted seeing “slight improvement,” “on occasion,” or “[through conversations] with grandparents.”

Maintenance in phase 5 had mixed results. Each of the participants maintained their ability to have lunch conversation and play with their peers on the autism spectrum. This was an improvement from the beginning of treatment, when they each ate silently, apart from peers, and played alone at recess.

As far as maintaining social skills with typical peers, Student #1 was partially successful. On the first maintenance observation at lunch, he achieved 100% by having animated conversation with typical peers. The second month, he scored a zero by sitting alone and not speaking at all. The third month, Student #1 sat near peers and spoke only 5-to-7 times, which gave him a score of 56% for the first observer and 62% for the second observer. He also cried and made some odd faces. At recess, Student #1 maintained his social skills with scores between 90% and 100% on each observation.

Student #2 did not reach the maintenance level with typical peers at recess. He maintained his level of playing with friends on the autism spectrum. At lunch, Student #2 was partially successful, with scores of 76% on each observation by all observers. He continued to sit with peers and followed their conversation, though he spoke very little. During indoor recess, Student #2 scored 100% on generalization of social skills; however, he had no other options but to play with typical peers. If Student #2 had the option to play with friends on the spectrum, the researcher expected him to choose his ASD peers over the typical peers. Data recorded that he was able to use his social skills in an unstructured setting, though it may not have been his first choice.

Student #3 was unable to reach the level maintenance with typical peers. He also continued to play with his friends on the autism spectrum. At lunch, Student #3 continued to eat near typical peers, though he strictly conversed with students on the autism spectrum.

At lunch, Student #4 maintained his generalization by sitting with typical peers, maintaining eye contact, following the conversation, and participating in the topic. He did not reach the maintenance level at recess, for when observed, Student #4 rarely reached his goal of 80% when playing with typical peers. However, from anecdotal information from paraprofessional staff, Student #4 frequently spoke with at least one typical peer for most of the recess period. He also occasionally played tetherball with a couple of girls he sat with at lunch. During scheduled observations by the researcher, he only played with his ASD peers.

Regarding the Social Skills Pre-to-Post-Test, Student #4 improved in his ability to thank others, initiate introductions, apologizing, trying to understand the feelings of others, and helping others in need. He decreased in his ability to listen to others, question the appropriate person, and join group activities appropriately. Student #4 had the most area of improvement on the JobTips Assessment, increasing his number of ‘almost always’ responses from 12 to 18 and decreasing his ‘rarely’ responses from five to zero. His areas of improvement included initiating conversation, joining conversations, changing topics, exhibiting listening behaviors, selecting appropriate topics, avoiding inappropriate topics, expressing frustration, expressing disagreement, acknowledging mistakes, apologizing, accepting feedback, tolerating being told ‘no,’ offering assistance, and having good personal hygiene. Student #4 had areas of regression, which included seeking clarification appropriately and dressing appropriately.

The parents all notated improvement in their children’s social conversation skills and behaviors. However, the changes appeared to be small, with descriptive words, which included, “slight improvement” and “better” regarding a change in the child’s ability to participate in conversations appropriately, and “on occasion” and “slight improvement” used to describe if conversations were happening in places outside of the child’s home. Other places included the grocery store and grandparent’s house.

Research Question 2

How did the instructional program, The *Conversation Game,* paired with LinguiSystems Social Skills: Conversations workbook increase/decrease conversational skills, eye gaze, body posture, and facial expression, of student’s with ASD during conversations in structured and unstructured settings?

During phase 2, the researcher and participants had structured conversations using the *Conversation Game* (Brinton et al., 2004) and train photos. The baseline data revealed that each participant had a maximum number of verbalizations between five and nine verbal exchanges per topic and increased verbalizations as they progressed through the phases (Table 5). The researcher provided conversation topics as part of the game, and when a period of silence ensued, the participants often lacked the ability to begin a new topic. The participants were unable to transition between topics nor end conversations appropriately. Students would frequently just stop talking or in the middle of a conversation say, "Ok, bye!"

Table 5

Number of Verbal Exchanges

	Baseline	Phase 2	Phase 3
Student #1	9	26	54
Student #2	5	26	46
Student #3	9	55	32
Student #4	7	52	37

According to the conversation rubric and observation, each participant increased his physical aspects of conversation, including eye contact, body language, and facial expressions (Table 6). Using the JobTips Assessment, each participant made slight improvement, with three of the four participants showing a 50% increase.

Table 6

Physical Aspects of Conversation: Data from Observations

Phase 2	Student #1	Student #2	Student #3	Student #4
Body Language	67%	71%	60%	73%
Eye Contact	73%	74%	50%	88%
Facial Expression	65%	21%	25%	50%
Phase 3	Student #1	Student #2	Student #3	Student #4
Body Language	98%	96%	93%	100%
Eye Contact	87%	97%	72%	93%
Facial Expression	100%	67%	80%	83%

The physical aspects of conversation, eye gaze, body posture, and facial expression, varied between participants. Student #1 exhibited mostly appropriate body posture, used expression when speaking, looked toward his speaking partner during approximately 50% of the conversation, and showed appropriate facial expression for about 78% of the conversation. During one conversation, according to the researcher's field notes, Student #1 was "Sitting back with his legs crossed, right elbow on the table, and looking at the speaker. He looked relaxed."

Student #2 exhibited appropriate body language 100% of the time, by sitting face-to-face with his conversation partner and using his hands when speaking. He used expression in his voice, and looked toward his partner about 78% of the time. Student #2 exhibited almost no facial expression 21% of the time, and increased his conversational ability to 67%.

Student #3 was capable of expressing emotion with his face and voice, was able to maintain eye contact, and at times used appropriate body posture. However, Student #3 frequently sat hunched over, looked only at his food, and spoke in only a listening voice, such as saying, "Mm-hm," "Oh . . ." and "Yeah." Student #3 required frequent verbal prompts from the researcher to remember past lessons about eye contact and body posture. Altering the setting improved Student #3's posture and gaze, such as giving Student #3 a stationary chair, not one that spins, sitting directly across from his conversation partner, and giving him time to eat before beginning the conversation so his focus was on the speaker and not his food.

Student #4 began the study with average body posture, 73% of the time. He sat while facing his partner and looked at the speaker. Student #4 spoke with expression or made facial expressions about 50% of the time. Student #4 had the most difficulty thinking of something to say. When the researcher laid down a topic card, he was always the first to snatch it up and open the conversation. Without that topic, he was unable to open a conversation appropriately. Student #4 also lacked the knowledge of how to end a conversation. While his partner was speaking, he would frequently say, “Ok, bye!”

During structured lunch conversations, the participants’ conversational skills increased. At the end of phase 2, the participants were in groups of two, independently carrying on conversations, the autism (ASD) dyads were each having between 26 and 52 verbal exchanges per topic (see Table 5). Each of the participants were capable of introducing conversation topics appropriately, transitioning between topics, and staying on-topic approximately 96% to 99% of the time. Eye contact improved for each participant, so when the participants were each speaking they frequently looked toward the listener, and when others were speaking the listeners usually looked in the speaker’s direction.

The ability to express facial or vocal emotions varied with each participants’ personality. Student #1 expressed emotion in his voice at least once in almost every session. He often verbally stated emotional words, such as “I’m sorry,” “worried,” “I was so scared,” “Kind of a bummer,” and “Off the hook crazy.” Student #1 frequently laughed and smiled at appropriate times during the conversations.

Student #2 did not speak with expression as frequently as Student #1, however he would verbalize emotional words, such as “That’s funny,” “Cool,” and “Oh, my gosh!” Student #2 also laughed and smiled frequently during conversations. Student #1 and #2 were well-matched speaking partners, as they were equal in their abilities to take turns, listen, and exhibit appropriate emotions.

Student #3 expressed emotions, though in the beginning of treatment they were often not appropriate responses to the conversation. Student #3 often laughed or smiled during times when Student #4 was speaking monotonously about a topic. The researcher assumed Student #3 was not paying attention to the speaker, but was playing a soundtrack in his mind. Student #3 would throw out an occasional, “Wow!,” in response to something Student #4 said, which sounded appropriate, though it lacked emotion. Several months into the treatment, Student #3 increased in the number of honest responses, which included, “Really?” “Oh, my gosh!” “You do?” and “Oh, my!” Student #3 also told a scary story one session using a ghostly, eerie voice, on which his partner noticed and commented.

At the beginning of treatment, Student #4 typically spoke in a monotone voice, observably more than the other three participants. Occasionally, Student #4 would sigh loudly to signal to Student #3 that he was bored with the topic at hand. Student #4’s lack of emotion improved very little, to include saying, “Spooky,” and one time telling a story using an eerie, scary voice. However, in one session he circled his face with his finger and said, “Do you see the look on my face? Do you remember what Ms. Parmeley said? Can you see that I’m bored?”

Data during phase 4 documented that Students #1, #2, and #4 maintained a level of 80% or higher on conversational goals. They each consistently made verbalizations, listened to the speaker, maintained eye contact, and kept interfering behaviors minimal. Student #3 was not consistent in his ability to converse with peers. During three months of observations, he achieved 80% or higher only six times. Most of the time, he spent hunched over looking at his food, making hand puppets with food wrappers, or speaking to only students with ASD.

Recess proved more difficult. Student #1 frequently played tetherball, kickball, or basketball with typical peers, though he did that on his own, well before phase 4. Mostly the participants, Students #2, #3, and #4 spent recess playing imaginary games with their own group of friends with ASD; again, the researcher perceived this as an improvement.

Research Question 3

In an unstructured setting, was there evidence of change in the quality of interactions related to conversational skills between students with ASD and neurotypical peers? If there was an observable or measurable change, how did the quality (solo play, parallel play in proximity, trying to engage others unsuccessfully, partial engagement being in-and-out of the interaction, semi-involved, but not fully engaged, engaged with other and fully on-topic) of interactions change?

The quality of interactions for Students #1 and #4 observably changed, moving from 100% solo play at recess to 100% fully engaged with typical peers and/or ASD peers in a similar setting. At lunch, Student #1's behaviors changed from sitting completely alone to fully engaged in conversation with typical peers. Student #4 went from sitting with only ASD students to sitting with typical fourth-graders and looking like he fit and had friends. He followed the speakers with his body and eye gaze and frequently laughed or showed facial expressions that matched the conversation.

Student #2 was successful during phase 4, sitting with typical peers at lunch. Student #2 was capable of following the rules and knowing how to talk, asking appropriate questions, and staying on-topic; however, he missed what looked like a real connection. The ability of Student #2 to converse with typical peers at lunch declined after Student #4 progressed into phase 4. Student #2 began sitting near Student #4 and stopped speaking with his typical peers. At recess, Student #2 improved, by changing from solo play to partial involvement with other students with ASD. As stated previously, he played on the fringes of the group of ASD students and was rarely able to get fully involved in the imaginative games the group played. He never played with typical peers. Student #3 changed from trying to engage with typical peers unsuccessfully, to full engagement with ASD students.

The parent surveys did not report information regarding friends outside of school. The student follow-up interviews recorded a slight change, with all four participants specific when asked how many friends they had. Student #1 changed his answer from “none,” pre-treatment, to “a lot” post-treatment. Students #2 and #3 changed their nonspecific “a lot” to specific names of friends they played with. Student #4 maintained his answer of “two,” but in the follow-up interview stated specific names and mentioned one was his “best friend.” Each of the participants believed they were good friends to people, with Student #2 reasoning, “Yes, I’m a boy scout, I help people.” When asked what the participants did with their friends in the pre-treatment interview, each answered, “Play.” In the follow-up interview, again each participant was more specific, answering, “Play games,” “Play video games, watch TV, have conversations, play on the computer,” or “Ride bikes, play games, play basketball or hide and seek”.

The Empathy Assessment included five questions with a Likert scale of ‘almost never,’ ‘seldom,’ ‘sometimes,’ ‘often,’ and ‘almost always.’ The desirable outcome for each questions was ‘almost always.’ The participants showed very little movement on the scale, with Student #1 moving on the scale and improving in only one area, ‘listening to others’ points of view and attempting to understand their feelings.’ The other four questions remained the same after treatment. Student #2 recorded one increase on the scale, ‘listening to others’ points of view and trying to understand their feelings,’ and one decrease in ‘apologizing for mistakes.’ Student #3 also had one area of increase and one decrease. He improved from ‘almost never’ to ‘sometimes’ when speaking respectfully to others and decreased in the area of empathy by being ‘sensitive to others’ misfortunes.’ Student #4 again showed the most improvement, moving positively on the scale in four areas and decreasing in one area. Student #4 improved in the areas of respect, listening to others, following rules, and apologizing. He decreased in empathy for others. These results were consistent with the observations of the participants by the researcher, in that Student #4’s lack of empathy for others impaired his ability to form and maintain friendships.

Research Question 4

In an unstructured setting, will interfering problem behaviors change? If interfering problems do change, in what ways do they change?

Interfering problem behaviors decreased for each participant. At the beginning of phase 2, during ASD-only conversations, Student #1 exhibited one to four problem behaviors, which included singing, spinning in a chair, gazing off or out the window, or making inappropriate facial expressions. At the end of phase two, Student #1 exhibited one or no problem behaviors, which included scripting or interrupting. In phase 3, during conversations with ASD and typical peers, Student #1 had zero to two interfering behaviors, which included interrupting, scripting, or shouting out, “Derailment alert!”

When Student #1 entered into phase 4 and an unstructured environment, he exhibited no interfering problem behaviors. Student #2 almost never exhibited problem behaviors during conversation treatment sessions. During phases 2 and 3, he occasionally had a problem with topic change and was unable to move on when others changed the topic. However, outside of treatment in the regular education class, Student #2 exhibited behaviors, which negatively affected his progress with the treatment in phases 4 and 5. In the regular education classroom, Student #2 occasionally cried and argued with teaching staff. A typical student Student #2 frequently sat next to at lunch began making fun of Student #2 and called him “stupid” or “crybaby”. The peer frequently made comments about how “annoying” Student #2 was. The researcher spoke with the typical peer about his behavior and requested Student #2 not sit near him at lunch in the future. Student #2 was a creature of habit, and so would not have moved seats of his own volition; he appeared relieved that he did not have to sit next to that particular peer again. The researcher explained to Student #2 that crying was not age appropriate and people would not want to be his friend if he continued crying.

Student #3 also had very few interfering behaviors during treatment sessions, exhibiting one or none during phase 2 in ASD-only conversations, which included playing with his straw or drink pouch. In phase 3 conversations between ASD and typical peers, Student #3 exhibited the interfering behavior of long talking on two occasions. In phase 4, in unstructured settings, Student #3 exhibited no interfering behaviors. However, outside of treatment, Student #3 frequently picked his nose or picked stuff from the bottom of his shoe and ate it. The researcher reminded Student #3 that people would not want to play with him or speak with him if he continued to eat inappropriate items. Student #4 never exhibited any interfering behaviors.

When surveyed on their children's inappropriate behaviors, parents reported seeing "a slight decrease." One parent was unsure whether the decrease was due to "maturity or a change in meds." Another parent reported a decrease "to some degree." Anecdotal data and researcher notes stated an observable decrease in interfering behaviors.

Research Question 5

As a researcher and educator, did my instructional design and lesson planning change in the implementation of The *Conversation Game* and in particular, my perceptions regarding the ability of the students to learn and generalize conversation skills? If it did change, how did it change?

Lesson planning changed as the participants progressed through the phases. In phase 1, the researcher looked at the lesson from the *LinguiSystems* workbook (LoGiudice, & Johnson, 2008) beforehand, in order to make sure each lesson was appropriate for the group. During phase 2, the researcher expected to need more time for preparation. However, once the researcher made topic cards and the train photos, there was little preparation required, and the time involved after the discussion was lengthier, as the researcher listened to the conversation to record data and write field notes. The groups started out treatment using the conversation topic cards; however, the researcher realized the students had much better conversations when they chose their own topics, so the researcher created no further topic cards. They were able to discuss the researcher's topic, though conversations stayed under ten conversational exchanges per student. Once the researcher allowed the students to begin a conversation of their own choosing, the exchanges increased to 20 to 60 per topic. The researcher had to make some topics off-limits for further discussion when Student #3 began every conversation with “What’s your favorite video game?” The discarded topics included Skylanders, Five Nights at Freddy’s, and other video games. The boys understood and accepted the change.

Throughout treatment, the researcher’s perception changed significantly. During phase 1, the researcher wrote, “Remember: the goal is not for the boys to have amazing conversations, but to learn to initiate and respond more appropriately with others.” It was discouraging to hear their short, unthoughtful statements and their inability to ask follow-up questions to show interest in the speaker. The researcher frequently notated her frustration at the lack of caring between conversation partners. The participants were happy to talk about their topic with complete disregard for the listener’s interest or understanding. The researcher understood the nature of ASD and that these behaviors were criteria for an ASD diagnosis, yet due to her knowledge, she felt disheartened and questioned whether her efforts were in vain.

The researcher recorded her surprise when she began to see progress in the conversations. On September 22, the researcher wrote, “Even though Student #4 was saying boring things, #3 listened and asked questions!” Student #1 frequently asked questions of his conversation partners and appeared to want to hear the answer. He was an avid listener and asked appropriate follow-up questions to keep his conversational partners talking. The participants continued making progress and moving through the phases, much to the researcher’s surprise.

The researcher noted after one session, that after being complimented by the researcher, Student #1 said, “I think we need to get more people in here.” The students even began talking about school topics, such as magnets from science class and an upcoming social studies test. Student #1 made the comment, “I’m nervous, I may not get a good grade.” He used emotion and stayed on-topic to have an appropriate conversation. Student #3 surprisingly opened one conversation with, “Do you know any secrets of the world?” Student #2 began joke telling, and Student #4 opened a conversation about scary animals, naming leeches as his least favorite.

However, the students’ ASD characteristics did not completely disappear throughout treatment. During one conversation, Student #2 began discussing his father’s boss and money, in which the typical peers were unable to relate. Discussions had an ebb and flow, where one week the students spoke fluidly and transitioned between topics flawlessly, as opposed to the next week that included conversational errors and social faux pas. In order to move to another phase, the students were required to achieve 80% on four-out-of-five days on the conversational and body posture goals. It was evident by the data that the students had more conversations that were appropriate than not, as they all moved through the phases of treatment. Again, the treatment did not cure the participants of their diagnostic criteria for ASD, but did show observable progress and data, which noted positive statistical gains.

The pre- and post-friendship interviews revealed little useful data. The answers changed minimally, though became more specific. Each participant changed answers from vague, “a lot” to specific numbers of friends. When asked what they did with friends, the answers all changed from “play” to specific (and appropriate) passed-times.

The students all mentioned wanting more friends and they all thought they were a good friend to others.

For the researcher, the largest attitude adjustment came in the form of inclusion. As a self-contained teacher, she was happy in her own room, secluded from the rest of the school. Working with regular education teachers brought difficulty, time constraints, and chaos. However, the results did not lie. The students who spent more time with typical peers in the past, achieved better levels of generalization in the study. Because of this awakening, two of her students will attend math and science with regular education in the future.

Research Question 6

How did the parents work with their child to increase their child's conversational social skills, throughout the duration of the study?

The researcher did not observe a change in the participants' conversation skills in conjunction with parent conversation at home. The researcher was aware that Students #1, #2, and #4 participated in frequent family outings, participated in the community, and took vacations. They each had families who ate dinner together and discussed the day or future plans. From speaking with parents, the researcher believed that Student #3 spent less time in daily conversation with family members and, at his request, spent more time alone.

Consistent with knowledge of the families and their desires to see improvement for their children, Students #1, #2, and #4 each returned homework every week, 15 total. However, Student #3 returned homework only three times, with the conversation ranging from two to three minutes, while the other participants' conversations ranged from eight to 30 minutes.

Though Student #3 made the least progress, the researcher did not believe that homework, or the lack of, had any bearing on Student #3's lack of success, nor, that Students #1, #2, or #4 made progress because of their rates of return on homework. However, the researcher contemplated whether the homework data were consistent with a lifelong pattern of parenting given to #1, #2, and #4, where the parents gave their children more opportunities for conversations and life experiences, opportunities that #3 did not receive equally. This was strictly based on conjecture from the researcher's knowledge of her participants and their families.

When asked if the conversation lessons were a positive experience for their children, parents answered "to a degree" and "yes, some." One of the parents replied that they believed "everything helps" in regards to learning social skills. All of the parents responded positively to the treatment and appeared to see some positive changes in their children. Parent #1 stated, "[the study] helped [him] to initiate and maintain conversation about the topic." Parent #2 wrote, "He definitely asks about the other person more" "[the lessons] helped in trying to communicate with his siblings." No one mentioned any negative implications.

Conclusion

All four participants improved their social skills to include playing with other students on the spectrum. One participant maintained generalization in three structured areas, cafeteria, indoor recess and outdoor recess. Two participants were able to maintain generalization in two unstructured settings, one in the cafeteria and indoor recess and one in the cafeteria and occasionally on the playground. Only one student did not reach any level of generalization with typical peers. The JobTips assessment notated the most positive data for the treatment program, having shown a positive increase for each participant in the program. Parents also stated positive comments about the program and lacked any negative feedback.

Chapter Five: Discussion and Recommendations for Future Research

The purpose of this action-research study was to explore the use of a particular treatment, or intervention with students diagnosed with ASD. The treatment in this study taught conversational skills using a structured *Conversation Game* (Brinton et al., 2004) paired with the LinguiSystems workbook, *Spotlight on Socials Skills (adolescents): Conversations* (LoGiudice & Johnson, 2008). The treatment took place in a self-contained setting and attempted to teach participants social skills, and then used scripts to aid the participants in generalizing the skills to unstructured settings. This study included four boys with an educational diagnosis of autism, who were at or near grade level. The treatment strived for generalization and maintenance of social skills to unstructured areas.

Data collection involved students' individual educational program goals, parent interviews and surveys, student pre-and post-interviews, worksheets, homework, the Empathy and Social-Skills pre-and post-tests, and the JobTips Assessment. The researcher took data regarding individual conversation skills, such as the number of comments, introductions, and closings, and the number of off-topic remarks, while a paraprofessional tracked data on the physical aspect of conversation, including eye contact, body language, facial expressions, and emotions.

Research Questions

Research questions addressed were:

RQ$_1$: How does the implementation of the instructional program, the *Conversation Game,* paired with LinguiSystems *Social Skills: Conversations* workbook help generalize conversational social skills of students with ASD to unstructured settings?

RQ$_2$: How does the instructional program, the *Conversation Game*, paired with LinguiSystems *Social Skills: Conversations* workbook increase/decrease conversational skills, eye gaze, body posture, and facial expression, of student's with ASD during conversations in structured and unstructured settings?

RQ$_3$: In an unstructured setting, is there evidence of change in the quality of interactions related to conversational skills between students with ASD and neurotypical peers? If there is an observable change, how does the quality (solo play, parallel play in proximity, trying to engage others unsuccessfully, partial engagement being in-and-out of the interaction, semi-involved, but not fully engaged, engaged with other and fully on-topic) of interactions change?

RQ$_4$: In an unstructured setting, will interfering problem behaviors change? If interfering problems do change, in what ways do they change?

RQ$_5$: As a researcher and educator, did my instructional design and lesson planning change in the implementation of the *Conversation Game* and in particular, my perceptions regarding the ability of the students to learn and generalize conversation skills? If it did change, how did it change?

RQ$_6$: How did the parents work with their child to increase their child's conversational social skills, throughout the duration of the study?

Relation to Current Literature

The results of this study were consistent with past studies (Barry et al., 2003; Bauminger, 2002; Kamps et al., 1992; Kohler et al., 1997; Schleien et al., 1995; Tse et al., 2007; Webb et al., 2004), which stated that children on the autism spectrum were able to learn social conversation skills. The researcher agreed with McConnell (2002) that peer models helped increase the social skills of the participants, but was disappointed that the typical peers did not help ease the transition into phase 4 of the study, which was the intention. However, the researcher believed it was a positive outcome that the participants generalized their social skills without depending on the typical volunteers.

Bauminger et al. (2008a) hypothesized that when exposed to typically developing peers, students with autism would have better social development. That belief would coincide with Student #1 in this study exhibiting the most growth of the four participants.

Implications for Future Research

In the future, the researcher would like to continue using the LinguiSystems workbook (LoGiudice, & Johnson, 2008), while also including other workbooks offered by the same publisher, which cover emotions, negotiations, figurative language, metaphors, getting along, social inferences, nonverbal language, and making friends. While the *Conversation Game* (Brinton et al., 2004) did not warrant success in the treatment, because the participants quickly surpassed the strict hierarchy of making one comment and then a comment and a question, etc., the researcher would recommend using the game with younger children on the spectrum who would possibly benefit from the structure. The students benefitted from the practice and feedback during conversations, which needs to continue in future work with students on the autism spectrum. The work of Kasari et al. (2012) inspired the researcher, and in the future she would consider training typical peers to look for the students who are playing or sitting alone, so they may try to engage them in conversation or play.

In the future, the researcher would like to begin treatment in kindergarten, enabling the students to make friends in early grades, and scaffold the interventions to help maintain the friendships through elementary school. Further research in junior high would be interesting, to gauge the ability of students to maintain relationships in a larger environment. The researcher would also like to work to engage students on the autism spectrum in clubs outside of school, such as Boy or Girl Scouts, Park and Recreational sports, 4-H, church groups, dance, or something similar.

While homework did not appear to lead to the positive results of the program, the researcher believed that parents would benefit from training on how to improve their children's social skills outside of school. Friendships with typical peers appeared to be more beneficial to those on the autism spectrum than maintaining friendships only with children with other disabilities (Bauminger et al., 2008a). With that in mind, the researcher had a stronger desire to continue addressing social skill for children with ASD and helping them maintain those friendships throughout their elementary education, and further into the future.

Research Question 1

RQ_1: How does the implementation of the instructional program, The Conversation Game, paired with LinguiSystems Social Skills: Conversations workbook help generalize conversational social skills of students with ASD to unstructured settings?

After eight months of treatment with conversational social skills using the *Conversation Game* (Brinton et al., 2004) paired with the LinguiSystems workbook, (LoGiudice & Johnson, 2008), a new student joined the class of Students #2, #3, and #4. The researcher was astonished to witness the excitement of the participants as they spoke to the new student, asked questions, and listened to him with expected body language. After the first day, when the new student was leaving, he turned and said, “I expected to come here and have people be mean to me . . . I was surrounded by happiness and now have all these friends, thank you.” The researcher does not believe this comment would have occurred, particularly with three of the study’s participants, the previous year. This comment was perceived by the researcher as an indication of success in reaching the goals of this study, for the students who participated. Having Student #1 run in the classroom for the treatment lunch group to say, “We played basketball at lunch and they wanted me on their team! It blew my mind!” showed success. After treatment, during the family picnic, three of the participants exchanged phone numbers and made plans for future summer engagements. Their exclamations to their parents when they said, “Guess what’s in my pocket? A phone number!” brought a smile to everyone’s faces.

The researcher would have liked more involvement with typical peers at recess and lunch for Students #2, #3, and #4; however, the nature of the study made it difficult to harbor those relationships. Two of the participants spent time only with typical peers at lunch and recess. The only typical peers they truly knew were the volunteers in phase 4, who did not choose to seek out the participants during unstructured activities. It was the researcher’s hope that the typical volunteers in phase 3 would help bridge the transition into phase 4 for the participants. However, though that was not the case, it does make an even more compelling case for the study that the participants were able to enter the unstructured setting of the cafeteria, playground, and library, and find completely new typical peers with which to form relationships. The researcher did not believe it a coincidence that Student #1 had the most success building relationships and achieving the research goals, as he was the only participant fully included in regular education. The researcher was pleased to request during the most recent IEP meeting that Student #4 attend two regular education classes in the fall of 2015, which was not possible for this student in the past. The researcher expects to witness further progress made in relationships with typical peers for Student #4 in the following year.

In the future, the researcher would like to implement more opportunities for students on the autism spectrum to be involved with typical peers, such as book buddies during lower grades and lunch buddies or lunch groups to harbor conversation in small groups, possibly in a setting away from the loud and distracting cafeteria. The researcher also plans to use the *Conversation Game* (Brinton et al., 2004) with younger students to promote good conversational skills; however, does not plan to implement the game with the older students, as they did not appear to need the structure of the game. The participants had been in recess groups with typical peers in the past. Future groups may need to meet more frequently than once per week. The researcher would like to develop a plan to increase social opportunities for students on the autism spectrum as they move through elementary grades.

Research Question 2

RQ$_2$: How does the instructional program, The Conversation Game, paired with LinguiSystems Social Skills: Conversations workbook increase/decrease conversational skills, eye gaze, body posture, and facial expression, of student's with ASD during conversations in structured and unstructured settings?

The research data showed observable gains in the physical aspects of conversation (Table 4). Though the participants did not maintain the level of conversation the researcher would have liked to see, they did continue to sit with typical peers at lunch. During lunch periods, the participants, though quiet, sat up, looked at their typical peers, and followed the conversations with their eyes. The researcher was pleased that the participants remained open to conversation and alert to those around them. Student #3 was the only participant who, on occasion, continued to slip into his comfort zone of playing with his food and having animated dialog with himself. Consistent with literature current at the time of this writing (Harper et al., 2008; Kim, 2015; Licciardello et al., 2008; Willey, 2015), the participants required structured teaching regarding how to physically behave when in conversation. During phases 1 and 2, the participants needed frequent reminders to sit up, show the speaker that they were listening, and to make faces to show confusion, understanding, or interest.

Research Question 3

RQ$_3$: In an unstructured setting, is there evidence of change in the quality of interactions related to conversational skills between students with ASD and neurotypical peers? If there is an observable or measurable change, how do the quality (solo play, parallel play in proximity, trying to engage others unsuccessfully, partial engagement being in-and-out of the interaction, semi-involved, but not fully engaged, engaged with other and fully on-topic) of interactions change?

During maintenance, when Student #1 was playing four square with complete attention and expected behavior, a typical peer was heard saying, “Good job, Student!” to which Student #1 replied, “Thanks!” Prior to treatment, though fully included in regular education classes for several years, Student #1 did not play at all; he certainly did not play with peers, even those on the autism spectrum. His level of engagement increased 100% and maintained at recess. In the cafeteria, Student #1 maintained his level of conversation about half of the time.

Students #2, #3, and #4 all increased and maintained their ability to fully-engage with students on the autism spectrum at lunch and at recess. However, only Students #2 and #4 generalized their social skills in the cafeteria with typical peers, and Student #3 was unable to generalize his skills in either setting. Bauminger et al. (2008a) notated that friendships required one to have interest in their conversation partner. Student #3 frequently lacked interest in anyone other than himself, which explained his lack of success in the treatment program.

The participants need more access to peers at social times. Many self-contained students only accessed typical peers during PE, music class, lunch, and recess. PE and music only occurred once per week and were not ‘social’ periods. While lunch and recess were appropriate times for social communication, the participants did not have the skills to be successful. Follow-up research on the participant’s ability to maintain the social skill in junior high would also be interesting information.

Research Question 4

RQ_4: In an unstructured setting, will interfering problem behaviors change? If interfering problems do change, in what ways do they change?

Input from paraprofessionals using the JobTips assessment, observation from the data recorders, anecdotal data from school staff, and survey results from parents all reported that problem behaviors for each participant appeared to decrease. On occasion, observers notated that Student #4 "looked typical eating lunch with the other fourth graders" and "Student #2 looked like he fit right in." Student #1 followed the rules to tetherball, kickball, and basketball, and waited patiently and talked with classmates each day at recess, so that an outside observer most likely would not have suspected he was on the autism spectrum. Even Student #3, who did not make the progress and improvement equivalent to the other participants, decreased interfering behaviors. Parents also noted a "slight decrease" in interfering behaviors.

Research Question 5

RQ_5: As a researcher and educator, did my instructional design and lesson planning change in the implementation of The Conversation Game and in particular, my perceptions regarding the ability of the students to learn and generalize conversation skills? If it did change, how did it change?

The instructional design changed, when the students immediately surpassed the need for the *Conversation Game* (Brinton et al., 2004), which began with the requirement that the students make one comment. At the beginning of treatment, the students did not have long conversational exchanges, nor were they always on-topic; however, they quickly had exchanges that included statements and questions, so the *Conversation Game* became obsolete. To continue with the outline of the game, the researcher would have stifled conversation and taken away the natural course of conversation.

The researcher was pleasantly surprised with the outcome of the treatment. Having worked with this population of students for 14 years and having a solid grasp of the characteristics of autism spectrum disorder (ASD), she was aware of the social and communicative challenges. The researcher chose this study because social skills were troublesome for the majority of students on the spectrum, the participants all lacked social skills, and social skills were so vital in life and for the future success in high school, college, relationships, and the workplace.

While the researcher believed in the need for social skills and had the desire to help improve the lives of her students, she did not expect to see positive results. Many early entries in her field notes mentioned being “discouraged,” “not expecting a lot of progress,” and notating how “self-centered” the participants were, and that they were unable to converse when they did not care what others were saying. Many of the students appeared happy to exist alone, even when stating that they wanted friends. The resulting relationships between students on the spectrum were an unexpected positive result. The addition of another student to the class solidified their relationships even more. It was a testament to the researcher when he stated that he “had all these friends” in class, when he was speaking of three of the four study participants. Witnessing relationships blossom between students with ASD and typical peers was a joyful surprise.

Research Question 6

RQ_6: How did the parents work with their child to increase their child’s conversational social skills, throughout the duration of the study?

The pre-and post-data was interesting, but showed little improvement in student behavior. For future research, the researcher recommends that providing short training for parents on how to conduct ‘homework’ conversations with their children would be beneficial. Maybe, even giving parents a list of appropriate topics in which to engage their children would help increase parent participation. One parent noted on the survey that they did not “follow through with the exercises” as they should have. One parent also questioned whether the improvement in their child was due to “maturity or a change in med,” and not the intervention.

The researcher previously stated that the parents of Students #1, #2, and #4 were highly involved in the education of their children and participated in community events and daily dialog. Prior research on autism mentioned a connection between the quality of the relationship between a parent and a child and the child’s ability to make friendships with peers (Berlin & Cassidy, 1999; Grossman et al., 1999; Youngblade & Belsky, 1992). At the picnic when students shared phone numbers, one parent stated with little affect, “Well, you’re leaving for the summer, you won’t be here.” It would have been preferable to see pleasure at their child’s success in friendship. However, parent attitude may have influenced their child’s social functioning.

The JobTips Assessment provided the most useful data, which the researcher believed was due to the number of questions. Thirty-one questions provided more detail than the Empathy pre-and post-test of five questions, which showed almost no change in student behavior. The Social Skills pre-and post-test, with 13 questions, showed moderate change in the students’ behaviors. In the future, the researcher would only use the JobTips Assessment.

The student’s pre-and post-friendship interviews also gave little useful data. The answers showed little improvement, only showing change in the specificity. The researcher agreed with parents that the interview answers could have changed due to maturity of the participants. Their answers to “How many friends to you have?” changed from the generic “a lot” to specific answers and names, with Student #4 actually naming a best friend. When asked what they did with friends, all the participants changed their answers from “play” to specific games and Student #3 actually listed “have conversations” as something he did with friends.

Conclusion

“Even the slightest improvement can influence drastically the way that children with autism and their families experience everyday life” (Wilson, 1995, as cited in Kalyva & Avramidis, 2005, p. 258). As a teacher and researcher, I began this project because of the strong need for children with ASD to learn and generalize social skills. The literature review revealed that, while researchers had taught social skills, very few observed true generalization or maintenance of the social skills. While current literature stated that students with autisms could learn social skills, this research added to the body of knowledge by addressing and observing generalization and maintenance of social skills, which went unexamined in past research.

References

Aarons, M., & Gitten, T. (1992). *The handbook of autism.* London, UK: Routledge.

Abbeduto, L., Seltzer, M. M., Shattuck, P., Krauss, M. W., Orsmond, G., & Murphey, M. (2004). Psychological well-being and coping in mothers of youths with Down syndrome, autism, and fragile X syndrome. *American Journal on Mental Retardation, 109*(3), 237-254.

Adshead, G. (1996). Commentary on "Psychopathy, other-regarding moral beliefs and responsibility". *Philosophy, Psychiatry and Psychology, 3*(4), 279-281.

Akande, A. (1999). Autism: A case in early childhood. A South African investigation. *Early Child Development and Care, 155*(1), 71-78.

Amaral, D. G., & Corbett, B. A. (2002). The amygdala, autism and anxiety. In (Name of Chairperson or Editors) (Chair or Ed.). *Novartis Foundation Syposium 251* (pp. 1-20). Location: Department of Psychiatry, Center for Neuroscience and California Regional Primate Research Center.

American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental health disorders, DSM-III* (3rd ed.). Washington, DC: American Psychiatric Publishing.

American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders* (3rd ed., text rev.). Washington, DC: American Psychiatric Publishing.

American Psychiatric Association. (1994). *Diagnositc and statistical manual of mental health disorders* (4th ed.). Washington, DC: American Psychiatric Publishing.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed. rev.). Washington, DC: American Psychiatric Publishing.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: American Psychiatric Publishing.

Asher, S. R., Parkhurst, J. T., Hymel, S., & Williams, G. A. (1990). Peer rejection and loneliness in childhood. In S. R. Asher, & J. D. Cole (Eds.), *Peer rejection in childhood.* New York, NY: Cambridge University Press.

The Association for Experiential Education. (2009, August 17). What is experiential education? *The Association of Experiential Education.* Retrieved from http://www.earlysignsofautism.com/what-is-the-global-incidence-of-autism/

Attwood, T. (1993). *Why does Chris do that? Some suggestions regarding the cause and management of the unusual behavior of children and adults with autism and Asperger syndrome.* London, UK: National Autistic Society.

Attwood, T. (1998). *Asperger's syndrome: A guide for parents and professionals.* Philadelphia, PA: Jessica Kingsley.

Attwood, T. (2007). *The complete guide to Aspgerger's syndrome.* London, UK: Jessica Kingsley Publishers.

Autism Society. (2014). *Diagnosis*. Retrieved from http://www.autism-society.org/about-autism/diagnosis/

Autism Speaks. (2013a). How is autism treated? *Autism Speaks*. Retrieved from http://www.autismspeaks.org/what-autism/treatment

Autism Speaks. (2013b). Prevalence. *Autism Speaks*. Retrieved from http://www.autismspeaks.org/what-autism/prevalence

Autism Speaks. (2013c). Pivotal response treatment. *Autism Speaks*. Retrieved from http://www.autismspeaks.org/what-autism/treatment/pivotal-response-therapy-prt

Autism Speaks. (2014). How is autism diagnosed? *Autism Speaks*. Retrieved from http://www.autismspeaks.org/what-autism/diagnosis

Auyeung, B., Wheelwright, S., Allison, C., Atkinson, M., Samarawickrema, N., & Baron-Cohen, S. (2009). The children's empathy quotient and systemizing quotient: Sex differences in typical development and in autism spectrum conditions. *Journal of Autism and Developmental Disorders, 39*(11), 1509-1521.

Bagatell, N. (2011). Engaged moments: Meditated action and children with autism in the classroom setting. *OTJR Occupation, Participation, and Health, 32*(1), 258-265.

Balli, S. J., Demo, D. H., & Wedman, J. F. (1998). Family involvement with children's homework: An intervention in the middle grades. *Family Relations, 47*(2), 142-146.

Barhill, T. D., Cook, K. T., Tebbenkamp, K., & Myles, B. S. (2002). The effectiveness of social skills intervention targeting nonverbal communication for adolescents with Asperger syndrome and related pervasive developmental delays. *Focus on Autism and Other Developmental Disabilities, 17*(2), 112-118.

Barnhill, G. P. (2007). Outcomes in adults with Asperger syndrome. *Focus on Autism and Other Developmental Disabilities, 22*(2), 116-126.

Baron-Cohen, S. (1988). Social and pragmatic deficits in autism: Cognitive or affective? *Journal of Autism and Developmental Disorders, 18*(3), 379-401.

Baron-Cohen, S. (2000). Theory of mind and autism: A fifteen year review. In S. Baron-Cohen, H. Tager-Flusberg, & D. J. Cohen (Eds.), *Understanding other minds: Perspectives from developmental cognitive neuroscience* (pp. 3-20). Oxford, England: Oxford University Press.

Baron-Cohen, S. (2002). The extreme male brain theory of autism. *Trends in Cognitive Sciences, 6*(6), 248-254.

Baron-Cohen, S. (2003). *The essential difference.* London, UK: Penguin.

Baron-Cohen, S. (2005). Autism-"autos": Literally, a total focus on the self? In T. E. Feinberg, & J. P. Keenan (Eds.), *The lost self: Pathologies of the brain and identity* (pp. 166-180). Oxford, England: Oxford University Press.

Baron-Cohen, S. (2009). Autism: The empathizing systemizing theory. *The Year in Cognitive Neuroscience, 1156*(Mar), 68-80.

Baron-Cohen, S., Leslie, A. M., & Firth, U. (1985). Does the autistic child have a 'theory of mind?' *Cognition, 21*(1985), 37-46.

Baron-Cohen, S., Richler, J., Bisarya, D., Gurunathan, N., & Wheelwright, S. (2004). The systemizing quotient: An investigation of adults with Asperger syndrome or high-functioning autism, and normal sex differences. In U. Frith & E. L. Hill (Eds.), *Autism: Mind and brain* (pp. 161-186). Oxford, England: Oxford Univeristy Press.

Baron-Cohen, S., Scott, F. J., Allison, C., Williams, J., Bolton, P., Matthews, F. E., & Brayne, C. (2009). Prevalence of autism-spectrum conditions: UK school-based population study. *The British Journal of Psychiatry, 194*(6), 500-509.

Barry, T. D., Klinger, L. G., Lee, J. M., Palardy, N., Gilmore, T., & Bodin, S. D. (2003). Examining the effectiveness of an outpatient clinic-based social skills group for high-functioning children with autism. *Journal of Autism and Developmental Disorders, 33*(6), 685-701.

Bauman, M. L., & Kemper, T. L. (1985). Histoanatomic observations of the brain in early infantile autism. *Neurology, 35*(6), 866-874.

Bauminger, N. (2002). The facilitation of social-emotional understanding and social interaction in high-functioning children with autism: Intervention outcomes. *Journal of Autism and Develomental Disorders, 32*(4), 283-298.

Bauminger, N. (2007). Brief report: Group social-multimodal intervention for HFASD. *Journal of Autism and Developmental Disorders, 37*(8), 1605-1615.

Bauminger, N., & Kasari, C. (2000). Loneliness and friendship in high-functioning children with autism. *Child Development, 71*(2), 447-456.

Bauminger, N., Shulman, C., & Agam, G. (2003). Peer interaction and loneliness in high-functioning children with autism. *Journal of Autism and Developmental Disorders*, *33*(5), 489-507.

Bauminger, N., Solomon, M., Aviezer, A., Heung, K., Brown, J., & Rogers, S. J. (2008a). Friendship in high-functioning children with autism spectrum disorder: Mixed and non-mixed dyads. *Journal of Autism and Developmental Disorders, 38*(7), 1211-1229.

Bauminger, N., Solomon, M., Aviezer, A., Heung, K., Gazit, L., Brown, J., & Rogers, S. J. (2008b). Children with autism and their friends: A multidimensional study of friendship in high-functioing autism spectrum disorder. *Journal of Abnormal Child Psychology*, *36*(2), 135-150.

BBC Films (Producer), & Landsman, F. (Director). (2003, July 30). My family and autism [Movie, television broadcast]. London, UK, London: BBC 2.

Begeer, S., Gevers, C., Clifford, P., Verhoeve, M., Kat, K., Hoddenbach, E., & Boer, F. (2011). Theory of mind training in children with autism: A randomized controlled trial. *Journal of Autism and Developmental Disorders, 41*(8), 997-1006.

Bellack, A. S., Brown, C. H., & Thomas-Lohrman, S. (2006). Psychometric characteristics of role-play assessments of social skill in schizophrenia. *Behavior Therapy*, *37*(4), 339-352.

Bellini, S. (2004). Social skills deficits and anxiety in high-functioning adolescents with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 19*(2), 78-86.

Bellini, S., Peters, J. K., Benner, L., & Hopf, A. (2007). A meta-analysis of school-based social skills interventions for children with autism spectrum disorders. *Remedial and Special Education*, *28*(3), 153-162.

Berlin, L. J., & Cassidy, J. (1999). Relations among relationships: contribution from attachment theory and research. In J. C. Shaver (Ed.), *Handook of attachment: Theory , research, and clinical applications* (pp. 688-712). New York, NY: Guilford Press.

Bettelheim, B. (1967). *The empty fortress.* New York, NY: Free Press.

Bishop, D., Whitehouse, A. J., Watt, H. J., & Line, E. A. (2008). Autism and diagnostic substitution: Evidence from a study of adults with a history of developmental language disorder. *Developmental Medicine and Child Neurology, 50*(5), 341-345.

Blair, R. J. (2005). Responding to the emotions of others: Dissociating forms of empathy through the study of typical and psychiatric populations. *Consciousness and Cognition*, *14*(4), 698-718.

Blumberg, S. J., Bramlett, M. D., Kogan, M. D., Scheive, L. A., Jones, J. R., & Lu, M. C. (2013). Changes in prevalence of parent-reported autism spectrum disorder in school-aged U.S. children: 2007 to 2011-2012. *National Health Statistics Reports, 65*(Mar), 1-12.

Bolton, P. F., Golding, J., Emond, A., & Steer, C. D. (2012). Autism spectrum disorder and autistic traits in the Avon Longitudinal Study of Parents and Children. *Journal of the American Academy of Child and Adolescent Psychiatry, 51*(3), 249-260.

Bosacki, S., & Astington, J. W. (1999). Theory of mind in preadolescence: Relations between social understanding and social competence. *Social Development, 8*(2), 237-255.

Botroff, V., Bartak, L., Langford, P., Page, M., & Tong, B. (1995). *Social cognitive skills and implications for social skills training in adolescents with autism*. Paper presented at the 1995 Australian Autism Conference, Flinders University, Adelaide, Australia.

Bovee, J. P. (1999). My experience with autism and how it relates to "theory of mind". *Advocate*, *32*(5),18-19.

Bowker, A., D'Angelo, N. M., Hick, R., & Wells, K. (2011). Treatments for autism: Parental choices and perceptions of change. *Journal of Autism and Developmental Disorders, 41*(10), 1371-1382.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualittive Research in Psychology, 3*(2), 77-101.

Braun, J. M., Kalkbrenner, A. E., Calafat, A. M., Yolton, K., Ye, X., & Dietrich, K. N. (2011). Impact of early-life Bisphenol A exposure on behavior and executive function in children. *Pediatrics, 128*(5), 873-882.

Brauser, D. (2013). UK autism rates plateau while U.S. rates continue to climb. *Medscape Medical News*. Retrieved from http://www.medscape.com/viewarticle/813211

Brinton, B., Robinson, L. A., & Fujiki, M. (2004). Description of a program for social language intervention: "If you can have a conversation, you can have a relationship". *Speech & Hearing Services in Schools, 35*(3), 283-290.

Bristol, M. M., & Schopler, E. (1983). Stress and coping families of autistic adolescents. In G. M. E. Schopler (Ed.), *Autism and adolescents and adults* (pp. 251-278). New York, NY: Plenum.

Brobst, J. B., Clopton, J. R., & Hedrick, S. S. (2009). Parenting children with autism spectrum disorders: The couple's relationship. *Focus on Autism and Other Developmental Disabilities, 24*(1), 38-49.

Brown, J., & Murray, D. (2001). Strategies for enhancing play skills for children with autism spectrum disorder. *Training in Mental Retardation and Developmemntal Disabilities, 36*(3), 312-317.

Buhrmester, D. (1990). Intimacy of friendships, interpersonal competence, and adjustment during preadolescence and adolescence. *Child Development, 61*(4), 1101-1111.

Buysse, V. (1993). Friendships of preschoolers with diabilities in community-based child care settings. *Journal of Early Intervention, 17*(4), 380-395.

Caldwell, P. (2006). *Finding you finding me: Using intensive interaction to get in touch with people whose severe learning disabilities are combined with autistic spectrum disorder.* London, UK: Jessica Kingsley.

Camras, L. A. (1986). Judgements of emotion from facial expression and situational context. In C. E. Izard, & P. B. Read (Eds.), *Measuring emotions in infants and children* (pp. 75-89). New York, NY: Cambridge University Press.

Capps, L., Kasari, C., Yirmiya, N., & Sigman, M. (1993). Parental perception of emotional expressiveness in children with autism. *Journal of Consulting and Clinical Psychology, 61*(3), 475-484.

Carter, A. S., Davis, N. O., Klin, A., & Volkmar, F. R. (2005). Social development in autism. In F. R. Volkmar, A. Klin, & D. Cohen (Eds.), *Handbook of autism and pervasive developmental disorders: Vol. 1; Diagnosis, development, neurobiology, and behavior.* Hoboken, NJ: John Wiley & Sons.

Casanova, M. F., Kooten, I. A., Switala, A. E., Engeland, H. v., Heinsen, H., Steinbusch, H. W . . . Schmitz, C. (2006). Minicolumnar abnormalities in autism. *Acta Neuropathologica, 112*(3), 287-303.

Center for Autism and Related Disorders. (2014). What is ABA? *ABA Therapy*. Retrieved from http://www.centerforautism.com/aba-therapy.aspx

Center for Disease Control and Prevention. (2013). *Changes in prevalence of parent-reported autism spectrum disorder in school-aged U.S. children; 2007 to 2011-2012.* Atlanta, GA: U.S. Department of Health and Human Services.

Chakrabarti, S., & Fombonne, E. (2001). Pervasive developmental disorders in pre-school children. *Journal of the American Medical Assosication, 285*(24), 3093-3099.

Charlop, M. H., & Trasowech, J. E. (1991). Increasing autistic children's daily spontaneious speech. *Journal of Applied Behavior Analysis, 24*(4), 747-761.

Charman, T. (2003, January). Why is joint attention a pivotal skill in autism? *The Royal Society, 358*(1430), 315-324. doi:10.1098/rstb.2002.1199

Clark, T. F., Winkielman, P., & McIntosh, D. N. (2008). Autism and the extraction of emotion from briefly presented facial expressions: Stumbling at the first step of empathy. *Emotion, 8*(6), 803-809.

Cohen, D. J., & Volkmar, F. R. (Eds.). (1997). *Handbook of autism and pervasive developmental disorders.* New York, NY: Wiley.

Cohen, D., Klin, A., Paul, R., & Volkmar, F. R. (2005). *Handbook of autism and pervasive developmental disorders.* Hoboken, NJ: John Wiley and Sons, Inc.

Constantino, J. N., Lajonchere, C., Lutz, M., Gray, T., Abbacchi, A., Singh, D., & Todd, R. D. (2006). Autistic social impairment in the siblings of children with pervasive developmental disorders. *The American Journal of Psychiatry, 163*(2), 294-296.

Constantino, J. N., Zhang, Y., Frazier, T., Abbacchi, A. M., & Law, P. (2010). Sibling recurrence and the genetic epidemiology of autism. *The American Journal of Psychiatry, 167*(11), 1349-1356.

Cooke, S. A., Cooke, T. P., & Apolloni, T. (1978). Developing nonretarded toddlers as verbal models for retarded classmates. *Child Study Journal, 8*(1), 1-8.

Cotter, M. W. (1997). *Improving the social behavior of high-functioning children with autism: A social skills support group intervention*. Unpublished doctoral dissertation. University of Alabama, Tuscaloosa, AL.

Croen, L. A., Grether, J. K., & Selvin, S. (2002). Descriptive epidemiology of autism in a California population: Who is at risk? *Journal of Autism and Developmental Disorders*, *32*(3), 217-224.

Cumine, V., Leach, J., & Stevenson, G. (1998). *Asperger syndrome: A practical guide for teachers.* London, UK: David Fulton.

Dai, S., Jia, M., & Tao, K. (2008). *Help autistic children get away from loneliness.* Beijing, China: Chinese Women Press.

Dawson, G., & Watling, R. (2000). Interventions to facilitate auditory, visual, and motor integration in autism: A review of the evidence. *Journal of Autism and Developmental Disorders, 30*(5), 415-421.

Delquadri, J. C., Greenwood, C. R., Stretton, K., & Hall, R. V. (1983). The peer tutoring spelling game: A classroom procedure for increasing opportunity to respond and spelling performance. *Education and Treatment of Children, 6*(3), 225-238.

DeMeyer, M., Hingtgen, J., & Jackson, R. (1981). Infantile autism reviewed: A decade of research. *Schizophrenic Bulletin, 7*(3), 388-451.

DeMeyer, M. K., Pontius, Q., Norton, J. A., Barton, S., Allen, J., & Steelwe, R. (2003). Parental practices and innate activity in normal, autistic and brain-damaged infants. *Journal of Autism and Childhood Schizophrenia, 2*(1), 49-66.

Derry, S. J. (1999). A fish called peer learning: Searching for common sense. In A. M. King (Ed.), *Cognitive Perspectives on Peer Learning* (pp. 197-211). Mahwah, NJ: Lawrence Erlbaum Associates.

DiSalvo, C., & Oswald, D. (2002). Peer-mediated interventions to increase social interaction of children with autism: Consideration of peer expectancies. *Focus on Autism and Other Developmental Disabilities, 17*(4), 198-207.

Do2Learn. (2011). *Do2Learn*. JobTips. Retrieved from http://www.do2learn.com/JobTIPS/Printables/SocialSkillsAssessment-Part1.pdf

Duarte, C. S., Bordin, I. A., Yazigi, L., & Mooney, J. (2005). Factors associated with stress in mothers of children with autism. *Autism, 9*(4), 416-427.

Dugan, E., Kamps, D., Leonard, B., Watkins, N., Rheinberger, A., & Stackhaus, J. (1995). Effects of cooperative learning groups during social studies for students with autism and fourth-grade peers. *Journal of Applied Behavior Analysis, 28*(2), 175-188.

Dziobek, I., Rogers, K., & Fleck, S. (2008). Dissociation of cognitive and emotional empathy in adults with Asperger syndrome using the Multifaceted Empathy Test (MET). *Journal of Autism and Developmental Disorder, 38*(3), 464-473.

Egan, G. J., Brown, R. T., Goonan, L., Goonan, B. T., & Celano, M. (1998). The development of decoding of emotions in children with externalizing behavioral disturbances and their normally developing peers. *Archives of Child Neurology, 13*(4), 383-396.

Ehlers, S., & Gillberg, C. (1993). The epidemiology of Asperger syndrome. *Journal of Child Psychology and Psychiatry, 34*(8), 1327-1350.

Englund, M. M., Levy, A. K., Hyson, D. M., & Sroufe, L. A. (2000). Adolescent social competence: Effectiveness in a group setting. *Child Development, 71*(4), 1049-1060.

Estes, A., Munson, J., Dawson, G., Koehler, E., Zhou, X., & Abbott, R. (2009). Parenting stress and psychological functionging among mothers of preschool children with autism and developmental delay. *Focus on Autism and Other Developmental Disabilities, 13*(4), 375-387.

Feinberg, E., & Vacca, J. (2000). The drama and trauma of creating policies on autism: Critical issues to consider in the new millenium. *Focus on Autism and Other Developmental Disabilities, 15*(3), 130-138.

Feinstein, A. (2010). *A history of autism: Conversations with the pioneers.* Sussex, UK: Wiley-Blackwell.

Feng, H., Lo, Y., Tsai, S., & Cartledge, G. (2008). The effects of theory-of-mind and social skills training on the social competance of a sixth-grade student with autism. *Journal of Positive Behavior Interventions, 10*(4), 228-242.

Fernandes, R. L., Citero, V. A., Nogueira-Martins, L. A., & Mari, J. J. (2013, August). Regional disparities in Brazil: Regional disparities, differences, and similarities in an international context. *International Review of Psychiatry, 25*(4), 386-92.

Fombonne, E. (2001). What is the prevalence of Asperger disorder? *Journal of Autism and Developmental Disorders, 31*(3), 363-364.

Fombonne, E. (2003). Epidemiologic surveys of autism and other pervasive developmental disorders: An update. *Journal of Autism and Developmental Disorders, 33*(4), 365-382.

Frederickson, N. (2002). Evidence-based practice and educational psychology. *Educational and Child Psychology, 19*(3), 96-111.

Freedman, B. H., Kalb, L. G., Zaboltsky, B., & Stuart, E. E. (2012). Relationship status among parents of children with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 42*(4), 539-548.

Freitag, C. M. (2007). The genetics of autistic disorders and its clinical relevance: A review of literature. *Molecular Psychiatry, 12*(1), 2-22.

Frith, J. (1989). A new look at language and communication in autism. *British Journal of Disorders of Communication, 24*(2), 123-150.

Garaigordobil, M. (2009). A comparative analysis of empathy in childhood and adolescence: Gender differences and associated socioemotional variables. *International Journal of Psychology & Psychological Therapy, 9*(2), 217-235.

Garcia-Winner, M. G. (2011). Latest research on social skills interventions. *Autism Support Network.* Retrieved from http://www.autismsupportnetwork.com/news/latest-research-socials-skills-interventions-autism-220392001

Gerber, S., Brice, A., Capone, N., Fujiki, M., & Timler, G. (2012). Language use in social interactions of school-age children with language impairments: An evidence-based systematic review of treatment. *Language, Speech, and Hearing Services in Schools, 43*(2), 235-249.

Gernsbacher, M. A., & Frymiare, J. L. (2005). Does the autistic brain lack core modules? *Journal of Developmental and Learning Disorders, 9*(1), 3-16.

Ghaziuddin, M., & Gerstein, L. (1996). Pedantic speaking style differentiates Asperger syndrome from high-functioning autism. *Journal of Autism and Developmental Disorders*, *26*(6), 585-595.

Gillberg, C. (1991). Clinical and neurobiological aspects of Asperger syndrome in six family studies. In U. Frith (Ed.), *Autism and Asperger syndrome.* Cambridge, UK: Cambridge University Press.

Gillberg, C. (1996). The long-term outcome of childhood empathy disorders. *European Children & Adolescent Psychiatry*, *5*(1), 52-56.

Gillberg, C., & Billstedt, E. (2000). Autism and Asperger syndrome: Coexistence with other clinical disorders. *Acta Psychiatrica Scandinavica, 102*(5), 321-330.

Gillberg, C., & Gillberg, I. C. (1989). Asperger syndrome - some epidemiological considerations: A research note. *Journal of Child Psychology and Psychiatry, 30*(4), 631-638.

Glasberg, B. A. (2000). The development of siblings' understanding of autism spectrum disorders. *Joural of Autism and Developmental Disorders, 30*(2), 143-156.

Goin-Kochel, R. P., Myers, B. J., & Mackintosh, V. H. (2007). Parental reports on the use of treatments and therapies for children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, *1*(3), 195-209.

Golan, O., Baron-Cohen, S., & Hill, J. (2006). The Cambridge Mindreading (CAM) Face-Voice Battery: Testing complex emotion recognition in adults with and without Asperger syndrome. *Journal of Autism and Developmental Disorders, 36*(2), 169-183.

Gottman, J., & Parker, J. (1986). *Conversations of friends: Speculations on affective development (Part I & Part III).* Cambridge, UK: Cambridge University Press.

Gralinski, J. H., & Kopp, C. (1993). Everyday rules for behavior: Mother's requests to young children. *Developmental Psychology, 29*(3), 573-584.

Grandjean, P., & Landrigan, P. J. (2006). Developmental neurotoxicitiy of industrial chemicals. *Lancet, 368*(9553), 2167-2178.

Green, J., Gilchrist, A., Burton, D., & Cox, A. (2000). Social and psychiatric functioning in adolescents with Asperger syndrome compared with conduct disorder. *Journal of Autism and Developmental Disorders, 30*(4), 279-293.

Green, V. A., Pituch, K. A., Itchon, J., Choi, A., O'Reilly, M., & Sigafoos, J. (2006). Internet survey of treatments used by parents of children with autism. *Research in Developmental Disabilities, 27*(1), 194-211.

Greenspan, N. S. (2010, May 3). Autism and the media. *Huffington Post*. Retrieved from http://www.huffingtonpost.com/neil-s-greenspan/autism-and-the-media_b_560906.html

Greenspan, S. (2014, June 30). What is Floortime? *The Greenspan Floortime Approach.* Retrieved from: http://www.stanleygreenspan.com/what-is-floortime/

Greenspan, S., & Weider, S. (2007). *Engaging autism: Using floortime approach to help children relate, communicate and think.* Cambridge, MA: Da Capo Press.

Greenwood, C. R., & Hops, H. H. (1981). Group-oriented contingencies and peer behavior change. In P. S. Strain (Ed.), *The utilization of classroom peers as behavioral change agents* (pp. 327-360). New York, NY: Plenum Press.

Gresham, F. M. (1986). Conceptual issues in the assessment of social competence in children. In P. Strain, M. Guralnick, & H. Walker (Eds.), *Children's social behavior: Development, assessment, and modification* (pp. 143-179). New York, NY: Academic Press.

Gresham, F. M. (1992). Social skills and learning disabilities: Causal, concomitant, or correlational? *School Psychology Review, 21*(3), 348-360.

Gresham, F. M., & Elliot, S. N. (1990). *Social skills rating system.* Circle Pines, MN: American Guidance Service.

Gresham, F. M., Sugai, G., & Horner, R. H. (2001). Interpreting outcomes of social skills training for students with high-incidence disabilities. *Exceptional Children, 67*(3), 331-344.

Grinker, R. R. (2007). Diagnostic criteria for autism through the years. *Unstrange Minds.* Retrieved from: http://www.unstrange.com/dsm1.html

Grossman, K. E., Grossmann, K., & Zimmerman, P. (1999). A wider view of attachment and exploration: Stability and change during years of immaturity. In J. C. Shaver (Ed.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 760-786). New York, NY: Guilford Press.

Guralnick, M. J., Connor, R. T., Hammond, M. A., Gottman, J. M., & Kinnish, K. (1996a). Immediate effects of mainstreamed settings on the social interactions and social integration of preschool children. *American Journal on Mental Retardation, 100*(4), 359-377.

Guralnick, M. J., Connor, R. T., Hammond, M. A., Gottman, J. M., & Kinnish, K. (1996b). The peer relations of preschool children with communication disorders. *Child Development, 67*(2), 471-489.

Guralnick, M. J., Gottman, J. M., & Hammond, M. A. (1996c). Effects of social setting on the friendship formation of young children differing in developmental status. *Journal of Applied Developmental Psychology, 17*(4), 625-651.

Guralnick, M. J., & Groom, J. M. (1988). Friendships of preschool children in mainstreamed playgroups. *Developmental Psychology, 24*(4), 595-604.

Guralnick, M. J., & Weinhouse, F. M. (1984). Peer-related social interactions of developmentally delayed young children: Development and characteristics. *Developmental Psychology, 20*(5), 815-827.

Hall, K. (2001). *Asperger Syndrome, the Universe and Everything.* London, UK: Jessica Kingsley Publishers.

Hall, L. J., & Smith, K. L. (1996). The generalization of social skills by preferred peers with autism. *Journal of Intellectual & Developmental Disability, 21*(4), 313-331.

Happe, F. G. (1994). An advanced test of theory of mind: Understanding of story characters' thougths and feelings by able autistics, mentally handicapped and normal children, and adults. *Journal of Autism and Developmental Disorders, 24*(2), 129-154.

Harari, H., Shamay-Tsoory, S. G., Ravid, M., & Levkovitz, Y. (2010). Double dissocation between cognitive and affective empathy in borderline personality disorder. *Psychiatry Research, 175*(3), 277-279.

Harper, C. B., Symon, J. B., & Frea, W. D. (2008). Recess is time-in: Using peers to improve social skills of children with autism. *Journal of Autism and Developmental Disorders, 38*(5), 815-826.

Hartley, S. L., Barker, E. T., Baker, J. K., Seltzer, M. M., & Greenberg, J. S. (2012). Marital satisfaction and life circumstances of grown children with autism across seven years. *Journal of Family Psychology, 26*(5), 688-697.

Hartley, S. L., Barker, E. T., Seltzer, M. M., Floyd, F., Greenberg, J., Orsmond, G., & Bolt, D. (2010). The relative risk and timing of divorce in families in children with an autism spectrum disorder. *Journal of Family Psychology*, *24*(4), 449-457.

Hauck, M., Fein, D., Waterhouse, L., & Feinstein, C. (1995). Social initiations by autistic children to adults and other children. *Journal of Autism and Developmental Disorders*, *25*(6), 579-595.

Hill, E., & Frith, U. (2004). Understanding autism: Insights from mind and brain. In U. Frith, & E. L. Hill (Eds.), *Autism: Mind and brain* (pp. 1-20). Oxford, England: Oxford Universty Press.

Hoffman, C. D., Sweeney, D. P., Hodge, D., Lopez-Wagner, M. C., & Looney, L. (2009). Parenting stress and closeness: Mothers of typically developing children and mothers of children with autism. *Focus on Autism and Other Developmental Disabilities, 24*(3), 178-187.

Honda, H., Shimizu, Y., & Rutter, M. (2005). No effect of MMR withdrawal on the incidence of autism: A total population study. *The Journal of Child Psychology and Psychiatry, 46*(6), 572-579.

Hoover-Dempsey, K. V., & Sandler, H. M. (1997). Why do parents become involved in their children's education? *Review of Educational Research, 67*(1), 3-42.

Hope, J. (2008, February 5). The research that 'disproves MMR jab link to autism'. *Daily Mail* (p. 4). Retrieved from http://www.dailymail.co.uk/health/article-512348/The-research-disproves-MMR-jab-link-autism.html

Howes, C. (1996). The earliest friendships. In W. M. Bukowski, A. F. Newcomb, & W. W. Hartup (Eds.). *The company they keep: Friendships in childhood and adolescence.* Cambridge, UK: Cambridge Univeristy Press.

Howlin, P. (2000). Outcome in adult life for more able individuals with autism or Asperger syndrome. *Autism, 4*(1), 63-83.

Howlin, P., & Asgharian, A. (1999). The diagnosis of autism and Asperger syndrome; Findings from a survey of 770 families. *Developmental Medicine and Child Neurology, 41*(12), 834-839.

Howlin, P., Goode, S., Hutton, J., & Rutter, M. (2004). Adult outcome for children with autism. *Journal of Child Psychology and Psychiatry, 45*(2), 212-229.

Howlin, P., Mawhood, L., & Rutter, M. (2000). Autism and developmental receptive language disorder- a follow-up comparison in early adult life II: Social behavioral and psychiatric outcomes. *Journal of Child Psychology and Psychiatry, 41*(5), 561-578.

Ickes, W. (1997). *Empathic accuracy.* New York, NY: Guilford Press.

Jackson, C. T., Fein, D., Wolf, J., Jones, G., Hauck, M., Waterhouse, L., & Feinstein, C. (2003). Responses and sustained interactions in children with mental retardation and autism. *Journal of Autism and Developmental Disorders, 33*(2), 115-121.

Jackson, L. (2002). *Freaks, Geeks, and Asperger Syndrome.* London, UK: Jessica Kingsley Publishers.

Jean-Coussens, M., Magill-Evans, J., & Koning, C. (2006). The quality of life of young men with Asperger syndrome: A brief report. *Autism, 10*(4), 511-524.

Johnson, S. A., Filliter, J. H., & Murphy, R. R. (2009). Discrepancies between self- and parent-perceptions of autistic traits and empathy in high functioning children and adolescents on the autism spectrum. *Journal of Autism and Developmental Disorders, 39*(12), 1706-1714.

Jones, A. P., Happe, F. G., Gilbert, F., Burnett, S., & Viding, E. (2010). Feeling, caring, knowing: Different types of empathy deficit in boys with psychopathic tendencies and autism spectrum disorder. *Journal of Child Psychology and Psychiatry, 51*(11), 1188-1197.

Jones, C. D., & Schwartz, I. S. (2009). When asking questions is not enough: An observational study of social communication differences in high functioning children with autism. *The Journal of Autism and Developmental Disorders, 39*(3), 432-443.

Kalyva, E., & Avramidis, E. (2005). Improving communication between children with autism and their peers through the 'Circle of Friends': A small-scale intervention study. *Journal of Applied Research in Intellectual Disabilities, 18*(3), 253-261.

Kamps, D. M., Barbetta, P. M., Leonard, R. B., & Delquadri, J. (1994). Classwide peer tutoring: An integration strategy to improve reading skills and promote peer interaction among students with autism and general education peers. *Journal of Applied Behavioral Analysis, 27*(1), 49-61.

Kamps, D., Leonards, B., Vernon, S., Dugan, E., Delquadri, J., Gershon, B., . . . Folk, L. (1992). Teaching social skills to students with autism to increase peer interactions in an integrated first-grade classroom. *Journal of Applied Behavior Analysis, 25*(2), 2810288.

Kamps, D. M., Potucek, J., Lopez, A., Kravits, T., & Kemmerer, K. (1997). The use of peer networks across multiple settings to improve social interaction for students with autism. *Journal of Behavioral Education*, *7*(3), 335-357.

Kamps, D., Royer, J., Dugan, E., Kravits, T., Gonzalez-Lopez, A., Garcia, J., . . . Kane, L. G. (2002). Peer training to facilitate social interaction for elementary students with autism and their peers. *Exceptional Children, 68*(2), 173-187.

Kanner, L. (1943). Autistic disturbances of affective contact. *Nervous Child*, *2*(1), 217-250.

Karst, J. S., & Vaughan Van Hecke, A. (2012). Parent and family impact of autism spectrum disorders: A review and proposed model for intervention evaluation. *Clinical and Child Family Psychological Review, 15*(3), 247-277.

Kasari, C. (2002). Assessing change in early intervention programs for children with autism. *Journal of Autism and Developmental Disorders*, *32*(5), 447-461.

Kasari, C., & Rotheram-Fuller, E. (2007). Peer relationships of children with autism: Challenges and interventions. In E. Hollander, & E. Anagnostou (Eds.), *Clinical manual for the treatment of autism* (pp. 235-257). Washington, DC: American Psychiatric Publishing, Inc.

Kasari, C., Rotheram-Fuller, E., Locke, J., & Gulsrud, A. (2012). Making the connection: Randomized controlled trial of social skills at school for children with autism spectrum disorders. *The Journal of Child Psychology and Psychiatry, 53*(4), 431-439.

Kim, C. (2015). *Nerdy, Shy, and Socially Inappropriate.* London, UK: Jessica Kinsley Publishers.

Kim, Y. S., Leventhal, B. L., Koh, Y. J., Fombonne, E., Laska, E., Lim, E. C., . . . Grinker, R. R. (2011). Prevalence of autism spectrum disorders in a total population sample. *American Journal of Psychiatry, 168*(9), 904-912.

Klin, A., & Volkmar, R. F. (2003). Asperger syndrome: Diagnosis and external validity. *Child and Adolescent Clinics of North America, 12*(1), 1-13.

Klin, A., Jones, W., Schultz, R., & Volkmar, F. (2003). The enactive mind, or from actions to cognition: Lessons from autism. *The Royal Society, 358*(1430), 345-360.

Knott, F., Dunlop, A., & Mackay, T. (2006). Living with ASD: How do children and thier parents assess their difficulties with social interaction and understanding? *Autism, 10*(6), 609-617.

Koegel, R. L., & Schreibman, L. (1977). Teaching autistic children to respond to simultaneous multiple cues. *Journal of Experimental Child Psychology, 24*(2), 299-311.

Kohler, F. W., Strain, P. S., Hoyson, M, & Jamieson, B. (1997). Merging natualistic teaching and peer-based strategies to address the IEP objectives of preschoolers with autism: An examination of structural and child behavior outcomes. *Focus on Autism and Other Developmental Disabilties, 12*(4), 196-206.

Kolevzon, A. R., Gross, R., & Reichenberg, A. (2007). Prenatal and perinatal risk factors for autism: A review and integration of findings. *Archives of Pediatric and Adolescent Medicine, 161*(4), 326-333.

Koning, C., & Magill-Evans, J. (2001). Social and language skills in adolescent boys with Asperger syndrome. *Autism, 5*(1), 23-36.

Kopp, C. B., Baker, B. L., & Brown, K. W. (1992). Social skills and their correlates: Preschoolers with developmental delays. *American Journal on Mental Retardation, 96*(4), 357-366.

Kopp, S., & Gillberg, C. (2011). The autism spectrum screening questionnairre (ASSQ)-revised: An instrument for better capturing the autism phenotype in girls? *Research in Developmental Disabilities*, *32*(6), 2875-2888. doi:10.1016/j.ridd.2011.05.017

Krasny, L., Williams, B. J., Provencal, S., & Ozonoff, S. (2003). Social skills interventions for the autism spectrum: Essential ingredients and a model curriculum. *Child and Adolescent Psychiatric Clinics of North America, 12*(1), 107-122.

Larson, H. J., Eaton, W. W., Madsen, K. M., Vestergaard, M., Olesen, A. V., & Agerbo, E. (2005). Risk factors for autism: Prenatal factors, parental psychiatric history, and socionomic status. *American Journal of Epidemiolgoy, 161*(10), 916-925.

Laugeson, E. A., Frankel, F., Gantman, A., Dillon, A. R., & Mogil, C. (2012). Evidence-based social skills training for adolescents with autism spectrum disorders: The UCLA PEERS program. *Journal of Autism and Developmental Disorders*, *42*(6), 1025-1036.

Laushey, K., & Heflin, L. J. (2000). Enhancing social skills of kindergarten children with autism through the training of multiple peers as tutors. *Journal of Autism and Developmental Disorders, 33*(3), 183-193.

Lawrence, E. J., Shaw, P., & Baker, D. (2007). Empathy and enduring depersonalization: The role of self-related processes. *Society for Neuroscience, 2*(3-4), 292-306.

Leekam, S., Libby, S., Wing, L., Gould, J., & Gillberg, G. (2000). Comparison of ICD 10 and Gillberg's criteria for Asperger syndrome. *Autism, 4*(1), 11-28.

LeGoff, D. B. (2004). Use of LEGO as a therapeutic medium for improving social competence. *Journal of Autism and Developmental Disorders, 34*(5), 557-571.

LeGoff, D. B., & Sherman, M. (2004). Long-term outcome of social skills intervention based on interactive LEGO play. *Autism, 10*(4), 317-323.

Lewy, A., & Dawson, G. (1992). Social stimulation and joint attention in young autistic children. *Journal of Abnormal Child Psychology, 20*(6), 555-566.

Liber, D. B., Frea, W. D., & Symon, J. G. (2008). Using time-delay to improve social play skills with peers for children with autism. *Journal of Autism and Developmental Disorders, 38*(2), 312-323.

Licciardello, C. C., Harchik, A. E., & Luiselli, J. (2008). Social skills intervention for children with autism during interactive play at a public elementary school. *Education & Treatment of Children, 31*(1), 27-37.

Lichtenstein, P., Carlstrom, E., Rastam, M., Gillberg, C., & Anckarsater, H. (2010). The genetics of autism spectrum disorders and related neuropsychiatric disorders in childhood. *The Journal of American Psychiatry*, *167*(11), 1357-1363.

Lieber, J. (1993). A comparison of social pretend play in young children with and without disabilities. *Early Education and Development, 4*(3), 148-161.

Little, L. (2002). Middle-class mothers' perceptions of peer and sibling victimization among children with Asperger syndrome and non-verbal learning disorders. *Issues in Comprehensive Pediatric Nursing, 25*(1), 43-57.

Little, L., & Clark, R. R. (2006). Wonders and worries of parenting a child with Asperger syndrome and nonverbal learning disorder. *The American Journal of Maternal Child Nursing, 31*(1), 39-44.

Liu, K., Zerubavel, N., & Bearman, P. (2010). Social demographic change and autism. *Demography, 47*(2), 327-343.

Locke, J., Rotheram-Fuller, E., & Kasari, C. (2012). Exploring the social impact of being a typcial peer model for included children with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 42*(9), 1895-1905.

LoGiudice, C., & Johnson, P. F. (2008). *Spotlight on social skills, adolescent: Conversations.* Austin, TX: LinguiSystems.

Lopata, C., Thomeer, M. L., Volkmar, M. A., Nida, R. E., & Lee, G. K. (2008). Effectiveness of a manualized summer social treatment program for high-functioning children with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 38*(5), 890-904.

Lord, C., & Bishop, S. L. (2010). Autism spectrum disorders: Diagnosis, prevalence, and services for children and families. *Society for Research in Child Development, 24*(2), 1-21.

Lord, C., & McGee, J. P. (n.d.). *Educating children with autism.* Washington, DC: National Academy Press.

Lord, C., Rutter, M., DiLavore, P. C., & Risi, S. (2012). *Autism Diagnostic Observation Schedule* (2nd ed.). Torrance, CA: Western Psychological Services.

Lord, C., Wagner, A., Rogers, S., Szatmari, P., Aman, M., Charman, T., . . . Yoder, P. (2005). Challenges in evaluating psychosocial interventions for autistic spectrum disorders. *Journal of Autism and Developmental Disorders, 35*(6), 695-708.

Losh, M., Sullivan, P. F., Trembath, D., & Piven, J. (2008). Current developments in the genetics of autism: From phenome to genome. *The Journal of Neuropathology and Experimental Neurology, 67*(9), 829-837.

Lovaas, I. (1981). *Teaching developmentally disabled children: The me book.* Austin, TX: Pro-Ed.

MacDonald, W. D., Anderson, J., Dube, W. V., Geckeler, A., Green, G., Hocomb, W., . . Sanchez, J. (2006). Behavioral assessment of joint attention: A methodological report. *Research in Developmental Disabilities, 27*(2), 138-150.

Madsen, K. M., & Vestergaard, M. (2004). MMR vaccination and autism: What is the evidence for a causal association? *Drug Safety, 27*(12), 831-840.

Magnee, M. J., De Gelder, B., Van Engeland, H., & Kemner, C. (2007). Facial electromyographic responses to emotional information from faces and voices in individuals with pervasive developmental disorder. *Journal of Child Psychology and Psychiatry, 48*(11), 1122-1130.

Maguire, C. (2013, April 16). Autism on the rise: A global perspective. *Harvard College Global Health Review.* Retrieved from http://www.hcs.harvard.edu/hghr/online/autism-on-the-rise-a-global-perspective/

Mandal, A. (2014, March 31). Autism History. *News Medical Network.* Retrieved from http://www.news-medical.net/health/Autism-History.aspx

Mandell, D. S., Novak, M. M., & Zubritsky, C. D. (2005). Factors associated with age of diagnosis among children with autism spectrum disorders. *Pediatrics, 116*(6), 1480-1486.

Mankoski, R. E., Collins, M., Ndosi, N. K., Mgalla, E. H., Sarwatt, V. V., & Folstein, S. (2006). Etiologies of autism in a case series from Tanzania. *Journal of Autism and Developmental Disorders, 36*(8), 1039-1051.

Marriage, K. J., Gordon, V., & Brand, L. (1995). A social skills group for boys with Asperger's. *Australia and New Zealand Journal of Psychiatry, 29*(1), 58-62.

Masland, M. (2005, February 23). Children in the grip of autism. *NBC News.* Retrieved from http://www.nbcnews.com/id/6901860/ns/health-mental_health/#.U7Grai0o6M8

Matson, J. L., Hattier, M. A., & Williams, L. W. (2012). How does relaxing the algorithm for autism affect the DSM-V prevalence rates? *Journal of Autism and Developmental Disorders, 42*(8), 1549-1556.

Matson, M. L., Mahan, S., & Matson, J. L. (2009). Parent training: A review of methods for children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, *3*(4), 868-875.

Matson, J. L., Matson, M. L., & Rivet, T. T. (2007). Social-skills treatments for children with autism spectrum disorders an overview. *Behavior Modification*, *3*(5), 682-707.

Matson, J. L., & Wilkins, J. (2007). A critical review of assessment targets and methods for social skills excesses and deficits for children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, *1*(1), 28-37.

McCarthy, J. (2009). *Mother warriors: A nation of parents healing autism against all odds.* New York, NY: Plume.

McConnell, S. R. (2002). Interventions to facilitate social interaction for young children with autism. *Journal of Autism and Developmental Disorders, 32*(5), 351-372.

McConnell, S., & Odom, S. (1986). Sociometrics: Peer-referenced measures and the assessment of social competence. In P. Strain, M. Guralnick, & H. Walkers (Eds.), *Children's social behavior: Development, assessment, and modification* (pp. 216-284). Orlando, FL: Academic Press.

McFall, R. M. (1982). A review and reformulation of the concept of social skills. *Behavioral Assessment*, *8*(1), 3-10.

McMahon, M. (1997, December). *Social constructivism and the world wide web: A paradigm for learning*. Australasian Society for Computers in Learning in Tertiary Education Conference. Perth, Australia.

Mesibov, G. V., Shea, V., & Schoper, E. (2007). *The TEACCH approach to autism spectrum disorders.* New York, NY: Springer.

Messer, D. J. (1994). *The development of communication.* New York, NY: Wiley.

Montes, G., & Halterman, J. S. (2007). Psychological functioning and coping among mothers of children with autism: A population-based study. *Pediatrics, 119*(5), 1040-1046.

Morris, B. K. (2008a). Help with autism, Asperger's syndrome & related disorders. *Synapse.* Retrieved from http://www.autism-help.org/autism-incidence-increase.htm

Morris, B. K. (2008b). Refrigerator mothers-discredited cause of autism. *Synapse.* Retrieved from http://www.autism-help.org/points-refrigerator-mothers.htm

Morrison, R., & Blackburn, A. M. (2008). Take the challenge: Building social competency in adolescents with Asperger's syndrome. *TEACHING Exceptional Children Plus, 5*(2), 1-17.

Mundy, P., Sigman, M., & Kasari, C. (1990). A longitudinal study of joint attention and language development in autistic children. *Journal of Autism and Developmental Disorders, 20*(1), 115-128.

Myles, B. S., & Simpson, R. L. (2001). Understanding the hidden curriculum: An essential social skill for children and youth with Asperger syndrome. *Intervention in School and Clinic, 36*(5), 279-286.

Myles, B. S., & Southwick, J. (1999). *Asperger syndrome and difficult moments: Practical solutions for tantrums, rage, and meltdowns.* Shawnee Mission, KS: Autism Asperger Publishing.

National Autism Center. (2009). *National Standards Report.* Randolph, MA: National Autism Center.

The National Autistic Society. (2014). *Dr. Lorna Wing OBE 1928-2014*. The National Autistic Society. Retrieved from http://www.autism.org.uk/news-and-events/news-from-the-nas/dr-wing-obe-1928-2014.aspx

National Research Council. (2001). *Educating children with autism.* Washington, DC: National Academy Press.

Nauert, R. (2012, March 30). Is autism an epidemic? *PsychCentral.* Retrieved from http://psychcentral.com/news/2012/03/30/is-autism-an-epidemic/36729.html

Neggers, Y. (2014). Increasing prevalence, changes in diagnositc criteria, and nutritional risk factors for autism spectrum disorders. *ISRN Nutrition*, *2014*(514026), 1-14. doi:10.1155/2014/514026

New York State Department of Health. (1999). *Clinical practice guidelines: Report of the recommendations on autism and pervasive developmental disorders.* New York, NY: State Department of Health Early Intervention Program. Retrieved from http://www.health.ny.gov/community/infants_children/early_intervention/disorders/autism/ch4_pt2.htm

Newschaffer, C. J. (2006). Investigating diagnostic substitution and autism prevalence trends. *Pediatrics, 117*(4), 1436-1437.

Nyarambi, A., Enwefa, R. L., & Enwefa, S. C. (n.d.). *Research on autism in Africa: Breaking the silence.* Johnson City, TN: East Tennessee State University.

Nygren, G., Cederlund, M., Sandberg, E., Gillstedt, F., Arvidsson, T., Gillberg, I. C., . . . Gillberg, C. (2012). The prevalence of autism spectrum disorders in toddlers: A population study of 2-year-old Swedish children. *Journal of Autism and Developmental Disorders, 42*(7), 1491-1497.

Odom, S. L., Boyd, B., Hall, L. J., & Hume, K. (2010). Evaluation of comprehensive treatment models for individuals with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 40*(4), 425-436.

Odom, S. L., McConell, S. R., McEvoy, M. A., Peterson, C., Ostrosky, M., Chandler, L. K. . . . Favazza, P. D. (1999). Relative effects of interventions supporting the social competence of young children with disabilities. *Topics in Early Childhood Special Education, 19*(2), 75-91.

Odom, S. L., Zercher, C., Li, S., Marquart, J., & Sandall, S. (1998). *Social relationships of preschool children with disabilities in inclusive settings*. Paper presented at the Conference on Research Innovations in Early Intervention. Charleston, SC.

Olsson, M. B., & Hwang, C. P. (2001). Depression in mothers and fathers of children with intellectual disability. *Journal of Intellectual Disability, 45*(6), 535-543.

Ontario Adult Autism Research and Support Network. (2007). *News Bulletin.* Retrieved from http://www.ont-autism.uoguelph.ca/news-20060902.html

Onur, K., & Parsons, C. (2009). Improving classroom learning: The effectiveness of time delay within the TEACCH approach. *International Journal of Special Education, 24*(3), 173-185.

Ornstein, A. C., Pajak, E. F., & Ornstein, S. B. (2011). *Contemporary issues in curriculum* (5th ed.). Boston, MA: Pearson.

Orsmond, G. I., Krauss, M. W., & Seltzer, M. M. (2004). Peer relationships and social and recreational activities among adolescents and adults with autism. *Journal of Autism and Developmental Disorders, 34*(3), 245-256.

Owens-DeSchryver, J. S., Carr, E. G., Cale, S. I., & Blakeley-Smith, A. (2008). Promoting social interactions between students with autism spectrum disorders and their peers in inclusive school settings. *Focus on Autism and Other Developmental Disabilities*, *23*(1), 15-28.

Ozonoff, S., & Miller, J. N. (1995). Teaching theory of mind: A new approach to social skills training for individuals with autism. *Journal of Autism and Developmental Disorders*, *25*(4), 415-433.

Palmer, R. F., Blanchard, S., Jean, C. R., & Mandell, D. S. (2005). School district resources and identification of children with autistic disorder. *American Journal of Public Health*, *95*(1), 125-130.

Parker, I. (2006, September 5). Autism and minicolumns. *A Shade of Grey.* Retrieved from http://www.a-shade-of-grey.blogspot.com/2006/09/autism-and-minicolumns.html

Parker, J., & Asher, S. (1987). Peer relations and later personal adjustment: Are low-accepted children at risk? *Psychological Bulletin*, *102*(3), 357-389.

Pavlov, I. P. (1927). *Conditioned Reflexes.* Oxford, UK: Oxford University Press.

Pearson, C. (2012, March 20). Autism prevalence up? 1 in 50 kids has ASD, parents say. *Huffington Post.* Retrieved from http:www. Huffingtonpost.com/2013/03/20/ autism-prevalence_n_2909533.html

Peeters, T. (1997). *Autism: From theoretical understanding to education intervention.* San Diego, CA: Singular Publishing Group.

Posserud, M., Lundervold, A. J., Lie, S. A., & Gillberg, C. (2010). The prevalence of autism spectrum disorders: Impact of diagnostic instrument and non-response bias. *Social Psychiatry and Psychiatric Epidemiology*, *45*(3), 319-327.

Potter, C. A., & Wittaker, C. A. (2002). Teaching the spontaneous use of semantic relations through multi-pointing to a child with autism and severe learning disabilities. *Child Language Teaching & Therapy*, *13*(2), 177-193.

Prince-Hughes, D. (2004). *Songs of the Gorilla Nation.* New York, NY: Three Rivers Press.

Provencal, S. L. (2003). The efficacy of social skills training program for adolescents with autism spectrum disorders. (Unpublished doctoral dissertation). University of Utah, Salt Lake City, UT.

Rao, P. A., & Beidel, D. C. (2009). The impact of children with high-functioning autism on parental stress, sibling adjustment, and family functioning. *Behavior Modification, 33*(4), 437-451.

Rao, P., Beidel, D., & Murray, M. (2008). Social skills interventions for children with Asperger syndrome or high functioning autism: A reveiw and recommendations. *Journal of Autism and Developmental Disorders, 38*(2), 353-361.

Reichenerg, A., Gross, R., Weiser, M., Bresnahan, J., Silverman, S., & Harlap, A. (2006). Advancing paternal age and autism. *Archives of General Psychiatry, 63*(9), 1026-1032.

Reichow, B., & Volkmar, F. (2010). Social skills interventions for individuals with autism: Evaluation for evidence-based practices within a best evidence synthesis framework. *Journal of Autism and Developmental Disorders, 40*(2), 149-166.

Rice, C. (2007). A public health collaboration for the surveillance of autism spectrum disorders. *Pediatric and Perinatal Epidemiology, 21*(2), 179-190.

Rivers, J. W., & Stoneman, Z. (2003). Sibling relationships when a child has autism: Marital stress and support coping. *Journal of Autism and Developmental Disorders, 33*(4), 383-394.

Robins, D. L., Fein, D., Barton, M. L., & Green, J. A. (2001). The modified checklist for autism in toddlers: An initial study investigating the early detection of autism and pervasive developmental disorder. *Journal of Autism and Developmental Disorders, 31*(2), 131-144.

Rocha, M. L., Schreibman, L., & Stahmer, A. C. (2007). Effectiveness of training parents to teach joint attention in children with autism. *Journal of Early Intervention, 83*(10), 154-172.

Rogers, K., Dziobek, I., Hassenstab, J., Wolf, O. T., & Convit, A. (2007). Who cares? Revisiting empathy in Asperger syndrome. *Journal of Autism and Developmental Disorders, 37*(4), 709-715.

Rogers, S. J., & Vismara, L. A. (2008). Evidence-based comprehensive treatments for early autism. *Journal of Clinical Child & Adolescent Psychology, 37*(1), 8-38.

Roithmayr, M. (2012, April 4). Autism is a national epidemic that needs a national plan. *Huffington Post.* Retrieved from http://www.huffingtonpost.com/mark-roithmayr/autism-statistics_b_1403263.html

Rubin, Z., & Sloman, J. (1984). How parents influence their children's friendships. In M. Lewis (Ed.), *Beyond the dyad* (pp. 223-250). New York, NY: Plenum Press.

Ruble, L., & Robson, D. M. (2007). Individual and environmental determinants of engagement in autism. *Journal of Autism and Developmental Disorders, 37*(8), 1457-1468.

Rutter, M. (2005). Incidence of autism spectrum disorders: Changes over time and their meaning. *American Journal of Psychiatry, 94*(1), 2-15.

Sacks, O. (1995). *An anthropolgist on mars.* Sydney, AU: Picador.

Safran, S. P. (2001). Asperger syndrome: The emerging challenge to special education. *Exceptional Children, 67*(2), 151-160.

Sansosti, F. J., & Powell-Smith, K. A. (2006). Using social stories to improve the social behavior of children with Asperger syndrome. *Journal of Positive Behavior Interventions, 8*(1), 43-57.

Savin-Baden, M., & Major, C. (2013). *Qualitative research: The essential guide to theory and practice.* New York, NY: Routledge.

Scahill, L., & Lord, C. (2004). Subject selection and characterization in clinical trials in children with autism. *CNS Spectrus, 9*(1), 22-32.

Schieve, L. A., Blumberg, S. J., Rice, C., Visser, S. N., & Boyle, C. (2007). The relationship between autism and parenting stress. *Pediatrics, 119*(1), 114-121.

Schieve, L. A., Boulet, S. L., Kogan, M. D., Yeargin-Allsopp, M., Boyle, C. A., Visser, . . . Rice, C. (2011). Parenting aggravation and autism spectrum disorders: 2007 national survey of children's health. *Disability and Health Journal, 4*(3), 143-152.

Schleien, S. J., Mustonen, T., & Rynders, J. E. (1995). Participation of children with autism and nondisabled peers in a cooperatively structured community art program. *Journal of Autism and Developmental Disorders, 25*(4), 397-413.

Schreiber, C. (2010). Social skills interventions for children with high-functioning autism spectrum disorders. *Journal of Positive Behavior Interventions, 13*(1), 49-62.

Schreibman, L., & Ingersoll, B. (2005). Behavioral interventions to promote learning in individuals with autism. In F. Volkmar, R. Paul, R. Klin, & D. Cohen (Eds.), *Handbook of autism and pervasive developmental disorders* (3rd ed.), (pp. 882-896). Hoboken, NJ: John Wiley & Sons, Inc.

Schwenck, C., Mergenthaler, J., Keller, K., Zech, J., Salehi, S., Taurines, R. . . . Freitag, C. M. (2012). Empathy in children with autism and conduct disorder: Group-specific profiles and developmental aspects. *The Journal of Child Psychology and Psychiatry, 53*(6), 651-659.

Seltzer, M., Greenberg, J. S., Floyd, F. J., Pettee, Y., & Hong, J. (2001). Life course impacts of parenting a child with a disability. *American Journal on Mental Retardation, 106*(3), 265.

Seltzer, M. M., Greenberg, J. S., Krauss, M. W., & Hong, J. (1997). Predictors and outcomes of the end of co-resident caregiving in aging families of adults with mental retardation and mental illness. *An Interdisciplinary Journal of Applied Family Studies, 46*(1), 13-22.

Shamay-Tsoory, A. G. (2011). The neural bases for empathy. *Neuroscientist, 17*(1), 18-24.

Shores, R. L. (1987). Overview of research on social interaction: A historical and personal perspective. *Behavioral Disorders, 12*(4), 233-241.

Shotton, G. (1998). A circle of friends approach with socially neglected children. *Educational Psychology in Practice, 14*(1), 22-25.

Siaperas, P., & Beadle-Brown, B. J. (2006). A case study of the use of structured teaching approach in adults with autism in a residential home in Greece. *Autism, 10*(4), 330-343.

Sigman, M. D., Kasari, C., Kwon, J., & Yirmiya, N. (1992). Responses to the negative emotions of others by autistic, mentally retarded, and normal children. *Child Development, 63*(4), 796-807.

Sigman, M., Mundy, P., Sherman, T., & Ungerer, J. (1986). Social interactions of autistic, mentally retarded and normal children and their caregivers. *Journal of Child Psychology and Psychiatry, 27*(5), 647-656.

Skinner, B. F. (1957). The experimental analysis of behavior. *American Scientist, 45*(1), 343-371.

Smith, A. (2008). The empathy imbalance hypothesis of autism: A theoretical approach to cognitive and emotional empathy in autistic development. *The Psychological Record, 59*(1), 489-510.

Smith, L. E., Hong, J., Seltzer, M. M., Greenberg, J. S., Almeida, D. M., & Bishop, S. L. (2010). Daily experiences among mothers of adolescents and adults with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 40*(2), 167-178.

Smith, T., & Eikeseth, S. (2010). O. Ivar Lovaas: Pioneer of applied behavior analysis and intervention for children with autism. *Journal of Autism and Developmental Disorders, 41*(3), 375-378.

Smith, T., Scahill, L., Dawson, G., Guthrie, D., Lord, C., & Wagner, A. (2007). Designing research studies on psychosocial interventions in autism. *Journal of Autism and Develpomental Disorders, 37*(2), 354-366.

Solomon, M., Goodlin-Jones, B. L., & Anders, T. F. (2004). A social adjustment enhancement intervention for high functioning autism, Asperger's syndrome, and pervasive developmental disorders NOS. *Journal of Autism and Developmental Disorders, 34*(6), 649-668.

Spence, S. H. (1995). *Social skills training: Enhancing social competence in children and adolescents.* Windsor, UK: The NFER-NELSON Publishing Company Ltd.

Spence, S. H. (2003). Social skills training with children and young people: Theory, evidence and practice. *Child and Adolescent Mental Health, 8*(2), 84-96.

Spence, S. H., & Donovan, C. (1998). Interpersonal problems. In P. J. Graham (Ed.), *Cognitive behavior therapy for children and families* (pp. 217-245). New York, NY: Cambrdge University Press.

Sponheim, E., & Skjeldal, O. (1998). Autism and related disorders: Epidemiological findings in a Norwegian study using ICD-10 diagnostic criteria. *Journal of Autism and Developmental Disorders, 28*(3), 217-227.

Stichter, J. P., O'Connor, K. V., Herzog, M. J., Lierheimer, K., & McGhee, S. D. (2012). Social competence intervention for elementary students with Asperger's syndrome and high functioning autism. *Journal of Autism and Other Developmental Disorders, 42*(3), 354-366.

Stone, W., & Caro-Martinez, L. (1990). Naturalistic observations of spontaneous communications in autistic children. *Journal of Autism and Developmental Disorders, 20*(4), 437-453.

Stone, W., Lemanek, K., Fishel, P., Fermamdez, M., & Altemeier, W. (1990). Play imitation skills in the diagnosis of autism in young children. *Pediatrics, 86*(2), 267-272.

Strain, P. S., Shores, R. E., & Timm, M. A. (1977). Effects of peer social initiations on the behavior of withdrawn preschool children. *Journal of Applied Behavior Analysis, 10*(2), 289-298.

Sullivan, H. S. (1953). *The interpersonal theory of psychiatry.* New York, NY: W. W. Norton.

Sun, X., Allison, C., Matthews, F. E., Sharp, S. J., Auyeung, B., Baron-Cohen, S., & Brayne, C. (2013). Prevalence of autism in mainland China, Hong Kong, and Taiwan: A systematic review and meta-anaysis. *Molecular Autism, 4*(7), 1-13.

Taba, H. (1962). *Curriculum development: Theory and practice.* New York, NY: Harcourt, Brace & World.

Tantam, D. (2000). Psychological disorders in adolescents and adults with Asperger syndrome. *Autism, 4*(1), 47-62.

Taylor, B., Miller, E., Farrington, C., Petropoulos, M., Favot-Mayoud, I., Li, J., & Wraight, P. (1999). Autism and measles, mumps, and rubella vaccine: No epidemiological evidence for a causal association. *Lancet, 353*(9169), 2026-2029.

Terpstra, J., Higgins, K., & Pierce, T. (2002). Can I play? Classroom-based interventions for teaching play skills to children with autism. *Focus on Autism and Other Developmemtal Disabilities, 17*(2), 119-126.

The Thompson Foundation for Autism, & Division of Developmental Services. (2012). *Autism Spectrum Disorders: Guide to Evidence-Based Interventions.* St. Louis, MO: Missouri Department of Mental Heath.

Travis, L., Sigman, M., & Ruskin, E. (2001). Links between social understanding and social behavior in verbally able children with autism. *Journal of Autism and Developmental Disorders, 31*(2), 119-130.

Tsang, S. K., Shek, D. T., Lam, L. L., Tang, F. L., & Cheung, P. M. (2007). Application of the TEACCH program on Chinese pre-school children with autism: Does culture make a difference? *Journal of Autism and Developmental Disorders, 37*(2), 390-396.

Tse, T., Sturlovitch, J., Tagalakis, V., Meng, L., & Fombonne, E. (2007). Social skills training for adolescents with Asperger syndrome and high-functioning autism. *Journal of Autism and Developmental Disorders, 37*(10), 1960-1968.

Ungerer, J. (1989). The early development of autistic children. In G. Dawson (Ed.), *Autism: Nature, diagnosis, and treatment.* New York, NY: Guildord.

U.S. Department of Education. (2006). *Topic: Individualized education program (IEP).* Office of Special Eduation Programs. Retrieved from http://idea.ed.gov/eplore/view/p/CrootCdynamicCTopicalBrief/C10C

U.S. Department of Education. (2010). *Digest of education statistics, 2009*. National Center for Education Statistics. Retrieved from http://nces.ed.gov/fastfacts/displayas?id=64

U.S. Department of Education. (2012). *Digest of education statistics, 2011*. National Center for Education Statistics. Retrieved from http://nces.ed.gov/fastfacts/display.asp?id=64

U.S. Department of Education. (2015). *Digest of education statistics, 2011*. National Center for Education Statistics. Retrieved from http://nces.ed.gov/pubs2015/2015011_2.pdf

University of North Carolina. (2014). *UNC School of Medicine*. TEACCH Autism Program. Retrieved from: http://teacch.com/about-us/what-is-teacch

Volkmar, F. R. (1987). Social development in autism. In D. Cohen, & A. Donnellman (Eds.), *Handbook of autism and pervasive and developmental disorders.* New York, NY: Wiley.

Volkmar, F. R., Carter, A., Grossman, J., & Klin, A. (1997). Social development in autism. In D. J. Cohen, & F. R. Volkmar (Eds.), *Handbook of autism and developmental disorders* (2nd ed., pp. 173-194). New York, NY: Wiley.

Volkmar, F., Cook, E. H., Pomeroy, J., Realmuto, G., & Tanguay, P. (1999). Practice parameters for the assessment and treatment of children, adolescents, and adults with autism and other pervasive developmental disorders. *Journal of American Academy of Child and Adolescent psychiatry, 38*(12), 32-54.

Volkmar, F. R., & Pauls, D. (2003). Autism. *The Lancet, 362*(9390), 1133-1141.

Wagner, S. (2008, October 23). What is a neurotypical, and why do many in the autism community use this word? *ABC News.* Retrieved from http://abcnews.go.com/Health/AutismLiving/story?id=5929143

Wakefield, A. (1998). RETRACTED: Ileal-lymphoid-nodular, hyperplasia, non-specific colitis, and pervasive developmental disorder in children. *The Lancet, 351*(9103), 637-641.

Walker, H. M., & McConnell, S. (1990). *Walker-McConnell scale of social competence and school adjustment.* Austin, TX: Pro-Ed.

Wan, X., Hu, Q., Li, T., Jiang, L., Du, Y., Feng, L., . . . Li, C. (2013). Prevalence of autism spectrum disorders among children in China: A systematic review. *Shanghai Archives of Psychiatry, 25*(2), 70-80.

Wang, S., & Parrila, R. (2008). Quality indicators for single-case research on social skill interventions for chilren with autistic spectrum disorder. *Developmental Disabilities Bulletin, 36*(1 & 2), 81-105.

Watson, J. B. (1914). *An introduction to comparative psychology.* New York, NY: Henry Hot and Company.

What is the global incidence of autism? (2009, August). *Early Signs of Autism*. Retrieved from http://www.earlysignsofautism.com/what-is-the-global-incidence-of-autism/

Webb, B. J., Miller, S. P., Pierce, T. B., Strawser, S., & Jones, W. P. (2004). Effects of social skill instruction for high-functioning adolescents with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 19*(1), 53-62.

WebMD. (2005). *History of Autism*. Autism Spectrum Disorders Health Center. Retrieved from http://www.webmd.com/brain/autism/history-of-autism

Weiss, R. S. (1974). The provisions of social relationships. In Z. Rubin (Ed.), *Doing unto others.* Englewood, NJ: Prentice Hall.

Werry, J. S., Methven, R. J., Fitzpatrick, J. (1983). The interater reliability of DSM-III in children. *Journal of Abnormal Child Psychology, 11*(3), 341-354.

Wetherby, A., & Prutting, C. (1984). Profiles of communicative and cognitive-social abilities in autistic children. *Journal of Speech and Hearing Research, 27*(3), 364-377.

Whitaker, P., Barratt, P., Joy, H., Potter, M., & Thomas, G. (1998). Children with autism and peer group support: Using circles of friends. *British Journal of Special Education, 25*(2), 60-64.

Willey, L. H. (1999). *Asperger syndrome in the family: Redefining normal.* London, UK: Jessica Kingsley Publishers.

Willey, L. H. (2015). *Pretending to be normal.* London, UK: Jessica Kingsley Publishers.

Williams, D. (1996). *Autism: An inside-out approach.* London, UK: Jessica Kingsley.

Williams-White, S., Koenig, K., & Scahill, L. (2007). Social skills development in children with autism spectrum disorders: A review of the intervention research. *Journal of Autism and Developmental Disabilities, 37*(10), 1858-1868.

Willingham, E. (2013). *Autism prevalence is now at 1 in 50 children*. *Forbes.* Retrieved from http://www.forbes.com/sites/emilywillingham/2013/03/20/autism-prevalence-is-now-at-1-in-50- children/

Wing, L. (1981). Asperger syndrome: A clinical account. *Psychological Medicine, 11*(1), 115-129.

Wing, L. (1990). What is autism? In K. Ellis (Ed.), *Autism: Professional perspectives and practice* (Chap. 1). London, UK: Chapman & Hall.

Wing, L. (2005). Reflections on opening Pandora's box. *Journal of Autism and Developmental Disorders, 35*(2), 197-203.

Wing, L., & Potter, D. (2002). The epidemiology of autistic spectrum disorders: Is the prevalence rising? *Mental Retardation and Developmental Disabilities Reserach Reviews, 8*(3), 151-161.

Winter, M., & Lawrence, C. (2011). *Asperger syndrome: What teachers need to know,* (2nd ed.). London, UK: Jessica Kingsley Publishers.

Wolery, M., & Garfinkle, A. N. (2002). Measures in intervention research with young children who have autism. *Journal of Autism and Developmental Disorders, 32*(5), 463-478.

Wolf, L. C., Noh, S., Fisman, S. N., & Speechley, M. (1989). Psychological effects of parenting stress on parents of autistic children. *Journal of Autism and Developmental Disorders, 19*(1), 157-166.

Woods, A. G., Mahdavi, E., & Ryan, J. P. (2013). Treating clients with Asperger's syndrome and autism. *Child & Adolescent Psychiatry & Mental Health*, *7*(32), 1-8.

Young, R. L., & Posselt, M. (2011). Using the *Transporters* DVD as a learning tool for children with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 42*(6), 984-991.

Youngblade, L. M., & Belsky, J. (1992). Parent-child antecedents of 5-year-old close friendships: A longitudinal analysis. *Developmental Psychology, 28*(4), 700-713.

Zanolli, K., Daggett, J., & Adams, T. (1996). Teaching preschool age autistic children to make spontaneous initiations to peers using priming. *Journal of Autism and Developmental Disorders, 26*(4), 407-422.

Zeglam, A. M., & Al-Bloushi, H. (2011). Autism today in Libya: Is it a tip of an iceberg? (A comparative study). *Medicine and Society, 10*(8), 34-38.

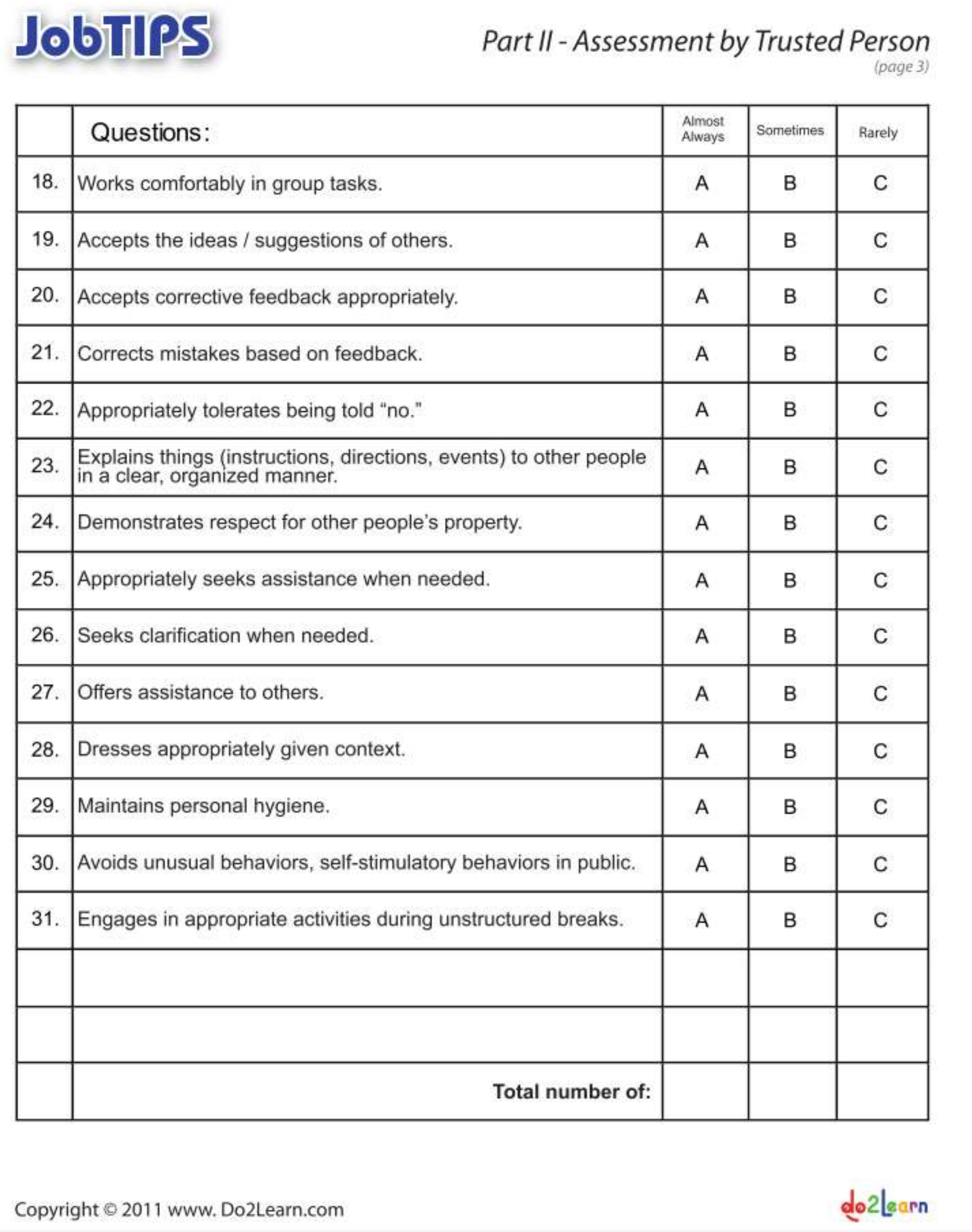
Appendix A

JobTIPS

Part II - Assessment by Trusted Person

(page 2)

	Questions:	Almost Always	Sometimes	Rarely
1.	Responds to questions.	A	B	C
2.	Initiates conversations appropriately.	A	B	C
3.	Joins ongoing conversations appropriately.	A	B	C
4.	Changes conversation topics appropriately.	A	B	C
5.	Speaks clearly.	A	B	C
6.	Displays appropriate body language in conversations.	A	B	C
7.	Maintains appropriate physical distance in conversations.	A	B	C
8.	Demonstrates appropriate “listening” behaviors (i.e. faces speaker, nods head).	A	B	C
9.	Uses greetings.	A	B	C
10.	Uses farewells.	A	B	C
11.	Selects appropriate conversational topics.	A	B	C
12.	Avoids inappropriate conversational topics.	A	B	C
13.	Uses telephone appropriately to give and obtain info.	A	B	C
14.	Expresses frustration appropriately.	A	B	C
15.	Expresses disagreement appropriately.	A	B	C
16.	Acknowledges own errors / mistakes.	A	B	C
17.	Apologizes for mistakes.	A	B	C



JobTIPS

Part II - Assessment by Trusted Person

(page 3)

	Questions:	Almost Always	Sometimes	Rarely
18.	Works comfortably in group tasks.	A	B	C
19.	Accepts the ideas / suggestions of others.	A	B	C
20.	Accepts corrective feedback appropriately.	A	B	C
21.	Corrects mistakes based on feedback.	A	B	C
22.	Appropriately tolerates being told “no.”	A	B	C
23.	Explains things (instructions, directions, events) to other people in a clear, organized manner.	A	B	C
24.	Demonstrates respect for other people’s property.	A	B	C
25.	Appropriately seeks assistance when needed.	A	B	C
26.	Seeks clarification when needed.	A	B	C
27.	Offers assistance to others.	A	B	C
28.	Dresses appropriately given context.	A	B	C
29.	Maintains personal hygiene.	A	B	C
30.	Avoids unusual behaviors, self-stimulatory behaviors in public.	A	B	C
31.	Engages in appropriate activities during unstructured breaks.	A	B	C
	Total number of:			

do2Learn

Appendix B

Cecilia Stoute
To
'parmeley@att.net'
Apr 10
Dear Ms. Parmeley,

Permission is granted for use of the material as outlined in the request below for use in your dissertation only. Permission is granted under the following conditions:

- Material must be reproduced without modification, with the exception of style and format changes
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Sincerely,

Cecilia Stoute
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703-907-8547 Office
703-907-1091 Fax
cstoute@psych.org

Appendix C

Lindenwood University
School of Education
209 S. Kingshighway
St. Charles, Missouri 63301

Informed Consent for Parents to Sign for
Student Participation in Research Activities

An Exploration of the Generalization of Conversational Social Skills for Students with Autism Spectrum Disorder within a Self-Contained Educational Setting

Principal Investigator: Sara Parmeley
Telephone: 618.420.6660 E-mail: slp345@lionmail.lindenwood.edu

Participant ________________________________ Parent Contact info ________________________________

Dear parent,

1. Your child is invited to participate in a research study conducted by Sara Parmeley under the guidance of Dr. Leavitt. The purpose of this research is to teach conversational skills in a small group setting that will generalize to unstructured settings.

2. a) Your child's participation will involve (please initial on each line):

_____ Prior to intervention, each child will be **interviewed** about their friends and desire for friends.

_____ Prior to intervention, each child will be **observed** at recess, looking at their level of interaction.

_____ Prior to intervention, a **social skill pre-test and empathy pre-test** will be filled out for each child.

- Sara will teach conversation skills using the LinguiSystems *Social Skills: Conversations* workbook to address body language, eye gaze, on-topic conversation, and turn-taking, etc. Sara will take data on a rubric, when the students are achieving 80%, the group will move to phase II. Expected timeline Spring 2014.

  Phase II – will add a typical peer (strictly for conversational and not treatment) for each student with ASD. Sara will become the facilitator of the discussion and not an active participant. Expected timeline Spring and Fall 2014.

  Phase III – After Sara preps the typical students on appropriate responses, students with ASD will be given scripts to practice initiations at lunch and recess. Expected timeline Fall 2014 and Spring 2015.

_____ Phase IV – After students achieve 80% progress, the scripts and prompts will be removed and Sara (along with unbiased observers) will **observe** the students initiation skills at lunch and recess.

_____ The conversation game will be conducted twice a week on Mondays and Wednesdays for the 30-minute lunch period in Sara Parmeley's classroom, to ensure that students are not missing any academic time. Their IEP minutes will reflect a change in the time they spend in regular education. This will continue through May 2015. Expected timeline Fall 2014

Four students with ASD and 4 typical peers will be involved in this research.

b) The amount of time involved in your child's participation will be about one school calendar year, beginning in March 2014 and ending in May 2015.

_____ 3. There may be certain risks or discomforts to your child associated with this research. They include: answering questions about friends that may result in sadness, peer rejection, or awareness of their loneliness. This will all be addressed in the small group and student's will be able to speak with staff if they appear to need comfort. Please contact Sara Parmeley or the principal, Mr. Dismukes if you feel your child is regressing or becoming stressed due to the intervention. <u>If you feel your child should NOT be involved in this intervention, please contact Sara or Mr. Disukes immediately, and they will be removed from the study without further delay or consequence</u>.

4. There are no direct benefits for your child's participation in this study. However, your child's participation will contribute to the knowledge about autism spectrum disorder, social skills, and the ability to generalize social skills to and that information may help society. Hopefully, your child will gain social knowledge and acquire friendships during the research.

_____ 5. Your child's participation is voluntary and <u>you may choose not to let your child participate in this research study or to withdraw your consent for your child's participation at any time</u>. Your child may choose not to answer any questions that he or she does not want to answer. You and your child will NOT be penalized in any way should you choose not to let your child participate or to withdraw your child. Please contact Sara Parmeley or Mr. Dismukes if you would like to remove your child from the study.

6. We will do everything we can to protect your child's privacy. As part of this effort, your child's identity will not be revealed in any publication or presentation that may result from this study. All students will be named as "student 1, student 2, etc" in all data, field notes, and writings.

7. If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Sara Parmeley at 618.420.6660 or the Supervising Faculty, Dr. Linda Leavitt at 636.949.4756 You may also ask questions of or state concerns regarding your participation to the Lindenwood Institutional Review Board

(IRB) through contacting Dr. Jann Weitzel, Vice President for Academic Affairs at 636-949-4846.

I have read this consent form and have been given the opportunity to ask questions. I will also be given a copy of this consent form for my records. I consent to my child's participation in the research described above.

Parent's/Guardian's Signature	Date	Parent's/Guardian's Printed Name
Child's Printed Name		
Signature of Investigator	Date	Investigator Printed Name

Revised 1-21-2010

APPENDIX D

Friendship Interview

1. How many friends do you have?

2. How did you get that/those friend(s)?

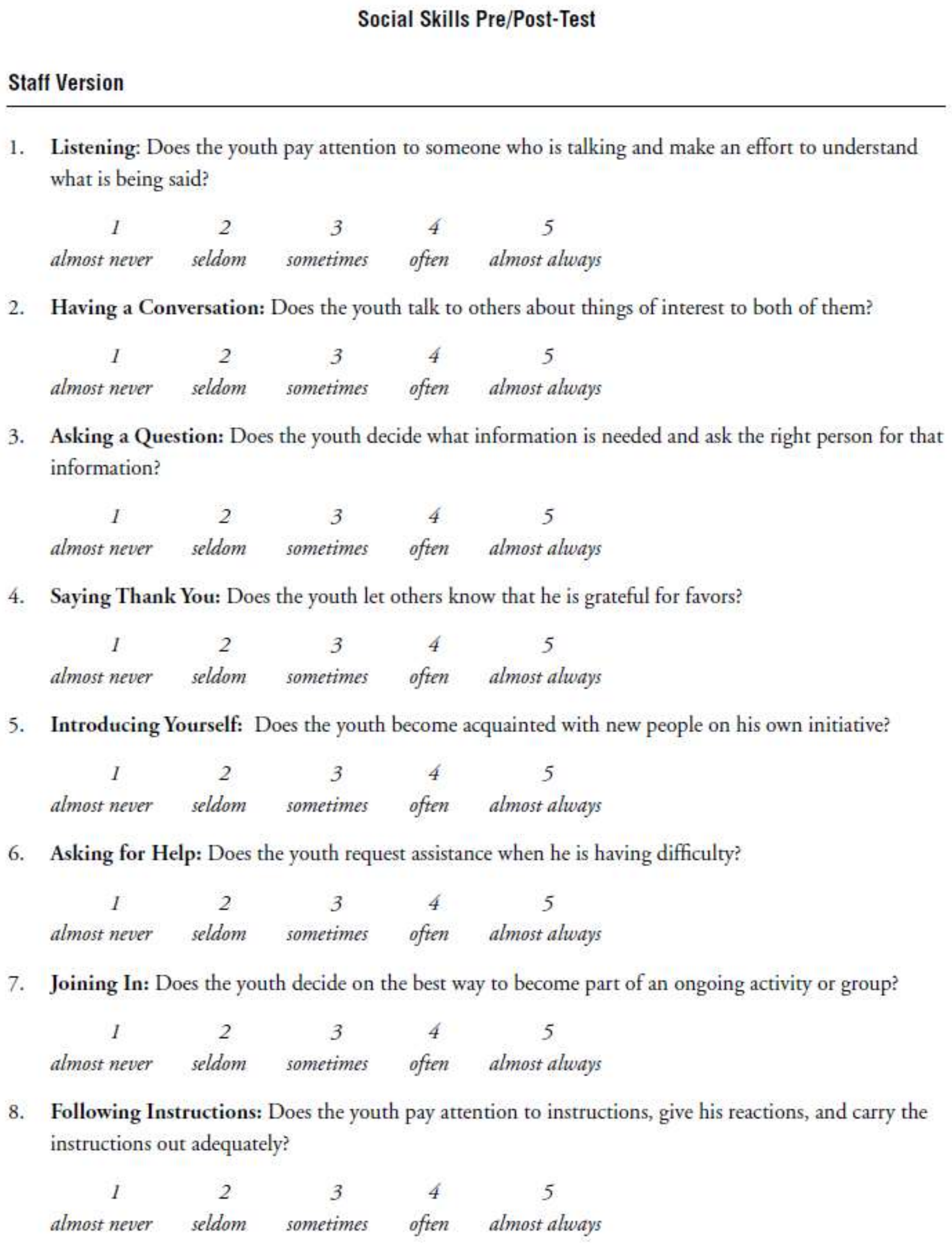
3. Would you like to have **more** friends?

4. Why do you think you don’t have more friends?

5. What do you like to do with your friends?

6. Do you think you’re a good friend?

Appendix E



Social Skills Pre/Post-Test

Staff Version

1. **Listening:** Does the youth pay attention to someone who is talking and make an effort to understand what is being said?

1	*2*	*3*	*4*	*5*
almost never	*seldom*	*sometimes*	*often*	*almost always*

2. **Having a Conversation:** Does the youth talk to others about things of interest to both of them?

1	*2*	*3*	*4*	*5*
almost never	*seldom*	*sometimes*	*often*	*almost always*

3. **Asking a Question:** Does the youth decide what information is needed and ask the right person for that information?

1	*2*	*3*	*4*	*5*
almost never	*seldom*	*sometimes*	*often*	*almost always*

4. **Saying Thank You:** Does the youth let others know that he is grateful for favors?

1	*2*	*3*	*4*	*5*
almost never	*seldom*	*sometimes*	*often*	*almost always*

5. **Introducing Yourself:** Does the youth become acquainted with new people on his own initiative?

1	*2*	*3*	*4*	*5*
almost never	*seldom*	*sometimes*	*often*	*almost always*

6. **Asking for Help:** Does the youth request assistance when he is having difficulty?

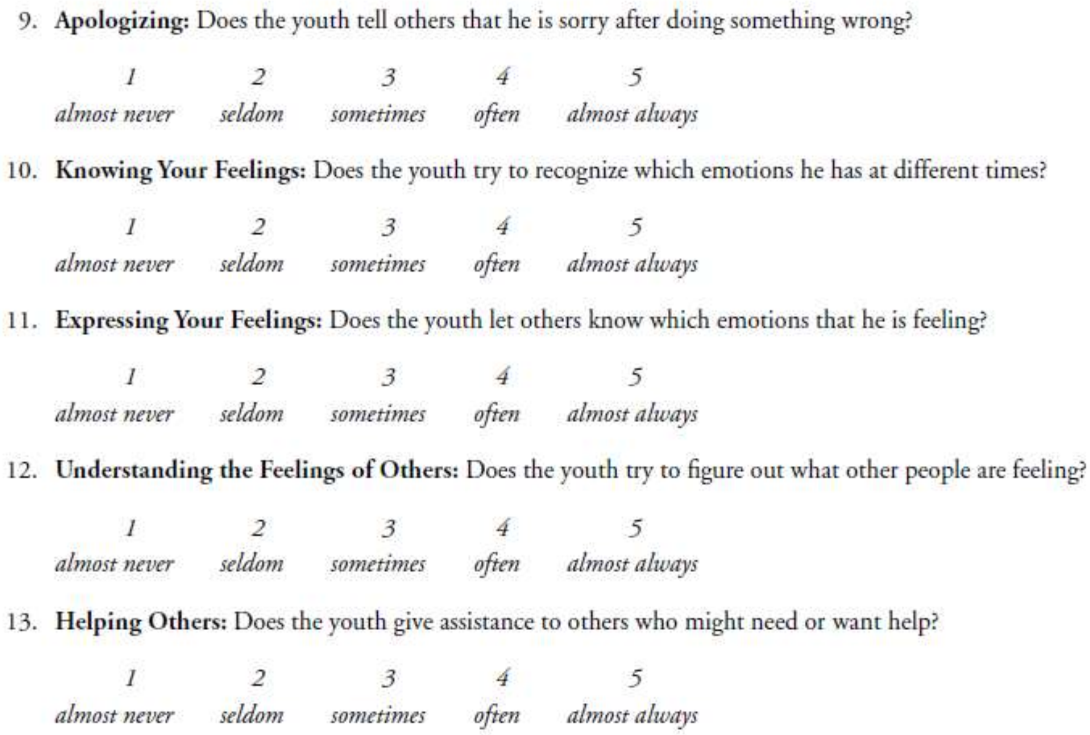
1	*2*	*3*	*4*	*5*
almost never	*seldom*	*sometimes*	*often*	*almost always*

7. **Joining In:** Does the youth decide on the best way to become part of an ongoing activity or group?

1	*2*	*3*	*4*	*5*
almost never	*seldom*	*sometimes*	*often*	*almost always*

8. **Following Instructions:** Does the youth pay attention to instructions, give his reactions, and carry the instructions out adequately?

1	*2*	*3*	*4*	*5*
almost never	*seldom*	*sometimes*	*often*	*almost always*



9. **Apologizing:** Does the youth tell others that he is sorry after doing something wrong?

1	*2*	*3*	*4*	*5*
almost never	*seldom*	*sometimes*	*often*	*almost always*

10. **Knowing Your Feelings:** Does the youth try to recognize which emotions he has at different times?

1	*2*	*3*	*4*	*5*
almost never	*seldom*	*sometimes*	*often*	*almost always*

11. **Expressing Your Feelings:** Does the youth let others know which emotions that he is feeling?

1	*2*	*3*	*4*	*5*
almost never	*seldom*	*sometimes*	*often*	*almost always*

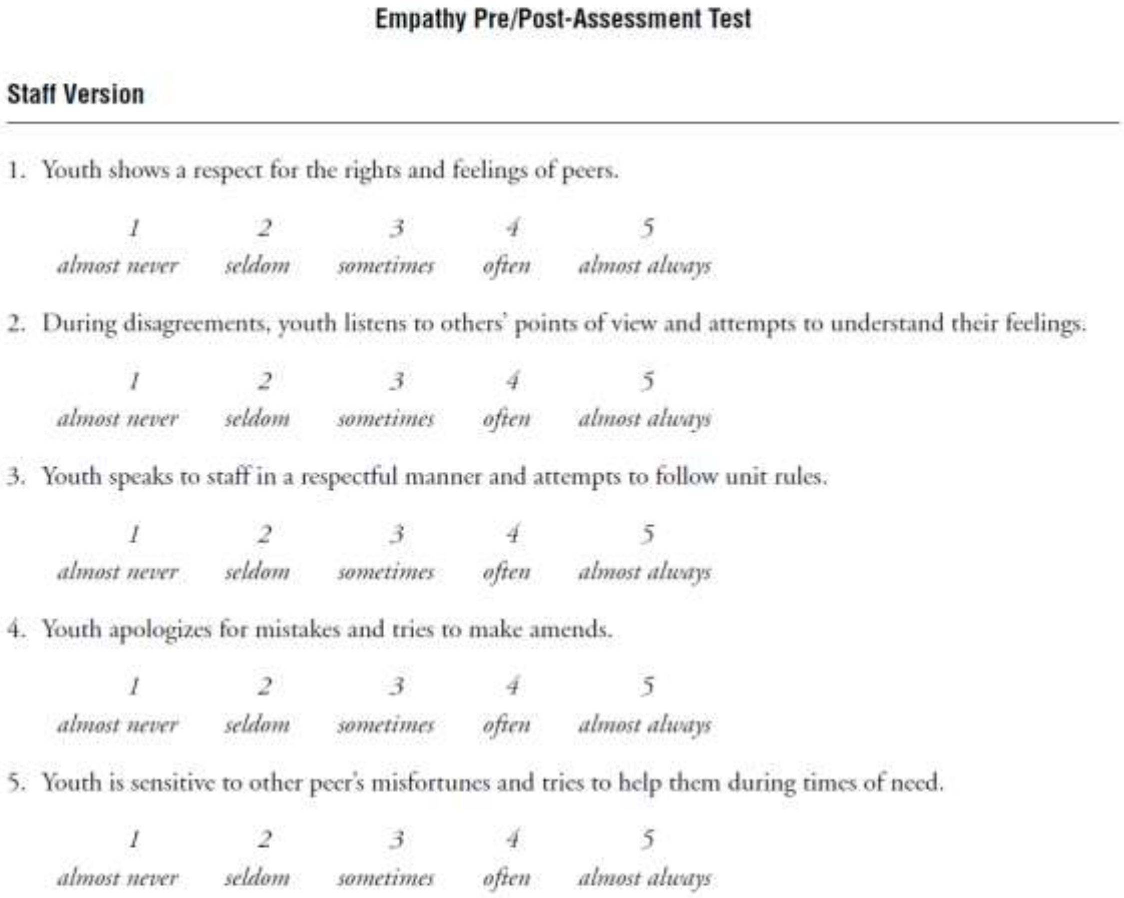
12. **Understanding the Feelings of Others:** Does the youth try to figure out what other people are feeling?

1	*2*	*3*	*4*	*5*
almost never	*seldom*	*sometimes*	*often*	*almost always*

13. **Helping Others:** Does the youth give assistance to others who might need or want help?

1	*2*	*3*	*4*	*5*
almost never	*seldom*	*sometimes*	*often*	*almost always*

Appendix F



Empathy Pre/Post-Assessment Test

Staff Version

1. Youth shows a respect for the rights and feelings of peers.

1	*2*	*3*	*4*	*5*
almost never	*seldom*	*sometimes*	*often*	*almost always*

2. During disagreements, youth listens to others' points of view and attempts to understand their feelings.

1	*2*	*3*	*4*	*5*
almost never	*seldom*	*sometimes*	*often*	*almost always*

3. Youth speaks to staff in a respectful manner and attempts to follow unit rules.

1	*2*	*3*	*4*	*5*
almost never	*seldom*	*sometimes*	*often*	*almost always*

4. Youth apologizes for mistakes and tries to make amends.

1	*2*	*3*	*4*	*5*
almost never	*seldom*	*sometimes*	*often*	*almost always*

5. Youth is sensitive to other peer's misfortunes and tries to help them during times of need.

1	*2*	*3*	*4*	*5*
almost never	*seldom*	*sometimes*	*often*	*almost always*

Appendix G

Parent's Interview: #____

1. Does your child ever have friends over or spend time at another friend's house?

2. Does your child enjoy playing with other children and get along with other children?

3. When you're around other children, describe your child's behavior:

4. On a scale of 1-10, 1 being very little and 10 being almost all the time, how much assistance do you provide to your child to initiate play, greetings, responses, etc.?
   1 2 3 4 5 6 7 8 9 10
   Explain:

5. How important to you think appropriate conversation skills are for your child?

6. How willing are you to address conversation skills at home?

Appendix H

Parent Survey: # _____

1. Did you notice a change in your child's ability to participate in conversations appropriately? Please explain.

   ____
   ____
   ____
   ____

2. Regarding the conversation homework that you completed, how do you feel it impacted your child's conversation skills?

   ____
   ____
   ____
   ____

3. Have you seen a decrease in your child's interfering behaviors (behaviors that negatively impact the ability to have a conversation)? Please explain.

   ____
   ____
   ____
   ____

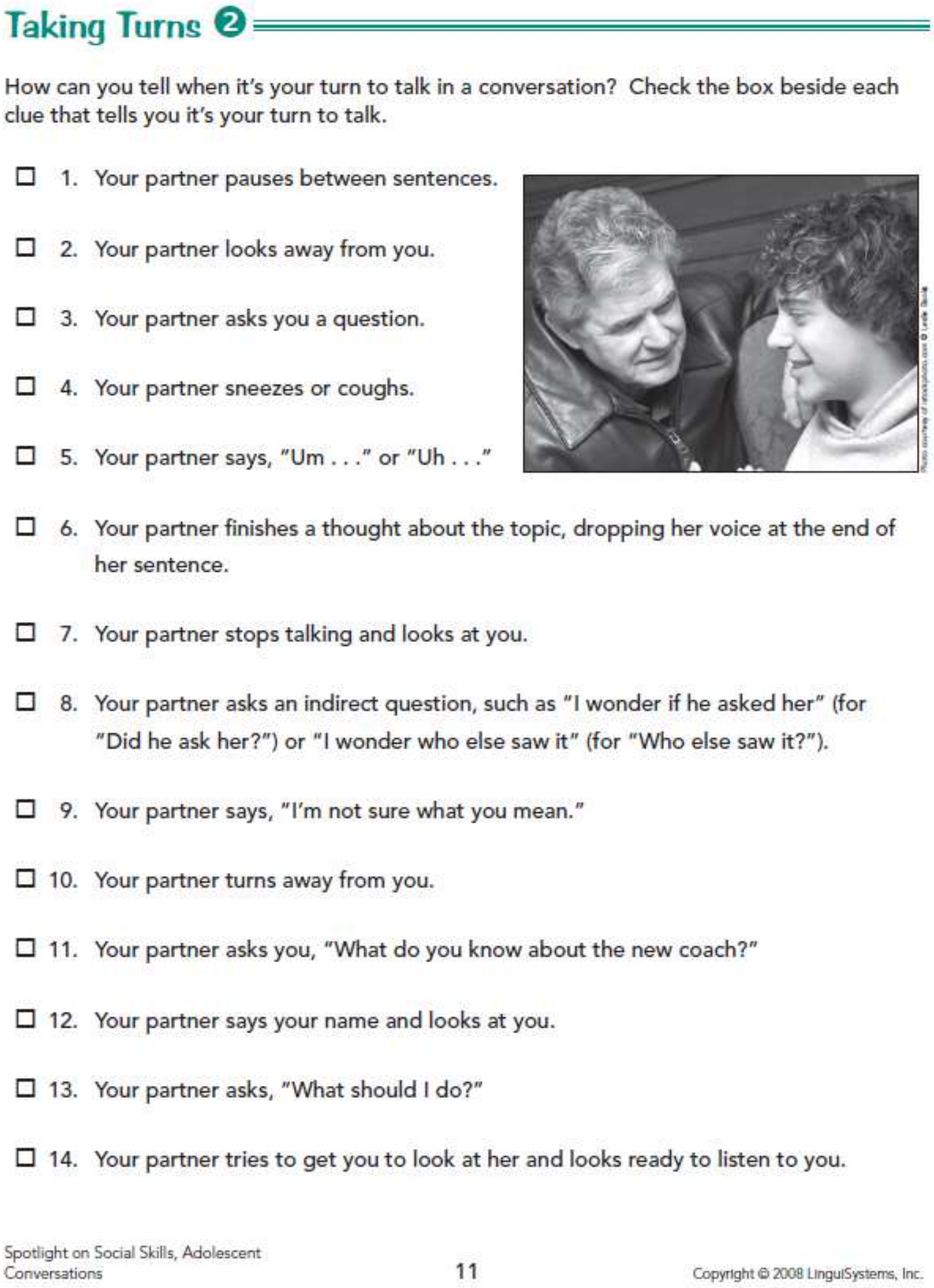
4. Has your child participated in more frequent appropriate conversations in other places than your home? Please explain.

   ____
   ____
   ____
   ____

5. Do you think these conversation lessons have been a positive experience for your child? Please explain.

   ____
   ____
   ____
   ____

Appendix I



Taking Turns ②

How can you tell when it's your turn to talk in a conversation? Check the box beside each clue that tells you it's your turn to talk.

☐ 1. Your partner pauses between sentences.

☐ 2. Your partner looks away from you.

☐ 3. Your partner asks you a question.

☐ 4. Your partner sneezes or coughs.

☐ 5. Your partner says, "Um . . ." or "Uh . . ."

☐ 6. Your partner finishes a thought about the topic, dropping her voice at the end of her sentence.

☐ 7. Your partner stops talking and looks at you.

☐ 8. Your partner asks an indirect question, such as "I wonder if he asked her" (for "Did he ask her?") or "I wonder who else saw it" (for "Who else saw it?").

☐ 9. Your partner says, "I'm not sure what you mean."

☐ 10. Your partner turns away from you.

☐ 11. Your partner asks you, "What do you know about the new coach?"

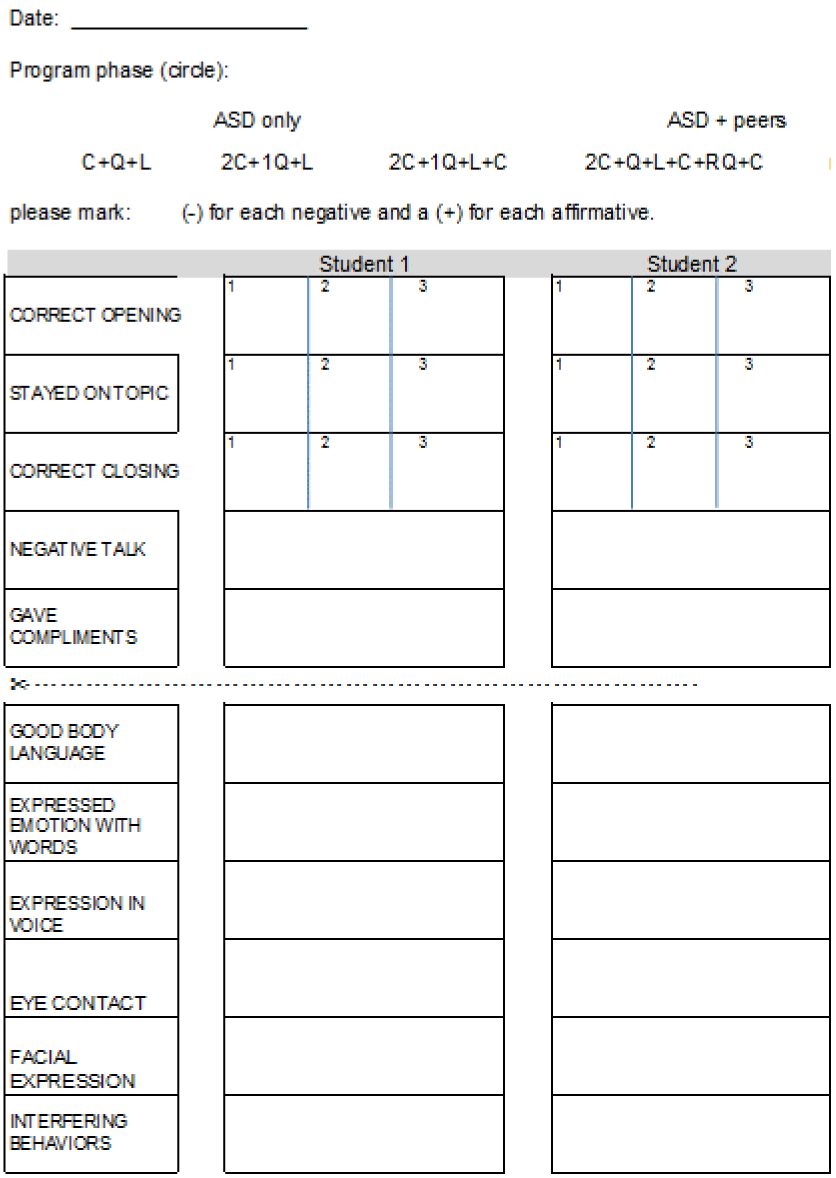
☐ 12. Your partner says your name and looks at you.

☐ 13. Your partner asks, "What should I do?"

☐ 14. Your partner tries to get you to look at her and looks ready to listen to you.

Spotlight on Social Skills, Adolescent Conversations 11 Copyright © 2008 LinguiSystems, Inc.

Appendix J



Date: ____________________

Program phase (circle):

	ASD only		ASD + peers
C+Q+L	2C+1Q+L	2C+1Q+L+C	2C+Q+L+C+RQ+C

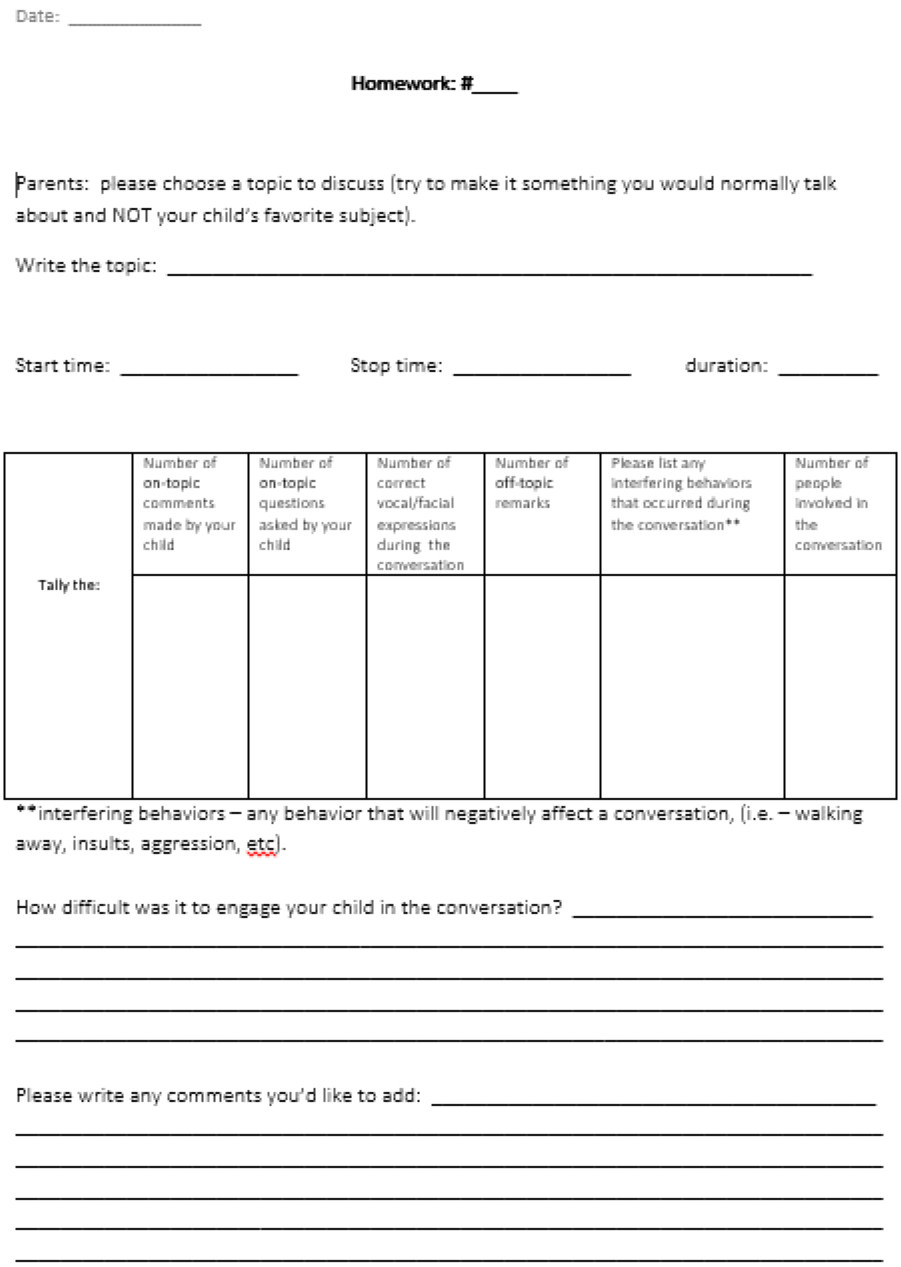
please mark: (-) for each negative and a (+) for each affirmative.

	Student 1			Student 2		
CORRECT OPENING	1	2	3	1	2	3
STAYED ON TOPIC	1	2	3	1	2	3
CORRECT CLOSING	1	2	3	1	2	3
NEGATIVE TALK						
GAVE COMPLIMENTS						

✂ --

	Student 1	Student 2
GOOD BODY LANGUAGE		
EXPRESSED EMOTION WITH WORDS		
EXPRESSION IN VOICE		
EYE CONTACT		
FACIAL EXPRESSION		
INTERFERING BEHAVIORS		

Appendix K



Date: ____________

Homework: #____

Parents: please choose a topic to discuss (try to make it something you would normally talk about and NOT your child's favorite subject).

Write the topic: ____

Start time: ______________ Stop time: ______________ duration: ________

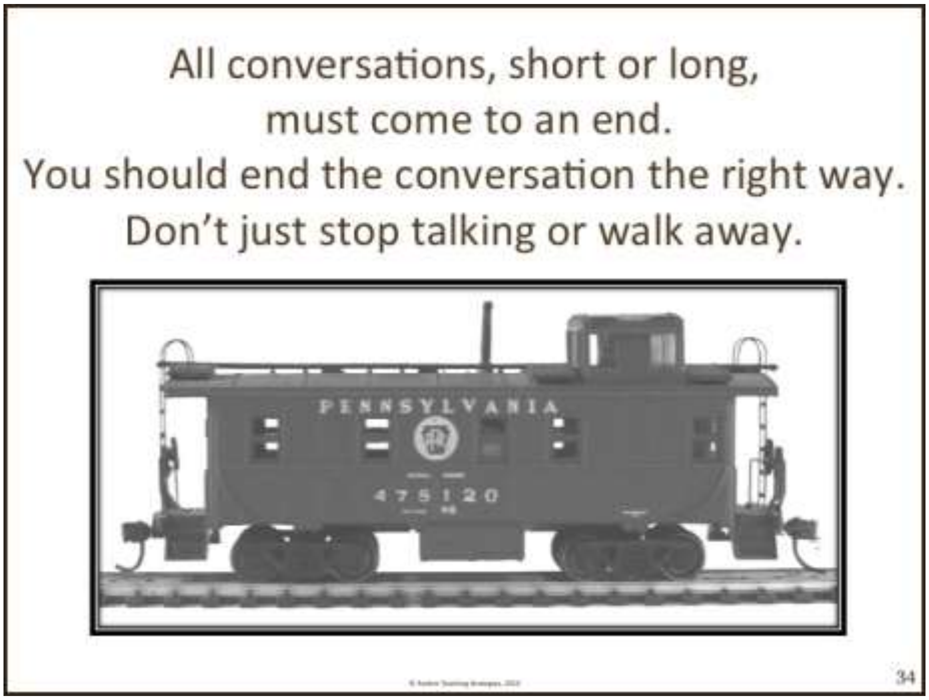
Tally the:	Number of on-topic comments made by your child	Number of on-topic questions asked by your child	Number of correct vocal/facial expressions during the conversation	Number of off-topic remarks	Please list any interfering behaviors that occurred during the conversation**	Number of people involved in the conversation

**interfering behaviors – any behavior that will negatively affect a conversation, (i.e. – walking away, insults, aggression, etc).

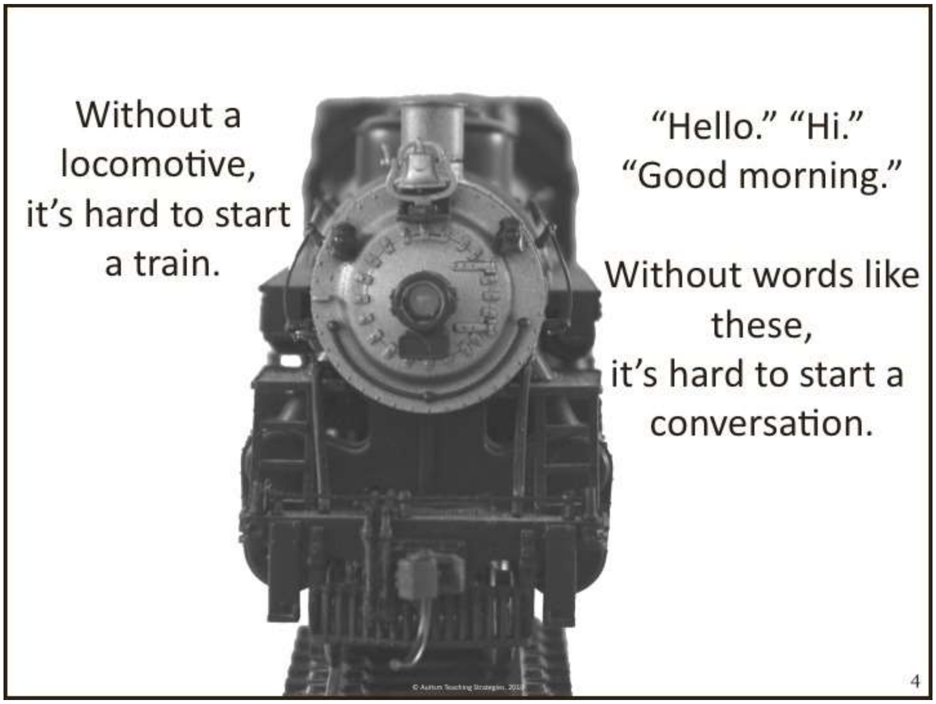
How difficult was it to engage your child in the conversation? ________________________
____
____
____
____

Please write any comments you'd like to add: ___________________________________
____
____
____
____
____

Appendix L



All conversations, short or long,
must come to an end.
You should end the conversation the right way.
Don't just stop talking or walk away.



Without a
locomotive,
it's hard to start
a train.

"Hello." "Hi."
"Good morning."

Without words like
these,
it's hard to start a
conversation.

Appendix M

OFF track

"Hi."

"Hello."

"How are you?"

"Fine, thanks."

"So, how do you like that snow we've been getting?"

"Great! We had a snowball fight last night!"

"I heard it might snow again."

"I got a new Pokemon card!"

Appendix N

Lindenwood University

School of Education

209 S. Kingshighway
St. Charles, Missouri 63301

Informed Consent for Parents to Sign for

Student Participation in Research Activities

An Exploration of the Generalization of Conversational Social Skills for Students with Autism Spectrum Disorder within a Self-Contained Educational Setting

Principal Investigator: Sara Parmeley

Telephone: 618.420.6660 E-mail: slp345@lionmail.lindenwood.edu

Participant________________________________ Parent Contact info
____

Dear parent,

1. Your child is invited to participate in a research study conducted by Sara Parmeley under the guidance of Dr. Leavitt. The purpose of this research is to teach conversational skills in a small group setting that will generalize to unstructured settings.

2. a) Your child's participation will involve:

    - Eating lunch in Sara Parmley's classroom one day a week (Tuesday or Thursday)

3. For participating in the study, your child will receive a $10.00 gift card to GameStop. Your child's participation will also contribute to the knowledge about autism spectrum disorder, social skills, and the ability to generalize social skills to and that information may help society.

4. Your child's participation is voluntary and you may choose not to let your child participate in this research study or to withdraw your consent for your child's

participation at any time. Your child may choose not to answer any questions that he or she does not want to answer. You and your child will NOT be penalized in any way should you choose not to let your child participate or to withdraw your child.

5. We will do everything we can to protect your child's privacy. Your child will NOT be discussed in the dissertation write-up and no names will be mentioned.

7. If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Sara Parmeley at 618.420.6660 or the Supervising Faculty, Dr. Linda Leavitt at 636.949.4756 You may also ask questions of or state concerns regarding your participation to the Lindenwood Institutional Review Board (IRB) through contacting Dr. Jann Weitzel, Vice President for Academic Affairs at 636-949-4846.

I have read this consent form and have been given the opportunity to ask questions. I will also be given a copy of this consent form for my records. I consent to my child's participation in the research described above.

Parent's/Guardian's Signature Date

Parent's/Guardian's Printed Name

Child's Printed Name

Signature of Investigator Date

Investigator Printed Name

Appendix O

Observation Scoring Rubric					Date: _____________
					Observer: _____________________
Student	1	2	3	4	

Number of initiations	Tally		Comments:									
Number of responses to peer initiations	Tally		Comments:									
Duration of interactions			Comments:									
Quality of interaction with **typical** or **ASD** peer	Playing with others, on-topic/task, fully engaged.		Semi-involved in play, but not fully engaged.		Partially engaged, though is in and out of game or conversation.		Trying to engage others, but unsuccessful in attempts.		Parallel play, proximity to others, but no engagement.		Keeping distance from others and playing alone.	
	Typical	ASD	Typical	ASD	Typical	ASD	Typical	ASD	Typical	ASD	Typical	ASD
Interfering behaviors	Comments:											

Vitae

At the time of this study, Sara was a self-contained teacher for students with autism for 14 years in the Metropolitan St. Louis Area. She has taught students kindergarten through sixth grade with multiple disabilities that required the structured environment that a self-contained setting could provide. Sara earned her undergraduate degree in special education at Illinois State University in Normal, Illinois, as a University Honors Scholar. She was knowledgeable in the varying severity of autism spectrum disorder and has taught all levels of students. She earned her Master of Arts degree in education from Lindenwood University in Belleville, Illinois and a Master of Science degree in geography from Southern Illinois University in Edwardsville, Illinois. Sara taught geography at a Metropolitan junior college for ten year and in the future hopes to teach special education courses, specifically autism courses, at the university level.