

Running Head: SOCIAL BEHAVIOR IN SIBLINGS

Siblings of Children with Autism:  
Social Behavior in Early Childhood  
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## DEDICATION

I would like to dedicate this dissertation to the siblings and families of children with autism. It is without question that the trials and tribulations that you face each day are challenging. Your participation in this project is appreciated and will hopefully lead to extended research in the field.

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### Abstract

Sibling relationships have been shown to impact the development of young children, specifically in the areas of social skills and behavior. Previous research has provided mixed results in regard to having a sibling with autism and its impact on social and behavioral development. Participants were included in the current study, based on meeting the criteria of being between the ages of 2 and 6, and having an older sibling with a diagnosis of autism or no diagnosis at all 1 to 5 years older. The children were then split into 2 groups of 14 children each, based on the siblings' diagnoses. Parents were asked to complete a demographic questionnaire and teachers were asked to complete the Social Skills Improvement Scale (SSIS). Formal observations were also conducted in each of the participants' classrooms to assess peer and teacher interactions. Results from the teacher's ratings determined significant findings, indicating that teachers rate their students who have an older sibling with autism as displaying less prosocial and more problematic behavior than siblings of children without any identified disabilities. Results from the formal observations indicated significance for peer interactions, but not for teacher interactions. The overall findings of this study will support researchers in further investigating this topic and addressing how to support siblings of children with autism in developing appropriate social skills and behavior.

## CHAPTER 1:

### **Siblings of Children with Autism: Early Childhood and Behavior**

Growing awareness of Autism spectrum disorder has led to increasing interest in the effects the disorder may have on the siblings of children with this diagnosis. Sibling relationships, in general, have been shown to affect psychological and social development in young children (Moser, Jones, Zaorski, Mirsalmi, & Luchner, 2005; Pike, Coldwell, & Dunn 2005). Specifically within the autistic population, areas such as social skills have been found to be affected, based on the sibling relationship (Rodrigue & Geffken, 1993). Unfortunately, the results of this research have been inconsistent (Hastings, 2003). It is unclear whether or not the autistic sibling relationship differs from other sibling relationships between typically developing children (Kaminsk & Dewey, 2002; Pilowsky, Yirmiya, Shalev, & Gross-Tsur, 2003). Previous research in this area has focused on school-aged siblings and there has been a lack of focus on the preschool-aged population. Because social interactions increase in complexity during the preschool years, it is necessary to make this the next step in the research (Pike et al., 2005).

The current study is an analysis of social interactions within the classroom for preschool-aged children who have an older sibling diagnosed with Autism spectrum disorder. More specifically, and for the purpose of this research, the term Autism spectrum disorder will encompass children with a diagnosis of Autism, pervasive developmental disorder- not otherwise specified (PDD-NOS), and Asperger's syndrome. Autism includes various levels of severity, and it is beneficial to understand the impact that each level has on the child's behavior. That behavior, in turn, may impact their

sibling without a disability. The social skills of these children have been compared with other children who have a sibling with no known disorders. Findings from this comparison will allow researchers to have a more concrete understanding as to whether or not aggressive or prosocial skills are impacted through sibling relationships during early childhood. Future research can then focus on preschool programming with this information taken into account.

### **Social Interactions**

Social interactions begin to develop early in a child's life. It is during the early childhood years (between the ages of two and six) that these interactions become very complex (Pike et al., 2005), as there are specific behaviors that influence how social interaction is approached and performed. DeMulder, Denham, Schmidt, and Mitchell (2000) explained social interactions during the early childhood years as follows: "A major developmental task of this period is to manage emotional arousal within social interaction while successfully moving into the world of peers" (p. 274). This is the first time that children begin to understand the meaning of feelings and are able to empathize with others. They are introduced to such constructs as peer popularity, social competence, aggressiveness, and anxiety. Previously, they were accustomed to the idea that they were the center of the universe. During the early childhood years, children begin to recognize the presence of others in their world (Pike, et al., 2005). At this point in their lives, children often begin to absorb the behaviors of others and make them their own. For example, this type of behavior is often seen after a child watches their favorite television show. They will attempt to imitate the behaviors that the actors display and

include them throughout their day. More specifically, they learn what behaviors seem to be accepted by society and include them into their own personality. Because this is such a critical component in how behavior is developed, research has focused directly on how the influence of others can impact an individual.

**Social learning theory.** Social learning research suggests that it is a combination of environmental and psychological factors that influence behavior (Berry, 2003; Ward & Gryczynski, 2009). Albert Bandura's social learning theory outlines three requirements for people to learn and model behavior. They include attention/retention (remembering what one observed), reproduction (ability to reproduce the behavior), and motivation (good reason) to want to adopt the behavior (Bandura, 1977). Bandura continues to utilize the principles of social learning theory in his more current research. He has expanded these ideas to concepts such as social cognitive theory and self-efficacy (Bandura, 1989; Bandura 1997).

Bandura defined self-efficacy as having the belief in our ability to succeed in specific situations. Self-efficacy contributes to how one might approach goals, tasks, and challenges. The concept of self-efficacy is a major element of Bandura's social cognitive theory. This theory emphasizes the role of observational learning and social experience in the development of personality. According to social cognitive theory, people with high self-efficacy (those who believe they can perform well) are more likely to view difficult tasks as something to be mastered rather than something to be avoided (Bandura, 1977). Bandura clearly explains how social learning theory is incorporated into the lives and behavior of all people in the following quote:

Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do.

Fortunately, most human behavior is learned observationally through modeling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action (Bandura, 1977, p. 22)

Supporters of this theory feel that children all act uniformly until they are exposed to outside factors that introduce them to new elements of behavior. Keenan and Shaw (1997), for instance, argued that gender differences emerge because socializing agents, such as parents, selectively encourage traditional sex-typed behaviors (e.g., shyness, fearfulness, and withdrawal in girls) and/or discourage non-sex-typed behaviors (e.g., aggressive behavior in girls). Other advocates of a social learning approach generally argue that gender differences do not exist early in life, but only emerge later during the preschool period, at a time when gender-differentiated socialization pressures are believed to be well established (Baillargeon et al., 2007). This is another example of the environment having an impact on behavior. When considering sibling relationships, the social learning theory would support the possibility of children learning certain behaviors from interactions at home and then carrying them out into other social environments. For example, a child who observes a sibling acting out aggressively at home and then being reinforced for that behavior, could think that the behavior was acceptable and transfer it to another setting.

In contrast, those in favor of a biological origin of behavioral development argue that gender differences in aggressive behavior are presented very early on in life before gender-differentiated socialization pressures could cause them. Research done by Maccoby and Jacklin (1974), for instance, found that boys and girls differ in their degree of preparedness toward aggression. They determined that boys are more inclined than girls to respond in aggressive ways to their environment. Similarly, Brennan, Hall, and Bor (2003) found that the processes that are related to persistent aggressive behavior patterns in boys and girls are somewhat different. They determined that boys act out aggressively early in life, prior to being exposed to social influences, whereas girls are more likely to have a delay in their aggressive tendencies until something in their social environment triggers them. Other factors may also be responsible for these gender differences early on in life; such as prenatal exposure to androgens, as well as pregnancy, labor, and delivery complications (Raine, 2002). No matter what a child's predisposition might be, an understanding of the development of behavior should be sought out in order to provide him or her with the appropriate tools necessary for being successful early in life.

**Aggressive versus prosocial behavior.** The type of social interactions that a child is exposed to can at times influence whether or not they display positive or negative behavior in the future. This concept of an individual's behaviors being shaped by patterns of social interactions previously observed has been described as transformational tendencies (VanLange et al., 1997). For example, repeated exposure to those who pursue self-interest activities may lead people to develop a more individualistic or competitive

orientation, rather than a prosocial orientation. In contrast, a child who observes his or her parents giving to others would be likely to display prosocial behavior in the future. Because these orientations are influenced by outside factors, it is possible for some tendencies to change, depending on life experiences (VanLange et al., 1997).

More specifically, VanLange et al.'s (1997) study examined two hypotheses in relation to this topic. The two mentioned were: "(a) the hypothesis that the percentage of prosocials increases with age, whereas the percentage of individualists and competitors decreases with age (i.e., prosocial-growth hypothesis) and (b) the hypothesis that the percentage of prosocials decreases with age, whereas the percentage of individualists and competitors increases with age (i.e., proself-growth hypothesis)." To do this, 728 participants were asked to complete questionnaires and a set of biographical questions to assess age, gender, and level of education. A series of six decomposed games were also administered to assess participants' social value orientations. These games allowed the researchers to determine which participants were prosocial, individualistic, and competitive. It was determined that the number of prosocial people in their sample increased with age, indicating that the more exposure to social experiences a person endures, the more likely he or she is to possess that characteristic.

Two factors associated with interactions between children are prosocial and aggressive behaviors. These factors are separate and can occur independently or it is possible that they co-exist with one another. The behaviors should be identified and analyzed as early as possible in order to determine whether or not a child needs intervention for his or her social skills. When analyzing children's poor behavior in

social settings, Beach and Laird (1968) determined that the development of social skill programming intended specifically for this population will decrease the intensity of serious problems in society later in life.

Prosocial behavior is defined as a voluntary action by an individual that is intended to benefit someone else (Garner, 2006). Most individuals exhibiting this behavior tend to maximize outcomes for themselves and others, while at the same time; they are trying to minimize their differences. They have clear tendencies toward cooperation (VanLange, De Bruin, Otten, & Jorreman, 1997). For the most part, these individuals act in a selfless manner. They view everyone as equal and hold the opinion that people should be granted equivalent opportunities to succeed in life. Prosocial behavior is an important feature of childhood friendships and predicts positive interactions among peers (Garner, 2006). Clearly, it is behavior that will positively affect a child's ability to have successful social interactions throughout his or her life.

On the other side of the behavioral continuum is aggressive behavior. Aggression is often divided into proactive and reactive aggression. Proactive aggression occurs when a child's action is goal-oriented, calculated aggression that is motivated by external reward. For example, a child in preschool might grab another child's toy out of his or her hands in order to meet a need for personal satisfaction, even though doing so will harm his or her peer. This child is not worried about hurting the other child; rather he or she is solely focused on getting what he or she wants.

Reactive aggression is when a child's action is in response to behavior that is perceived as threatening or intentional (Fite, Colder, Lochman, & Wells, 2007). This is

often seen in young children. An example would be a group of children sitting in circle, and by accident, one child gets up and steps on another child's finger. The child who was stepped on might retaliate out of anger and hit the child who accidentally stepped on him. In this situation, the child acts out in response to an event that occurred outside of his or her control. It is not a planned act, and in many cases, the child acts without allowing him or herself time to analyze the situation. There is also the possibility that the child has observed similar behavior in the past when certain events have occurred, and only knows one way to respond.

**Attachment.** Children that display prosocial tendencies develop more secure attachments than do individualists and competitors. Furthermore, Creasey and Hesson-McInnis (2001) found that adolescents with insecure attachment orientations were predicted to report more negative affect during disagreements, less confidence in coping during arguments, and less optimal conflict tactics (e.g., more conflict escalation) than adolescents with more secure representations. VanLange and Visser had similar finding in their 1999 study on social dilemmas. They determined that an uncooperative individual elicited not only relatively low levels of cooperation but also movement towards low interdependence when compared to prosocials and individualists.

Having a secure attachment bond with another individual has led adolescents to display prosocial behavior as well (Henry, 2008). Whether within the family or with a peer, having a positive attachment where appropriate behaviors can be observed and adopted is critical. One example of how this can impact daily functioning for a child is described. Henry (2008) determined that when an individual removes his or herself from

prosocial entities (e.g., family and school) and either simultaneously or subsequently interacts with antisocial entities (e.g., friends who use drugs); it is a critical contributor to adolescent drug use and delinquency. For young children, the first opportunity to form attachments with other individuals of their similar age may be with their sibling, however, that is not always possible.

Depending on the home environment, a child may have a sibling that requires significant attention from his or her parents. Under stressful family conditions, the quality of parent supervision and the consistency of social opportunities may be minimized, the child may be exposed to poor socialization models, and the child may be less open to socialization practices (DeMulder et al., 2000). What a child learns from the relationship he or she creates with a sibling can influence the development of appropriate attachments and peer relationships later in life.

### **Sibling Relationships**

Sibling relationships are unique in character and play an important role in a child's individual adjustment (Pike et al., 2005). What a child learns from relating to a sibling can influence cognitive, affective, and social skills, as well as positive self-image (Rodrigue, Geffken, & Morgan, 1993). Interestingly, it is not only sibling conflict that often correlates with a child's adjustment, but also the positivity in the relationship. Both elements of conflict and positivity in a relationship are able to foster a young child's behavior over a period of time (Pike et al., 2005). In any given situation, it is how the child interprets and copes with the situation that determines whether it will end well or not.

For example, if two children spend a majority of their day fighting with one another, they might have the tendency to be more aggressive when playing with other friends. If they spend most of their time sharing and cooperating, those similar behaviors might be displayed in other situations. More specifically, the siblings' relationship with one another contributes greatly to the way they will interact with other people in their lives in other social situations.

Sibling relationships begin to have a significant impact on a child during early childhood. This is the time when children engage in cooperative and pretend play, which are the types of interactions that foster the development of the child's ability to understand others (Pike et al., 2005). In many cases, siblings will use impressions of one another to form their own identity. As children grow older, the experiences that they go through with their sibling will help shape their future adult functioning, perceptions, expectations, self-care, and self-worth (Moser, Jones, Zaorski, Mirsalimi, & Luchner, 2005).

Multiple factors, including personality and behavior, can be transferred from the older to the younger sibling (Dunn, 2005; Moser et al., 2005; Pike et al., 2005). Overall, it is important to keep in mind that siblings are very influential towards one another, in both positive and negative ways. In many cases, younger children will attempt to be just like their older sibling and display the acceptable and unacceptable behaviors they have learned.

Moser et al.'s 2005 study determined that children have an easier time separating from their parents at an early age when they have an older sibling that they are able to

seek for protection. It is these older siblings that the children look to for guidance. VanLange et al. (1997) also reported that children with more siblings tend to be more prosocial than children with few or no siblings. Specifically, they had 631 participants (adults looking back at their own lives as children) answer several surveys that included questions relevant to number of siblings, birth order, and sex ratio of siblings. For each participant, social value orientation (prosocial, individualist, or competitor) was assessed. The individuals who reported being more prosocial had larger numbers of siblings. This could be because the child is able to interact with other children at an early time in their life. They are put into a position where cooperative bonds must be formed in order to get through the day. Children who grow up without siblings are not given that opportunity. They are forced to seek out social situations on their own.

In Pike et al.'s (2005) study, families with children between the ages of 4 and 6, who had an older sibling, eight years or under, were asked to complete a number of questionnaires that targeted the children's opinions of their relationships with one another, as well as the parents' opinions of their children's relationships with their siblings and how they react to their children's behavior. It was determined that older siblings were more dominant, having an impact on the quality of the sibling relationship. They also found that the siblings used each other as resources for developing social skills. Specifically, brothers and sisters who spent more time playing together in a positive manner could develop skills such as sharing, cooperation, and empathy.

When examining sibling relationships, it is evident that other members of the family could also have an impact on how the relationship develops. A study performed

by Hoffman (1991) found that the environment that parents provide for their children early on contributes to the personality traits that the children tend to exhibit in the future. Hoffman identified specific elements that can significantly influence parents to treat their children differently. Those elements included the order in which the children were born, the difference in age between the children, gender, physical appearance, and the experiences that each child has been exposed to. For example, parents will often give more responsibility to their older child and “baby” their younger child. They may also urge their child who is considered to be better looking to be more outgoing and social, and possibly discourage this behavior with their other children. Once the children understand the roles that their parents have created for them, the relationship between one another often reflects that.

Sibling relationships do not end within their family’s walls. In many cases, siblings are also each other’s peers. Ardel and Day (2002) studied sibling/peer relationships and found that adolescents who had a sibling that was also considered a peer were highly likely to identify them as their role model. In order to be considered peers, the siblings had to be close in age and/or grade. In total, 498 families from inner city Philadelphia agreed to be a part of the sample. For each of these families, a standardized interview, along with a questionnaire, was administered. After analyzing the data, it was determined that the more defiant older siblings were reported to be and were perceived to be by their younger siblings; (a) the lower the younger siblings’ own feelings of competence tended to be; (b) the more defiant friends and defiant attitudes younger siblings tended to have; and (c) the more likely they were to report engaging in defiant

behaviors themselves. The mean age difference between the siblings in these families was 3 years. This research established that the younger sibling was more likely to adopt similar behaviors as their older sibling if he or she was able to relate to their older sibling, as in considering them a peer.

A study performed by Brotman et al. (2005) also found the strong impact that an older sibling can have on their younger brother or sister. When examining the behavior of preschool-age children who had older siblings of adolescent-age, it was determined that the preschooler's behavior reflected the adolescent child's antisocial behavior or positive peer relationships in school. These positive and negative behaviors often need to be identified early in a child's life so that appropriate intervention can take place before negative behavior is engrained into the child's life, resulting in him or her following the negative path that the older sibling took.

Kramer and Kowal (2005) provide another example of how sibling relationships that are created at home can be carried out and displayed in other environments. Their study determined that any negativity experienced between a child and his or her new sibling was also seen with the child and a friend. Young children are often unable to discriminate between their home life and separate environments. Because many children spend a majority of their time at home, the behaviors they learn in the home environment are likely to transfer to other areas of their life. Overall, research has indicated that many children who are well-adjusted psychologically, have families, as well as the sibling relationships, that are close, open, warm, emotionally connected, and flexible (Richmond & Stocker, 2006).

## **Autism**

Before attempting to understand the significance of a sibling relationship where one of the siblings has a diagnosis on the Autism spectrum, one must first have a clear understanding of the disorder itself. Currently, there is a wide range of definitions that all attempt to describe Autism spectrum disorder, with each being slightly unique. Although there are conflicting views of what characteristics should be associated with the disorder, authorities have agreed that Autism can be defined at three interdependent levels: as a neurological disorder related to brain development; as a psychological disorder of cognitive, emotional, and behavioral development; and as a relationship disorder in which there is a failure of normal socialization (Kabot, Masi, & Segal, 2003). It is also understood by authorities that Autism is a spectrum disorder. This means that children can exhibit many unique forms of the disorder at different levels (Kusch & Peterman, 1995). Some individuals may be able to function very successfully and independently throughout life with little to no assistance, whereas others with Autism rely on intense one-on-one support to complete simple daily life skills.

The *Diagnostic and Statistical Manual of Mental Disorders- Revised Fourth Edition* (American Psychiatric Association [DSM-IV-TR], 2000) defines Autism as a pervasive developmental disorder (PDD) that is caused by a dysfunction of the central nervous system leading to disordered development. All children with Autism spectrum disorder are characterized by qualitative impairments in social interactions, imaginative activity, and both verbal and nonverbal communication skills. They also have a limited

number of interests, which tend to be repetitive, and the manifestation of symptoms sets in before age three (Kabot et al., 2003).

Autism is currently on the rise. Most recent reviews tend to estimate a prevalence of 1–2 per 1,000 for Autism and close to 6 per 1,000 for Autism (Newschaffer, C.J., Croen, L.A., Daniels, J., et al., 2007). It is actually considered the best-documented disorder in child psychiatry (Erba, 2000). 75-80% of people diagnosed with Autism are also diagnosed with mental retardation, 15-20% are considered severely retarded (IQ below 35), and more than 10% have an average to above average IQ (National Institutes of Mental Health, 1997). Unfortunately, it is often difficult to determine if a child has Autism because of the wide range of possible characteristics. Every child that has Autism is unique and may or may not be able to do some of the things that another child with Autism can or cannot do. This is much different than other disorders where the criteria for diagnosis are more rigid.

Identification of Autism spectrum disorder in a child often occurs at an early age. These children have difficulties orienting to social stimuli, an impoverished social gaze, and impairments in the areas of shared attention and motor imitation (Kabot et al., 2003). Unfortunately, these deficits make it extremely difficult for children to share understanding, communicate with others, or engage in interactive play. On the other hand, if children with Autism have been taught socialization skills and put into situations where they must practice these skills, their disruptive behavior decreases and their positive interactions with other children increases (Gonzalez-Lopez & Kamps, 1997). Socialization skills can be taught through constant exposure, both in the home and at

school. The more comfortable the child is within social situations, the better off they are going to be when functioning in school and in later years; the work setting.

As stated previously, one of the major deficits displayed by children with Autism involves their social behavior. Their ability to develop reciprocal social interactions is limited by the lack of responsiveness to others' initiations and the absence of social initiations on their part (Gonzalez-Lopez & Kamps, 1997). The lack of these specific skills makes it difficult for a child with Autism to develop relationships with others. There have been many attempts to assist children who have this deficit including verbal prompts and feedback systems; teaching specific social initiations and skills; training with multiple peers; and the selection of specific objects and social settings to produce more positive effects (Gaylord-Koss, Haring, Breen, & Pitts-Conway, 1984; Strain, Danko, & Kohler, 1995; Tremblay, Strain, Hendrickson, & Shores, 1981). Gonzalez-Lopez and Kamps' (1997) research specifically examined the usefulness of social skills training for autistic children. The participants for this study included four children with Autism and 12 typical children from the same elementary school. The experimental conditions included baseline, social skills training, social skills training plus reinforcement, return to baseline, and social skills training plus reinforcement again. It was determined that the combination of social skills training and reinforcement produced the largest increase in duration and frequency of peer interactions of the children with Autism.

With the strong impact that this disorder has on the socialization that a child displays, it is likely that the family, more specifically the sibling, will also be affected.

Research has shown that siblings are 10-20% more likely to develop Autism than other children who do not have a sibling with the diagnosis (Kabot et al., 2003). This includes children who, otherwise, have no other identified deficits deemed diagnosable. These children often display similar characteristics that they have imitated from their autistic sibling. Because so many siblings are now being diagnosed with a disorder on the Autism spectrum, it is necessary to examine their own characteristics and how exactly they interact and engage with their already identified sibling.

### **Siblings of Children with Autism**

In the past decade, there have been a number of studies that examined the siblings of children with Autism. With a strong acceptance that genes could play a role in Autism, it is understandable why the behaviors and learning patterns of siblings of a child diagnosed with Autism should be studied. The behaviors that a child with Autism displays could potentially provide insight on the way that child's younger brother or sister may act in the future (Goldberg et al., 2005). Unfortunately, the studies' findings have lacked cohesiveness. Previous research has found that behavioral issues displayed by the child with Autism did not have an effect on his or her sibling. One study determined that siblings of children with Autism were not at an inflated risk for adjustment difficulties, loneliness, or deficits in social competence (Kaminsk, & Dewey, 2002). Kaminsk and Dewey had 90 adolescents and their parents participate in their study on siblings of children with Autism. The adolescents either had a brother or sister who had been diagnosed with Autism, Down Syndrome, or a brother or sister without a known disability. A battery of questionnaires was completed by each participant and the

responses were analyzed. The study found that siblings of children with Autism are not at inflated risk for adjustment difficulties or loneliness. These siblings also did not display deficits in social competence. Interestingly, Kaminsk and Dewey did find that better psychosocial adjustment in siblings of children with Autism was associated with being surrounded by a greater number of siblings in the family. This would indicate that the siblings have a better chance of developing appropriately when they are exposed to other children who are typical and have no diagnoses. It is also critical to note the age of the participants in the study. The children were of adolescent age, indicating that they had a number of years where they could have been exposed to other children without disabilities. Over time, that exposure may have assisted in the siblings adopting more typical-like behavior.

A study by Rodrigue et al. (1993) found opposing results, reporting that older siblings of children with Autism had more internalizing and externalizing behavior problems. This could be due to the fact that they experience more pressure and stressors taking care of and defending their younger sibling.

Other findings have also determined that siblings of children with Autism have increased emotional problems, conduct problems, peer problems, and a lack of prosocial behavior. More specifically, Hastings (2003) collected data for 26 mothers of children with Autism recruited from a local school for children with Autism. The mothers were asked to assess their other child without a disability's behavior through the use of a behavior checklist and rating scale. The researchers determined that siblings of children

with Autism had an increased risk for poor psychological adjustment and difficulty with prosocial behavior.

Female siblings of children with Autism seem to have higher social competence and self-concepts than the male siblings (Verte et al., 2003). This may be because the females are able to take on a motherly role with their sibling. This role playing makes them feel important. In Van Lange et al.'s 1997 study, it was determined that children who display prosocial behavior are likely to have more sisters than brothers. This finding emphasizes the idea that females seem to possess more positive social skills attributes that are able to translate to their siblings.

When specifically comparing these siblings with other typical children, as well as children with a diagnosis of Autism, it was determined by Goldberg et al. (2005) that the siblings resembled the children with Autism much more than the typically developing children when it came to social situations, initiating joint attention, and initiating requests. For this study, the sample was divided into three groups: (1) 8 children with Autism spectrum disorder; (2) 8 untested younger siblings of children with Autism spectrum disorder; and (3) 9 typically developing children from families without Autism spectrum disorder. The participants were all between the ages of 10 months and 33 months old. The children were each administered the Autistic Diagnostic Interview-Revised (ADI-R) and the Autism Diagnostic Observation Schedule-Generic (ADOS-G). Control children were screened for participation using the Childhood Autism Rating Scale. Each child was then given the *Early Social Communication Scales* (ESCS) and

was videotaped interacting with a trained experimenter, who attempted to engage the child in various play situations.

Overall, Goldberg, et al. (2005) determined that the siblings group played in isolation more often than they played with other children and they were unlikely to initiate a social interaction or make a request. This study is significant, in that it explores the specific behaviors that are necessary for appropriate social development for a child. However, there are some elements of the study that warrant further investigation. More specifically, Goldberg, et al. utilized a sample of children who averaged under the age of two. Children without siblings who have a disability may have difficulties socializing appropriately at this age. Also, the participants were evaluated based on their interactions with an experimenter. Observing them in a more naturalistic setting, around same-age peers, would provide a more relevant picture of their actual social behavior.

Two other areas that have been examined for the siblings are their communication and language abilities. Again, varying results have been presented. A study performed by Tomblin et al. (2003) determined that language disabilities are often found within families of children who are diagnosed with Autism. For example, if a child in a family is autistic, it is likely that either a sibling or parent has some sort of difficulty with speech or communication. The level of difficulty could range from severe to mild. In contrast, Pilowsky et al. (2003) found that siblings of children with Autism functioned better than siblings with developmental language delays, with respect to their own language abilities. Interestingly, when this same population was compared to children with other

developmental delays, such as Down Syndrome, it was determined that siblings of children with Autism had similar ability in regard to language.

In general, having a sibling with any disability potentially influences a child's development. These children are given more responsibilities that can both be seen as positive and negative. Like siblings of children with Autism, children who have siblings with mental retardation are often called on more frequently to help out with household chores and may lose out on some one-on-one attention with their parents that other children without a disabled sibling might receive (McHale, & Gamble, 1989). When it comes to a child having a disability, it is clear that their sibling is at some level affected, and should be a major focus of intervention.

Research has been done comparing siblings of children with Autism and siblings of children with other disabilities such as Down Syndrome, mental retardation, and developmental language delay. Children with Down Syndrome represent a homogenous group of individuals that have fewer social and communication deficits than children associated with Autism (Kaminsk & Dewey, 2002). Rodrigue et al. (1993) found that the psychological functioning of siblings of children with Autism did not differ significantly from siblings of children with Down Syndrome. Another study performed by Pilowsky, Yirmiya, Shalev, & Gross-Tsur, (2003) examined the language abilities of siblings of children with Autism in comparison to the abilities of siblings of children with mental retardation or a developmental language disorder. Their findings indicated that language abilities of siblings of children with Autism were within normal limits, were similar to those of siblings of children with mental retardation, and were slightly better than those

of siblings of children with developmental language delays. Both of these studies would indicate that siblings of autistic children are not affected more prominently than other disabilities.

It is evident that there have been many studies done on siblings of children with Autism. These studies vary significantly in their focus, but all together provide a strong body of research dedicated to these individuals. And although the results vary from study to study, they make it clear that the siblings of children with Autism should not be disregarded. It is critical to understand that their lives are likely to be affected by the disability.

### **Early Childhood and Social Skill Development**

Unfortunately, a majority of the research done on siblings of children with Autism does not focus directly on children of preschool-age. These are the years when children are able to spend the most time with both siblings and peers, and patterns of interaction are formed (Lobato, Miller, Barbour, Hall, & Pezzullo, 1991). It is also the first time that they leave the walls of their home and are exposed to and influenced by people outside of their family.

The preschool years are also the time when maladaptive behaviors can be identified and appropriately dealt with before becoming problematic (Hill, Degnan, Calkins, & Keane, 2006). Some of these maladaptive behaviors include being physically aggressive, acting out in class, talking back to the teacher, unwillingness to share, etc. In contrast, persistence during challenges, frustration tolerance, and compliance with demands are hallmarks of successful emotional self-regulation later in life (Eisenberg et

al., 2001). Being successful in these areas requires the ability to manage emotional arousal.

DeMulder et al. (2000) indicated that there is continuity in adaptation across key developmental stages, including during the transition from early childhood in the home to preschool. Unfortunately, preschool is sometimes the only environment where a child can learn these important skills. The homes that some children grow up in may be a hindrance on their development. For instance, Kershner et al., (1996) found that elevated levels of psychological distress in parents is a risk variable for children. When a child lives with a parent who experiences this distress, they are more likely to develop behavior problems. DeMulder et al. (2000) found that experience in a good secure-base relationship at home facilitates a child's ability to use the preschool teacher as a secure base in the school-setting. If a child does not have that attachment at home, it will be more difficult for them to develop successful relationships in school.

Interactions with same-age peers are often first introduced during the preschool years. Persson (2005) explored preschoolers' prosocial and aggressive behaviors, with a focus on the inferred underlying motives of these behaviors. Forty-four children were observed in naturalistic interactions with peers. Three categories of prosocial behavior and three categories of aggressive behavior were explored. It was found that prosocial performance was developed and highly influenced at this point in the child's life. It was also noted that prosocial behavior increased in frequency as the children got older.

Other behaviors, such as aggression and compliance are observed during peer interactions at this age as well. For many children, it is the first time that they are given

restrictions, limitations, and rules to follow from the other children that they are attempting to socialize with. Some children will act out aggressively in response to these, while others will comply. Odom, Zercher, Li, Marquart, Sandall, and Brown, (2006) found that it is crucial for all preschool children to develop appropriate social acceptance and rejection during preschool, as these behaviors remain stable through the elementary school years and have the potential to affect academic performance and school adjustment. Social interactions can be very difficult for typically developing young children, so one can imagine the stress on preschool children with a disability being exposed to social situations.

Odom et al. (2006) noted that at this current point in time, the United States' government is requiring the provision of special education services in classes where typically developing children function. This is commonly referred to "push-in" services in the school. It is much less restrictive and allows the child with a disability the chance to interact with other typically developing children. With this movement introduced, access to social interactions with "typical" peers is more readily available in many preschool programs.

A pivotal study of preschool age children who had a sibling with Autism found that these children were at risk for atypical development (Goldberg et al., 2005). Specifically, the social interaction, joint attention, and requesting behaviors of the siblings all occurred significantly less often than typical developing children. The findings also indicated that the behaviors of siblings of children with Autism resembled children with Autism more than typical developing children. Fortunately, if maladaptive

behaviors are identified when the child is still in the preschool-age range, there is time for remediation before it becomes a larger issue (Odom et al., 2006).

## **Conclusions**

The research reviewed has shown that children begin to learn in social situations during early childhood. Social learning theory specifically explains how a child is able to take social experiences that he or she has learned and apply them to his or her own behavior. At this time, children are exposed to behaviors that allow them to express themselves in both prosocial and aggressive manners. For many families, the sibling relationship is the first time that a child is able to associate with his or her peer. It is that relationship where behaviors are first transferred.

As previously mentioned, Autism spectrum disorders have been frequently researched. More specifically, the effects that it has on the individuals surrounding a child with Autism appear to be significant. The siblings of children with Autism are often observed in various settings, displaying behaviors similar to their sibling. Unfortunately, little research has been aimed directly towards children between the ages of 3 and 5, where it has been documented that a significant amount of behavioral development occurs (Pike et al., 2005). Also, in a study (Goldberg et al., 2005) that did aim to examine young siblings, the interactions that the children had with peers and teachers in their classroom were not analyzed, but rather just the interactions with the test administrator.

The current study examines social interactions within the classroom for early childhood-aged children who have an older sibling diagnosed with Autism spectrum

disorder. These children have been compared with other children who have a sibling with no known disorders. Data related to each child's peer interactions and interactions with the teacher was then collected and analyzed.

### **Research Hypotheses**

It was hypothesized ( $H_1$ ) that children who have an older sibling with a diagnosis of Autism display less socially appropriate behavior when interacting with their peers, (such as playing or working with other children, touching others when the teacher has indicated that it is appropriate, and initiating conversations during free play), than children who have an older sibling considered to be typical. A second hypothesis ( $H_2$ ) was that children who have an older sibling with Autism have less socially appropriate behavior when interacting with their teacher, as compared to children with an older typically developing sibling. Specific behaviors targeted included: following directions, raising hand when appropriate, and engaging in appropriate physical touch with the teacher. A final hypothesis ( $H_3$ ) was that teachers rate siblings of children with Autism as demonstrating less prosocial behavior and more problematic behavior than siblings of children without any diagnosis.

CHAPTER 2:  
RESEARCH METHOD

**Participants**

Twenty-eight preschool-aged children who have a sibling with an ASD who is one to five years older than them participated in this study. In order for a child to have been considered in the early childhood age-range, they needed to be between the ages of 2 years, 0 months and 5 years, 11 months. For this study, the average age of the 28 participants is 4.5 years old (mean age= 54 months). *Group 1* included 14 children who have an older sibling with a diagnosis on the Autism spectrum, including Autism, Asperger's Disorder, and Pervasive Developmental Disorder (PDD-NOS). Asperger's is a neurological disorder that, like others on the Autism spectrum, is marked by difficulties in communication and social interaction. PDD-NOS is a condition on the spectrum with some, but not all, of the symptoms associated with classic Autism. Included are difficulty socializing with others, repetitive behaviors, and heightened sensitivities to certain stimuli (Autism Speaks, 2011). All of the children in *Group 1* were identified through various agencies in the northeastern United States who provide support for families who have a child with a disability. A 15<sup>th</sup> child was excluded from the study due to elevated ratings on an Autism screener (Gilliam Autism Rating Scale, Second Edition) given to each teacher for completion. *Group 2* was composed of 14 children who have an older sibling without any diagnosed disability. These children were chosen by the preschool/elementary school teachers of the children in *Group 1*. This was done in order to minimize the differences between the two groups, which could have impacted the

overall results. However, in some cases, children in different classes were utilized due to the lack of parental consent and to allow participation by peers in the classroom. In total, 16 teachers participated in the study. Ten teachers rated pairs of both children in *Group 1* and *Group 2*. In 1 case, the teacher rated more than just 1 child from each group. The remaining 5 teachers rated either a child from *Group 1* or *Group 2*.

The children in *Group 1* were identified with the assistance of *Upstate New York Families for Effective Autism Treatment (UNYFEAT)*, the *Central New York Chapter of the Autism Society of America (CNY ASA)*, Chemung ARC, *Preschool Learning Center (PLC)*, KidsOutAndAbout.com, Shelton Public Schools in Shelton, CT, and the *Parent Child Resource Center (PCRC)*. Each of these agencies distributed information regarding the present study to the families they serve. The families then had the opportunity to contact the researcher to participate. This self-election method of participating impacted the overall small sample size, as the families were required to make the additional step of reaching out to the researcher to be considered. Although only 28 participants were included in the study, a total of 32 families made initial contact to participate. One of those families ceased communication early in the selection process and 3 families did not meet the appropriate criteria. After completing the GARS-2, 1 participant was eliminated due to an elevated score, indicating a possibility of Autism.

In total, 43% of the *Group 1* participants were between the ages of two and four and 57% were between the ages of five and six. Fifty percent were males and 50% were females. All fourteen of the participants were Caucasian. When asked to rate the sibling's place on the Autism spectrum, 21% of the parents indicated PDD-NOS, 29%

indicated Asperger's Disorder, and the remaining 50% indicated Autism. Additional descriptive statistics and frequencies for *Group 1* may be found in Table 1.

The children in *Group 2* were identified by the preschool or elementary school teachers of the children in *Group 1*. Some parents were aware of the study being conducted and indicated an interest in having their child participate. All of the participants were required to attend preschool for at least half of the day on a regular basis and not have any diagnosed disability nor a sibling with a diagnosed disability. 50% of the participants in *Group 2* were between the ages of two and four and 50% were between the ages of five and six. *Group 2* was also split evenly between males and females. 86% of the participants were Caucasian and 14% were Indian. Additional descriptive statistics and frequencies for *Group 2* may be found in Table 1.

A letter of informed consent was provided to each family. The consent explained the research project and the rights of the participants (see *Appendix A*). A signed copy was required from each family prior to the participant being included in the study. The participants' teachers were important contributors to this study. They had the most consistent and direct contact with the participants during the data collection. Each teacher was provided with a written explanation of the study and a specified description of the tasks that they would be asked to complete and be responsible for (see *Appendix B*). Their informed consent was also required prior to the study beginning.

## **Measures**

**Gilliam Autism Rating Scale, Second Edition (GARS-2).** Every child's preschool teacher (from *Group 1* only) was asked to fill out the *Gilliam Autism Rating*

*Scale, 2<sup>nd</sup> Edition* (GARS-2) (Gilliam, J.E., 2006) to rule out the chance that the participating child might have Autism. When this screening tool indicated that the child could be on the Autism spectrum, he or she was not included in the study.

The GARS-2 is a revision of the popular *Gilliam Autism Rating Scale*. It assists teachers, parents, and clinicians in identifying and diagnosing Autism in individuals ages 3 through 22. The scale also helps estimate the severity of the child's disorder. Items on the GARS-2 are based on the definitions of Autism adopted by the Autism Society of America and the *Diagnostic and Statistical Manual of Mental Disorders: Fourth Edition-Text Revision* (DSM-IV-TR). With respect to reliability, the GARS-2 shows good internal consistency for the three subscales and the total scale with coefficient alphas ranging from .84-.94. Garro (2000) indicates that the test manual reports one study for test-retest reliability, results of which indicated good stability over a one-week interval. Please refer to the *Appendix C* for a copy of the scale.

In the current study's screening protocol, one sibling from *Group 1* was identified as having elevated levels (SS = 86) high levels of autistic-like behavior. Any standard score above 85 indicates that the individual is very likely to have some level of Autism. Due to the significantly elevated ratings, this child was not asked to continue with the study. For ethical reasons, the information collected from this screening was shared with the parents and school that this child attended and further evaluation was advised. In order to keep the groups even, one child from *Group 2* was then eliminated from the study. This process resulted in 14 children in *Group 1* and 14 children in *Group 2*. No

other information was analyzed from the GARS-2, as it was only utilized as a screener to determine who would be the most appropriate participants for the current study.

**Social Skills Improvement System (SSIS).** The SSIS is a nationally standardized series of questionnaires used to obtain information on the social behaviors of children and adolescents from teachers, parents, and the students themselves. This tool can be used for individuals between the ages of 3 and 18. The SSIS was developed by Gresham and Elliot (2007) to replace the *Social Skills Rating System (SSRS)*. For the present research, the teacher rating scale was utilized. This scale assesses three domains: (a) Social Skills, (b) Problem Behaviors, and (c) Academic Competence. The social skills domain includes subdomains labeled communication, cooperation, assertion, responsibility, empathy, engagement, and self-control. The problem behaviors domain includes externalizing, bullying, hyperactivity/inattention, internalizing, and Autism spectrum. The Academic Competence section addresses reading achievement, math achievement, and motivation to learn for children in grades K-12. The revised tool also includes national norms for preschool. Please refer to *Appendix D* for a copy of the SSIS.

According to the SSIS Rating Scales Manual, the internal consistency reliabilities support the idea that behaviors comprising each subscale reflect a common dominant trait and are relatively free from the influence of random error. The manual also explains that validity evidence was obtained through studies on content, internal structure, and correlation with other measures. Overall, it was found that the SSIS measures what it intends to measure and that appropriate inferences from the results can be made with confidence.

Although a relatively new tool, one study completed by Kettler, Elliott, Davies, and Griffin (2009) did utilize the SSIS when exploring student performance on national tests in Australia. The purpose of this study was to collect reliability and validity evidence for the SSIS. Their findings indicate that the SSIS is an appropriate instrument for measuring social skills and related constructs. The various items, guides, and subscales from the SSIS fit together in much the same way with the Australian sample as they did with the national standardization sample from the United States. These results indicate that academic skills and social behavior are related constructs. This relationship provides a rationale for using a brief measure of both academic skills and social behavior to predict academic achievement.

**Behavioral Assessment System for Children- (2<sup>nd</sup> Edition) – Student Observation System (BASC-2 SOS).** The BASC-2 was created by Reynolds and Kamphaus (2006). It includes a comprehensive set of rating scales and forms including the Teacher Rating Scales (TRS), Parent Rating Scales (PRS), Self-Report of Personality (SRP), Student Observation System (SOS), and Structured Developmental History (SDH). Together, they assist in the understanding of the behaviors and emotions of children and adolescents. Any individual between the ages of 2 and 21 can be evaluated using this system.

The rating scales and forms can be used in conjunction with one another or independently. For the purpose of this research, portions of the BASC-2 SOS were utilized. This measure was chosen in order to provide observational data that could be coupled with formal rating scales, with the expectation of more comprehensive results.

The form creates an outline of information to be collected during a direct observation. Using momentary time sampling during 3-second intervals, each spaced 30 seconds apart for 15 minutes, an observer can objectively rate a wide range of behaviors. The SOS assesses both adaptive and maladaptive behaviors, from positive peer interaction to repetitive motor movements. To address the research questions for this study, the following behaviors were observed: Response to Teacher/Lesson and Peer Interaction. Within the 2 general behaviors observed, data was collected on 6 more specific behaviors. Those behaviors included listening and/or following directions, interacting with the teacher by asking/answering questions, appropriate physical touch with the teacher, talking with another student, playing, or working with another student, and touching another student appropriately.

Research has been conducted to determine the validity of this measure. Lett and Kamphaus (1997) evaluated the differential validity of the BASC: TRS and the BASC: SOS in the differentiation of the nondisabled children from children with ADHD diagnosis, and children with an ADHD-only diagnosis from children with ADHD co-morbid diagnoses. The results indicated that the TRS and the SOS exhibited good differential validity. The group differences that were found were consistent with the definition of ADHD. A Predictive Discriminant Analysis also indicated, however; that the SOS does not contribute a sufficient amount of information above and beyond that obtained by the TRS alone. Unfortunately, according to the BASC-2 manual, the reliability of the measure has only been analyzed for the teacher, parent, and self rating scales, not the observational component.

**Independent Variables**

Two participant groups were formed based on whether the child's older sibling had Autism or no disability at all. These two groups were identified by the preschool teachers and parents, based on the necessary requirements to participate. Data was collected for each participant from the preschool teacher and the parents, and examined anonymously by the researcher.

**Dependent Variables**

Four variables were measured for this study; peer interactions, interactions with the teacher, prosocial skills, and problem behaviors. Peer interactions and interactions with the teacher were determined through the classroom observations, utilizing the BASC-2 SOS. Prosocial skills and problem behaviors were examined through the teacher ratings from the SSIS.

Peer interactions were characterized by talking, playing, sharing, and appropriate physical touch with other children in the classroom. Appropriate physical touch was determined to be touching in a non-aggressive form that was accepted by the child receiving it.

Interactions with the teacher included listening and/or following directions, asking/answering questions, and appropriate physical touch with the teacher. Appropriate physical touch was determined to be touching in a non-aggressive form that was accepted by the teacher. An example of this type of behavior could be a high-five or holding a hand.

Prosocial skills of communication, cooperation, assertion, responsibility, empathy, engagement, and self-control were measured.

Problem behaviors were grouped as externalizing, bullying, hyperactivity/inattention, and internalizing behavior. This variable also included an Autism behavior subscale.

### **Demographic Variables**

Information on several variables was collected in order to gain a better understanding of the participants. These were:

**Age:** Parents of the participants were asked to identify their child's current age on the demographic questionnaire. The questionnaire asked for both an age including year and month, however most of the questionnaire returned only included a year. Due to that response, only the year was taken into account.

**Gender:** Parents of the participants were asked to identify their child's gender (male or female) on the demographic questionnaire.

**Ethnicity:** Parents of the participants were asked to identify their child's ethnicity on the demographic questionnaire. Due to the lack of diversity in the communities that were polled for participants, 100% of the Group 1 participants and 86% of Group 2 participants were Caucasian. The second ethnicity identified in Group 2 was Indian.

**Number of Siblings:** Parents of the participants were asked to identify the number of siblings the participating child has on the demographic questionnaire. Again, in order to reduce error, it was important to keep the participants in Group 1 and Group 2 as

similar as possible. For each group, the majority of participants had 1 sibling (Group 1= 57% and Group 2= 64%).

**Sibling's Disability:** Parents of the participants in Group 1 were asked to identify the specific degree of Autism their older child has on the demographic questionnaire. This information was important, as Autism is a spectrum disorder with varying levels of severity. It is likely that a child with an older sibling who has Autism that is high functioning will have a much different experience growing up versus a child with an older sibling with a more severe level of Autism. For this study, 50% of the participants in *Group 1* had a sibling with Autism, 21% had a sibling with PDD-NOS and 29% had a sibling with Asperger's.

### **Procedure**

In order to initiate the current study, informed consent forms were either mailed out or hand delivered to the families and teachers. They were then required to sign and return the forms to this researcher. Along with the consent form directed to the families was a brief questionnaire reflecting the participants' demographics (See *Appendix F*).

After consent was granted, the teacher of each child in *Group 1* only was given the GARS-2 to complete, in order to rule out any possibility that the participating child may have a diagnosis of Autism. This was not done for *Group 2*, as the children had already been identified by their teachers as typically developing students. If a rating on the GARS-2 was elevated, the child was not included in the research project and the school was notified of the areas of weakness or concern. The children who cleared this screening were placed in one of two predetermined groups; children with an older sibling

who has been diagnosed with Autism and children who have a sibling with no identified disabilities.

Once the groups were created, the teachers were asked to complete and return an SSIS rating form on each child participant. Data collection also included two direct observations of the child in the classroom. Observations were conducted solely by this examiner to rule out the potential of weak inter-rater reliability. This observer entered the classroom where the child was located and performed two 15-minute observations using the BASC-2 SOS.

One observation was during direct instruction, and the other was during free play. This observer kept track of each partial-interval the child interacted with a child in the classroom, with the teacher, and the type of interaction that occurred. The teachers were notified ahead of time when to expect the observation, so that conflicts could be minimized. Due to age differences and various curricula being used in the schools, the actual observations ended up being unique for each child. More specifically, the younger children had more exposure to social skills instruction and were encouraged to participate in more group-based activities than the older children, whom were expected to already know appropriate social behavior and encouraged to complete activities on a more independent level. This was specifically observed when the observations were being completed during academic instruction. Because of the uniqueness of behaviors between age groups in this setting, as well as the limited encouragement for socialization for all participants, the data from the direct instruction setting was not further analyzed.

Following the data collection, including the rating scales and the formal observations in the free play setting, it was analyzed, and *Group 1* was compared with *Group 2*. Qualitative information that was gathered from the demographic questionnaire was also compiled and relative findings are discussed. At the end of the study, the parents and teachers of the participants were debriefed and thanked for their participation.

## RESULTS

### **Demographic Data**

In order to reduce error, it was essential to have the demographic data homogeneous between the experimental and control groups. Overall, general descriptive analysis determined that there was a range in age for the participants in each group between 2 years, 0 months and 5 years, 11 months, however overall, the mean ages were comparable (*Group 1* mean age = 4.57 years old, *Group 2* mean age = 4.50 years). The two groups were also evenly comprised of males and females. There was a difference between the two groups in the number of older siblings each participant had, however, again it was not at a level of concern (*Group 1* mean number of older siblings = 1.43, *Group 2* mean number of older siblings = 1.57). As the overall results are further discussed, this finding, although minor, may prove to be a factor that should be further investigated in the future, as the exposure to more siblings may support positive social development. For further information in regard to demographic data, refer to Tables 1.

### **Formal Observation Data**

H<sub>1</sub> and H<sub>2</sub> addressed the children's behavior in regard to interactions with peers and teachers at school through formal observation. Fourteen children with an older sibling with Autism and 14 children with an older sibling without a disability were observed using the BASC-2 SOS. H<sub>1</sub> stated that children who have an older sibling with a diagnosis of Autism will display less socially appropriate behavior when interacting with their peers, such as playing or working with other children, touching others when the teacher has indicated that it is appropriate, and initiating conversations during free play,

than children who have an older sibling considered to be typical. Three independent t-tests were utilized to test  $H_1$ . Working with other children, touching others when the teacher has indicated that it is appropriate, and initiating conversations during free play each served as dependant variables in the three separate t-test equations, with the participants serving as the independent variable. Because three t-tests were used to test  $H_1$ , which is an omnibus hypothesis (1 hypothesis made up of multiple parts), a Bonferroni adjustment ( $\alpha/c$ , where  $c$  = number of comparisons) was utilized to control for the occurrence of a Type 1 error. Based on the Bonferroni adjustment, only t-tests with significance level of  $\leq .01667$  were considered to be significant. Results are located on Tables 2.

Cohen's  $d$  was used as a measure of effect size. Similar to other  $d$ -family measures, Cohen's  $d$  is a measure of the difference between levels of the independent variables. As  $d$  diverges from 0 in either a positive or negative direction, the effect size increases. Theoretically,  $d$  can range infinitely in either direction (Green & Salkind, 2005). Cohen labeled an effect size small if  $d = .20$ . Cohen suggested large magnitudes of effect were  $d = .80$ . Medium-sized effects were placed between these two extremes, that is  $d = .50$  (Cohen, 1988).

The first of the 3 independent samples t-test was performed to address  $H_1$ . It determined whether or not children with an older sibling with Autism participated in playing or working with other children in the classroom less than children with an older sibling without a disability. Results of the t-test indicated a significant difference ( $t_{[26]} = -4.31, p = .0001$ ). Children with an older sibling without a disability play with their peers

on average 8.50 times during a 15-minute interval, compared to only 3.64 times for children with an older sibling with Autism. Additionally, a large effect size was observed ( $d = -1.63$ ).

The second t-test analyzed whether or not children with an older sibling with Autism participate in talking with other children in the classroom less than children with an older sibling without a disability. Results of the t-test again indicated a significant difference ( $t_{[26]} = -3.41, p = .0001$ ). Children with an older sibling without a disability talk with their peers on average 6.86 times during a 15-minute interval, compared to only 4.00 times for children with an older sibling with Autism. Again, a large effect size was observed ( $d = -1.27$ ).

The final t-test for  $H_1$  was then performed. This test was performed to see whether or not children with an older sibling with Autism participated in appropriate physical touch with other children in the classroom less than children with an older sibling without a disability. As with the previous 2 t-tests used to test  $H_1$ , a significant difference was observed ( $t_{[26]} = -3.19, p = .0001$ ). Children with an older sibling without a disability appropriately touch their peers on average 2.93 times during a 15-minute interval, compared to only 1.43 times for children with an older sibling with Autism. A large effect size was again observed ( $d = -1.21$ ).

$H_2$  indicated that children who have an older sibling with Autism will have less socially appropriate behavior when interacting with their teacher, as compared to children with an older typically developing sibling. Specific behaviors being targeted included: following directions, raising hand when appropriate, and engaging in appropriate physical

touch with the teacher. Similarly to  $H_1$ , three independent t-tests were utilized to test  $H_2$ . Since  $H_2$  is also an omnibus hypothesis, a Bonferroni adjustment was also used for  $H_2$ . Following directions, raising hand when appropriate, and engaging in appropriate physical touch with the teacher each served as dependant variables in the three separate t-test equations. Results for this hypothesis are located on Tables 3.

The first independent samples t-test was performed to determine whether or not children with an older sibling with Autism follow directions in classroom less than children with an older sibling without a disability. Results of the t-test indicated a significant difference ( $t_{[26]} = -5.96, p = .0001$ ). Children with an older sibling without a disability follow directions on average, 18.36 times during a 15-minute interval, compared to only 12.07 times for children with an older sibling with Autism. Additionally, a large effect size was observed ( $d = -2.25$ ).

The next t-test for  $H_2$  was performed to determine whether or not children with an older sibling with Autism raise their hand less than children with an older sibling without a disability. Results of the t-test did not indicate significance ( $t_{[26]} = -1.38, p = .178$ ). Children with an older sibling without a disability raise their hand on average, 5.86 times during a 15-minute interval, compared to 4.57 times for children with an older sibling with Autism. Despite not finding significant results, a moderate effect size was still observed ( $d = -.55$ ). The reasoning behind this finding is that the test of statistical significance takes into account two independent pieces of information: the magnitude of the intervention's impact (the effect size) and the size of the sample (Valentine & Cooper, 2003). For this portion of  $H_2$ , the effect size was not strong enough to support the small sample size.

A final independent samples t-test was performed for  $H_2$  to determine whether or not children with an older sibling of Autism participated in appropriate physical touch with their teacher less than children with an older sibling without a disability. The physical touch included giving or receiving high-fives or taking the teacher by the hand. Results of the t-test did not indicate significance ( $t_{[26]} = -1.79, p = .084$ ). Children with an older sibling without a disability appropriately touch their teacher on average, 2.07 times during a 15-minute interval, compared to 1.00 times for children with an older sibling with Autism. Similar to the previous t-test, a moderate effect size was observed ( $d = -.68$ ), despite not finding significant results.

### **Teacher Ratings**

The final hypothesis addressed each child's prosocial and problematic behavior, as rated by his or her teacher.  $H_3$  stated that teachers will rate siblings of children with Autism as demonstrating less prosocial behavior and more problematic behavior than siblings of children without any diagnosis. This was determined by the teachers' responses on the SSIS, which utilizes a four-point scale format ( $1 = not\ true, 2 = a\ little\ true, 3 = a\ lot\ true, 4 = very\ true$ ). Their ratings were then calculated into standardized scores. It was expected that prosocial and problematic behaviors would be negatively related to one another. Tests for significant correlation were conducted. Because the standard scores represent interval data, a Pearson correlation was performed. It confirmed a statistically significant moderate negative relationship ( $r = -.52, p < .01$ ) for prosocial and problematic behavior.

Similarly to  $H_1$  and  $H_2$ , more than one t-test was used to test  $H_3$ . Again, a Bonferroni adjustment ( $\alpha/c$ , where  $c$  = number of comparisons) was utilized to control for the occurrence of a Type 1 error. Based on the Bonferroni adjustment, only t-tests with significance level of  $\leq .025$  were considered statistically significant. Prosocial behavior and problem behavior each served as dependant variables in the two separate t-test equations. The same 14 participants from *Group 1* and *Group 2* were utilized, as were for  $H_1$  and  $H_2$ .

An independent samples t-test was performed to determine whether or not teachers rated siblings of children with Autism as demonstrating less prosocial behavior than siblings of children without any diagnosis. Results of the t-test indicated a significant difference ( $t_{[26]} = -4.81, p = .0001$ ). Children with an older sibling without a disability were rated on appropriate prosocial behavior with an average standard score of 100.21, compared to only 80.71 for children with an older sibling with Autism. Additionally, a large effect size was observed ( $d = -1.82$ ).

A second t-test was also performed to determine whether or not teachers rated siblings of children with Autism as demonstrating more problematic behavior than siblings of children without any diagnosis. These findings indicate a significant difference ( $t_{[26]} = 2.59, p = .015$ ). Children with an older sibling without a disability were rated on problematic behavior with an average standard score of 94.50, compared to 104.36 for children with an older sibling with Autism. Similarly to prosocial skills, a large effect size was also observed for problematic behavior ( $d = .98$ ). The results for  $H_3$  are located on Tables 4.

## DISCUSSION

The current study has attempted to gain a better understanding of the social interactions within a classroom of young children who have an older sibling diagnosed with Autism spectrum disorder. Specific attention was directed towards the children's social skills and problematic behavior in an early education setting. The findings from the data analysis will allow researchers to have a more concrete understanding as to whether or not problem behaviors or prosocial skills are impacted through sibling relationships during early childhood development. Unique from previous research, this study attempted to access information through two different formats; a rating scale completed by the classroom teacher, and direct systematic observations of the sibling in their school-setting completed by the researcher. By using multiple methods of data collection, the greatest amount of information was able to be collected and analyzed in a variety of ways. Specifically related to the current study, data was obtained first-hand by the researcher, as well as from the teacher that works with the child on daily basis. Unfortunately, due to the limited time allotted for socialization during instructional time, the data collected for that setting was not included in the analysis. Thus observational data that was analyzed was collected during free play opportunities only.

For the current study, it was hypothesized ( $H_1$ ) that children who have an older sibling with a diagnosis of Autism will display less socially appropriate behavior when interacting with their peers than children who have an older sibling considered to be typical. More specifically, the following behaviors were directly observed:

Playing/working with a peer, talking with another student, and appropriate touch with a

peer. Each behavior was considered to be its own variable, therefore; analyzed individually. Results indicated that all three variables yielded significant results, fully supporting H<sub>1</sub>. This was an important finding, as it indicated that when young children spent a majority of their early development with their older sibling with Autism, they did not learn how to appropriately engage in social behavior with their peers. This confirmed previous research conducted by Hastings et al. (2003), which reported that siblings of children with autism had more difficulty with prosocial skills based on their mothers' ratings than siblings of children without a disability. The children in that study were approximately 2 years in age. The current study was able to expand this finding to older children, assuming that they have had more time to be exposed to social behavior of siblings.

A second hypothesis (H<sub>2</sub>) developed was that children who have an older sibling with Autism will have less socially appropriate behavior when interacting with their teacher, as compared to children with an older typically developing sibling. The three individual behaviors analyzed included: listening/following directions, raising their hand, and appropriate touch with the teacher. The current study determined that only one of the three variables produced significant results. It was confirmed that children who have an older typically developing sibling will listen and follow directions more often than children with an older sibling with Autism. In regard to raising their hands and participating in appropriate touch with their teachers, no significant findings were determined.

The results for H<sub>2</sub> indicated that the interactions between the children and their teachers were variable. The current findings did not confirm that the children with typical developing siblings engaged in raising their hands or by high-fiving or holding the teachers' hands more frequently than children with an older sibling with Autism. This could, in part however, be impacted by the differing teaching styles that each child was exposed to and the amount of opportunities available to display such behavior.

H<sub>1</sub> and H<sub>2</sub> both utilized a direct observation approach. This was similar to the way data was collected in the research conducted by Goldberg et al. in 2005. Both studies determined that siblings of children with Autism have more difficulty engaging in social behavior with their peers. Expanding on the previous research, the current study also demonstrated that similar results could be found in naturalistic settings (classrooms), as compared to experimentally designed environments. What was unique for the two studies was that Goldberg's study found that siblings of children with Autism had more difficulty making requests of an adult. In the current study, that was not conclusive. When it came to interactions with the teachers, significance was not found for the 3 variables included.

The final hypothesis (H<sub>3</sub>) was that teachers will rate siblings of children with Autism as demonstrating less prosocial behavior and more problematic behavior than siblings of children without any diagnosis. Overall, the teacher's completion of the SSIS rating scale in regard to the participant's behavior in the classroom reveals that children in *Group 1* and *Group 2*, as a whole, display age-appropriate behavior in regard to prosocial and problematic behavior. More importantly, however, is that statistical

analysis indicated that children in *Group 1* were significantly closer to the clinically significant level for prosocial behavior, as well as problematic behavior, than children in *Group 2*. This means that children in *Group 1* were rated as having less prosocial and more problematic behavior at school than *Group 2*. The behaviors being considered included: communication, cooperation, assertion, responsibility, empathy, engagement, and self-control (prosocial) and externalizing, bullying, hyperactivity/inattention, and internalizing (behavior problems). Interestingly, according to the SSIS's acceptable range of behavior, both *Group 1* and *Group 2*'s standard scores were within the age-appropriate range. The significant findings indicate that *Group 1* and *Group 2* were on opposite ends of the spectrum for acceptable social behavior.

According to the previous research conducted, little focus has been directed toward the teacher's perception of how the siblings display their social skills in a natural setting (classroom). Significant results for H<sub>3</sub> suggest that the teachers are seeing undesirable behavior being displayed by the siblings of children with Autism. Because the preschool classroom is a location where social development occurs, it is beneficial to understand the perception of the teacher's on their students' behaviors.

### **Limitations**

Although significant results were confirmed for two out of the three hypotheses, it is important to keep in mind that certain components of the research study still could have had a negative impact on the overall results. In general, siblings of children with Autism were a difficult population to target and access. The total number of participants (sample size) was a major limitation. A small sample size could have contributed to the

large effect sizes calculated for many of variable tested. This would lead many to think that the overall results are solid; however, the effect size may not be quite a strong with a larger population.

In regard to accessing the participants, instead of identifying the children directly, their siblings with Autism needed to be first determined. Then, those families were contacted to see if there was a younger sibling between the ages of 2 years and 6 years that attends school and did not have an identified disability. There were a number of families that responded, but did not meet all of the necessary requirements, and therefore; could not participate. For example, one child had met the initial requirements, but when the GARS 2 was administered, elevations indicated that the child should be further assessed for possibly having Autism. This particular finding made the child ineligible to participate. Of the 14 children who did qualify to participate, the self-selection process of participating may have had an impact on the overall findings. More specifically, it is possible that the families who chose to participate may have had concerns about their child's behavior prior to the study and felt that the results would help answer some of their questions. On the other hand, families who did not choose to participate may have had children who they felt demonstrated appropriate behavior, and therefore, would not benefit from being involved with the study. This factor may have impacted the overall results due to the fact that *Group 1* may not have fully represented the population that it was intended to.

Similarly, the teachers' tendencies to recommend "model children" for *Group 2* may have also impacted the overall results. Although "typical peers" were requested,

some of the teachers were eager to include children from their classes who demonstrated exceptional social skills. These teachers were also aware of the background associated with this study, so it is possible that they were subconsciously rating the children from *Group 1* and *Group 2* accordingly.

Of the children that were determined to have met the appropriate criteria to participate, variability was identified in their siblings' Autism diagnoses, the years between when the siblings were born, and the exposure to other children without a disability. In regard to the Autism diagnoses, there was a range from high functioning Asperger's, where the child was able to communicate and socialize with others, to severe Autism, where the child had no verbal communication and limited social skills. This difference in the level of disability for the child with Autism could potentially lead to unique results in how the other children (siblings) around him or her behave.

The variability in the years between the siblings' ages could have also impacted the overall findings. Some of the participants had an older sibling that was just one year older, while others had siblings that were five years older. It is possible that the siblings who had a larger gap between ages could have had less in common, resulting in less time spent together. The time spent between these two siblings may have included participating in activities that would not be considered to be age-appropriate for the younger child. Therefore, the child is not learning social skills that would be helpful when interacting with other children the child's same-age. When the siblings were closer in age to one another, this may not have been an impacting factor. Another possibility is that the children with Autism who are much older than their sibling could have had more

time to learn appropriate social behavior, resulting in less problematic social behavior in general.

In regard to the exposure to other children without a disability, the findings ranged from children who only had the one older sibling with Autism to children who had up to four other siblings. Growing up in a home with other typically developing siblings could have made it easier for the child to learn and practice appropriate behavior. Those children also had a chance to compare the way his or her siblings' behaviors varied amongst each other. Without that normalized comparison, the sibling could interpret the inappropriate behavior that he or she learned as being acceptable. Based on the fact that the children in this study all came from different backgrounds, it could be assumed that they also had a range in previous experience with being around other children. It is possible that some of the participants may have been included in social groups early on in their lives, while others may have spent a majority of their early childhood in the home. Again, the exposure to typical behavior could have impacted the way the child presents today.

Another general limitation to this study was the classroom setting/activities being observed. Because there was a range in the age of the participants, the classroom environment varied. For the younger children, the classroom environment included more materials to play with and hands-on manipulatives, with more time in the day set aside to specifically focus on social skills development. The older children, on the other hand, were in classrooms where they were seated at individual desks with less stimulation surrounding them. These children had more academic expectations with which to

comply. With these differences, the amount of possible opportunities to socialize was unique to each situation. Unfortunately, due to the limited number of participants, statistical significance in regard to older children's behavior versus younger children's behavior was not analyzed.

This was specifically true in regard to the interactions with his or her teacher. The teacher's personality and teaching style were never evaluated, contributing to the possibility of different levels of opportunity for the students to interact directly with him or her. Although it was attempted to adjust for this particular factor, the matching of *Group 1* and *Group 2* participants was not always possible, leading to some variability.

This specific limitation resulted in one observational setting (academic) being eliminated from the statistical analysis process. It was not appropriate to compare children working in organized groups on academic tasks to children who were working independently on tasks where socializing with others was discouraged.

### **Future Research**

As previously discussed, it is evident that children in the early childhood age-range absorb significant amounts of knowledge in regard to social skill development in the home setting prior to first entering school. The current study attempted to analyze how these children are impacted by older siblings with Autism. The findings, in regard to interactions with peers were significant. A next step in the research process may be to compare siblings of children with Autism with other siblings of children with different disabilities. Taking into account that this study determined that siblings of children with Autism socialize with their peers less and were rated as displaying less prosocial and

more problematic behavior than siblings of children without a disability, it would be important to understand what impact other disabilities have on social development. This would either provide support for, or discredit, the uniqueness of having an older sibling with Autism, as it pertains to the younger sibling's social behavior.

Another direction for future research would require obtaining and utilizing a larger sample size. With more children involved in the study, additional analyses and comparisons could be made. It would also make the current finding stronger, assuming similar results were achieved. If different findings were determined, it would allow for additional variables to be analyzed individually. For example, in the current data collection procedure, information was collected on each child during an academic-based activity. Unfortunately, that data was not analyzed at this time, due to the variability in events that occurred within each setting. With a larger sample size, children of the same age could potentially be categorized together, making the likelihood for them to participate in similar activities stronger. Once those results are able to be determined, specific ages can then also be compared. As a child grows and develops between the ages of 2 and 6 years old, social growth occurs and unique behaviors could be displayed. This is necessary information to have when understanding the overall impact the older sibling could have on their younger brother or sister's social development.

Additionally, utilizing a larger sample size might allow for further exploration of factors such as other ethnicities and/or cultures, a variety of school structures (public schools, private schools, UPK, special education inclusion programs), and the

accessibility to social skills programs within the schools. These are all potential factors that could impact the way a young child learns and practices social behavior.

More specifically, cultural expectations of children vary significantly. In certain cultures, children are encouraged to be quiet and introverted, while in others, the children are given the freedom to express themselves openly and socialize freely. The culture's emphasis in respect for older siblings would also impact how much the younger children imitated their older brothers or sisters.

In regard to the type of school environment the participating child is in, he or she might be given an opportunity to interact with children of diverse needs, making it easier to discriminate between what behaviors are acceptable and what are not. Some schools may go as far as providing the children with social skills support. That direct instruction would lend to the assumption that even with the exposure to inappropriate social behavior at home, the child would be able to display prosocial skills and limited problematic behavior.

It would also be beneficial to collect information on the teachers working with the participants. The relationship between the teacher and siblings of children with Autism was the one area that did not lead to significant results. It is necessary for the focus to be directly on how the teacher and student interact with one another on a daily basis first. Once that is determined, then research should expand to how social behavior can contribute to the relationship.

Prior to pursuing further research with the participants, additional information in regard to the tools utilized would be supportive to the study. As the tools become more

popular and used more frequently, it is expected that additional research will be conducted on their reliability and validity. It is also possible that additional assessment tools will be introduced to the field that focus more directly on behavioral observations geared specifically towards social skills.

### **Implications for Practice**

While this research was being conducted, many families indicated their need for assistance with their child not identified as having a disability. It was reported that the children were displaying inappropriate behavior at home and at school. Some parents noted that their younger son or daughter was beginning to shut down and become less social, while others indicated that their child was acting out in a more overt manner. In both of these scenarios, the parents were hoping that the results of this study would shed some light for them as to why their child was acting the way he or she was, and possibly provide some support and/or strategies for dealing with the behavior. The results of the current study, although not the final stage in this area of research, could be a beginning in understanding why these younger siblings are acting out the way they are.

Following the data collection, some of the teachers expressed the importance of teaching appropriate social skills in preschool. The level of importance placed on social skills development varied between schools. As a general consensus, however, most of the teachers agreed it is important to teach appropriate social behavior early in the child's school involvement. By doing additional research, an item by item analysis could be conducted to determine what specific social skills need to be targeted and directly taught. Interestingly, many of the social skills programs developed to assist children with Autism

themselves, could also be appropriate for young children in preschool as well. This would include all children, with and without disabilities, no matter what exposure they may have had previously in their lives. With the child with Autism and his or her sibling learning the similar programs, it is more likely that the skills will be carried over to other settings and practiced regularly.

The difficulty with acquiring participants for this study indicates that there are many parents who are hesitant in exploring the research behind Autism and its impact on the family, as a whole. Unfortunately, it seems that many parents have a fear inside them that they will find out that there is something “wrong” with their child all over again. Through informal discussion with various families who chose not to participate, it was reported that there is a level of fear associated with “getting any more bad news.” The results of this study showed that in almost every case, the younger siblings only had relative weaknesses in social skill development. Instead of being fearful of hearing this information, the families would benefit from understanding it and utilizing it to their benefit. For example, the parents may want to encourage more time for their younger child to participate in social groups where appropriate behavior is reviewed. Eventually, as the topic becomes more frequently researched and addressed, play/social skill groups specifically geared toward siblings of children with Autism may develop. In those groups, specific issues, unique to their situations, would be focused on directly.

In general, this topic needs to be exposed to the public more intensely so that families and schools are aware of the possible risks that could occur from being a younger sibling of a child with Autism. Once that risk is identified, parents, early

intervention programs, medical doctors, and schools will be able to take this information and address children who would otherwise appear to be a “behavior problem,” and provide the appropriate support as needed. If schools can help this population of students be well prepared and have a positive social experience early in school, then they may prevent some of the academic, behavioral, and social-emotional concerns that some children experience later in school. Though future research is needed in this area to more conclusively determine the extent of the relationship between a child with Autism and his or her sibling and that relationship’s impact on the younger sibling’s social behavior at school, previous research, as well as the current study, has suggested that this link does exist. Therefore it seems absolutely necessary to utilize and incorporate this information appropriately in current practices.

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## TABLES

TABLE 1  
*Descriptive Statistics*

	Group 1	Group 2
	Frequency/Percentage	
<b>Age</b>		
2 years	1 / 7%	1 / 7%
3 years	2 / 14%	0 / 0%
4 years	3 / 21%	6 / 43%
5 years	4 / 29%	5 / 36%
6 years	4 / 29%	2 / 14%
<i>M</i>	4.57	4.5
<b>Gender</b>		
Female	7 / 50%	7 / 50%
Male	7 / 50%	7 / 50%
<b>Ethnicity</b>		
Caucasian	14 / 100%	12 / 86%
Indian	0 / 0%	2 / 14%
<b>Number of Siblings</b>		
1	8 / 57%	9 / 64%
2	6 / 43%	3 / 22%
3	0 / 0%	1 / 7%
4	0 / 0%	1 / 7%
<i>M</i>	1.43	1.57
<b>Sibling's Disability</b>		
No Disability	NA	14 / 100%
PDD-NOS	3 / 21%	NA
Asperger's	4 / 29%	NA
Autism	7 / 50%	NA

TABLE 2  
Peer Interactions

	Group 1		Group 2		df	t	p	d
	M	SD	M	SD				
Working/Playing with Peer	3.64	1.946	8.50	3.737	26	-5.96	.0001	-1.63
Appropriate Touch with Peer	4.00	1.617	6.86	2.685	26	-3.411	.0001	-1.27
Talking with Peer	1.43	1.284	2.93	1.207	26	-3.185	.0001	-1.21

\* $p \leq .01667$

TABLE 3  
*Interactions with Teacher*

	Group 1		Group 2		df	t	p	<i>d</i>
	M	SD	M	SD				
Listening/Following Directions	12.07	3.10	18.38	2.44	26	-5.96	.0001	-.55
Raising Hand	4.57	2.74	5.86	2.14	26	-1.384	.178	-2.25
Appropriate Touch with Teacher	1.00	1.88	2.07	1.21	26	-1.794	.084	-.68

\* $p \leq .01667$

TABLE 4  
*Teacher Ratings*

	Group 1		Group 2		df	t	p	<i>d</i>
	M	SD	M	SD				
Prosocial Behavior SS	80.71	10.34	104.36	9.20	26	-4.808	.0001	-1.82
Problem Behavior SS	100.21	11.10	94.50	10.85	26	2.594	.015	-0.98

\* $p \leq .025$

## APPENDIX A:

## INFORMED CONSENT- GROUP 1

Dear Parent/Guardian,

My name is Emily Tremaine and I am currently working towards completing the doctoral program for the Division of School Psychology at Alfred University. In order to do so, I must create a research project (dissertation) in an area of interest to me, as well as relevant to the field of school psychology. I have designed a project to assess whether or not siblings of children with a diagnosis of Autism display different patterns of social interactions in a preschool setting as compared to siblings of children who are considered to be typically developing.

I have been in contact with representatives of the school that your child attends and they have given me permission to complete this project with students in their preschool program. ***Based on the necessary requirements to participate, your child will be included in this project.***

This project will occur between now and the end of the school year. The first action requested is for you to complete the attached demographic questionnaire. Included in the questionnaire will be items focusing on your child on the Autism spectrum. Please be aware that no names, but rather identification numbers, will be included on these forms. This data will allow for further qualitative analysis at the end of the study. The project will include an observation of your child in the classroom for two 15-minute periods. Prior to the observation actually occurring, I will ask your child's teacher to complete a brief screener in regard to your child's current behavior in the classroom. This rating scale is called the *Gilliam Autism Rating Scale*. At that point, the observation will be made. Specific attention will be directed towards the child's prosocial, as well as aggressive, behavior with other students and his or her teacher. Another behavioral rating scale will also be given to the teacher to complete at the end of the observation. This rating scale is called the *Social Skills Improvement Scale*. The entire process should take less than one hour. Once all of the data has been collected and analyzed, overall results will be available upon request.

There is a very small possibility that a project like this one might cause some inconvenience to your child. Every possible effort will be taken to minimize this risk. Every effort by the observer will be made, so that your child does not get distracted by their presence in the room. Participation is voluntary and the teacher can decide at any time to stop the observation without consequence.

All information regarding your child's school information, as well as the rating scale information from the teacher, will be carefully guarded and remain confidential. Your child's teacher will not receive individualized scores or information related to the observation. Each child's information will correspond with a code number, not their name. The only people who will have access to individual surveys will be me and the graduate students who have received permission to assist in analyzing the data. Results of the project will be reported to all of the participating schools based on large group comparisons.

It is unlikely that your child will receive any direct benefit from participation in this project. On the other hand, it is quite possible that the information gained from this project will help you and your child's school in better understanding the importance of sibling relationships, and how they can impact a child's behavioral development.

***If you have any questions about this project or would like to withdraw your child from participation (which you may do without consequence) please contact me, Emily Tremaine at 203-321-5980 or eat2@alfred.edu .*** In addition, you may also contact my dissertation chairperson, Dr. Cris Lauback, Division of School Psychology, Alfred University, at 607-871-2212, or Chair of the Human Subjects Research Committee, Alfred University, Dr. Jana Atlas at 607-871-2212. Thank you for your consideration.

Sincerely,

Emily Tremaine, MA, NCSP

## APPENDIX B:

## INFORMED CONSENT- GROUP 2

Dear Parent/Guardian,

My name is Emily Tremaine and I am currently working towards completing the doctoral program for the Division of School Psychology at Alfred University. In order to do so, I must create a research project (dissertation) in an area of interest to me, as well as relevant to the field of school psychology. I have designed a project to assess whether or not siblings of children with a diagnosis of Autism display different patterns of social interactions in a preschool setting as compared to siblings of children who are considered to be typically developing.

I have been in contact with representatives of the school that your child attends and they have given me permission to complete this project with students in their preschool program. ***Based on the necessary requirements to participate, your child will be included in this project.***

This project will occur between now and the end of the school year. The first action requested is for you to complete the attached demographic questionnaire. Please be aware that no names, but rather identification numbers, will be included on these forms. This data will allow for further qualitative analysis at the end of the study. The project will include an observation of your child in the classroom for two 15-minute periods. Specific attention will be directed towards the child's prosocial, as well as aggressive, behavior with other students and his or her teacher. A behavioral rating scale will also be given to the teacher to complete at the end of the observation. This rating scale is called the *Social Skills Improvement Scale*. The entire process should take less than one hour. Once all of the data has been collected and analyzed, overall results will be available upon request.

There is a very small possibility that a project like this one might cause some inconvenience to your child. Every possible effort will be taken to minimize this risk. Every effort by the observer will be made, so that your child does not get distracted by their presence in the room. Participation is voluntary and the teacher can decide at any time to stop the observation without consequence.

All information regarding your child's school information, as well as the rating scale information from the teacher, will be carefully guarded and remain confidential. Your child's teacher will not receive individualized scores or information related to the observation. Each child's information will correspond with a code number, not their name. The only people who will have access to individual surveys will be me and the graduate students who have received permission to assist in analyzing the data. Results of the project will be reported to all of the participating schools based on large group comparisons.

It is unlikely that your child will receive any direct benefit from participation in this project. On the other hand, it is quite possible that the information gained from this project will help you and your child's school in better understanding the importance of sibling relationships, and how they can impact a child's behavioral development.

***If you have any questions about this project or would like to withdraw your child from participation (which you may do without consequence) please contact me, Emily Tremaine at 203-321-5980 or eat2@alfred.edu .*** In addition, you may also contact my dissertation chairperson, Dr. Cris Lauback, Division of School Psychology, Alfred University, at 607-871-2212, or Chair of the Human Subjects Research Committee, Alfred University, Dr. Jana Atlas at 607-871-2212. Thank you for your consideration.

Sincerely,

Emily Tremaine, MA, NCSP  
Alfred University

Permission Slip for Participation

I, \_\_\_\_\_ grant permission for my child,  
\_\_\_\_\_ to participate in the research project being conducted by  
Emily Tremaine from Alfred University at my child's school. I understand that my child  
will be observed in his/her classroom for two 15-minute sessions by an Alfred University  
graduate student, and that his/her teacher will be asked to complete rating scales that  
target behavior in the classroom. I agree to complete the demographic questionnaire  
included with this permission slip. I further understand that care will be taken to protect  
my child's identity including but not limited to using a number rather than my child's  
name on all documents related to this study.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Date

## APPENDIX C:

## INFORMED CONSENT- TEACHER (GROUP 1)

Dear Teacher/Administrator,

My name is Emily Tremaine and I am currently working towards completing the doctoral program for the Division of School Psychology at Alfred University. In order to do so, I must create a research project (dissertation) in an area of interest to me, as well as relevant to the field of school psychology. I have designed a project to assess whether or not siblings of children with a diagnosis of Autism display different patterns of social interactions in a preschool setting as compared to siblings of children who are considered to be typically developing.

I have been in contact with the parents of \_\_\_\_\_, and they have given me permission to complete this project with their child. ***Based on the necessary data required for this project, the study will need to be implemented in your school.***

This project will occur between now and the end of the school year. The project will include an observation of your student in the classroom for two 15-minute periods. Prior to the observation actually occurring, I will ask you to complete a brief screener in regard to your student's current behavior in the classroom. This rating scale is called the *Guilliam Autism Rating Scale*. At that point, the observation will be made. Specific attention will be directed towards the child's prosocial, as well as aggressive, behavior with other students and with you. Another behavioral rating scale will also be given to you to complete at the end of the observation. This rating scale is called the *Social Skills Improvement Scale*. The entire process should take less than one hour. Once all of the data has been collected and analyzed, overall results will be available upon request.

There is a very small possibility that a project like this one might cause some inconvenience to your student. Every possible effort will be taken to minimize this risk. Every effort by the observer will be made, so that your student does not get distracted by his or her presence in the room. Participation is voluntary and the teacher can decide at any time to stop the observation without consequence.

All information regarding your school information, as well as the rating scale information you will provide, will be carefully guarded and remain confidential. Please note that you will not receive individualized scores or information related to the observation. Each child's information will correspond with a code number, not their name. The only people who will have access to individual surveys will be me and the graduate students who have received permission to assist in analyzing the data. Results of the project will be reported to all of the participating schools based on large group comparisons.

It is unlikely that your student will receive any direct benefit from participation in this project. On the other hand, it is quite possible that the information gained from this project will help your school and your student's parents in better understanding the importance of sibling relationships, and how they can impact a child's behavioral development.

***If you have any questions about this project or would like to withdraw your child from participation (which you may do without consequence) please contact me, Emily Tremaine at 203-321--5980 or eat2@alfred.edu .*** In addition, you may also contact my dissertation chairperson, Dr. Cris Lauback, Division of School Psychology, Alfred University, at 607-871-2212, or Chair of the Human Subjects Research Committee, Alfred University, Dr. Jana Atlas at 607-871-2212. Thank you for your consideration.

Sincerely,

Emily Tremaine, MA, NCSP  
Alfred University

## APPENDIX D:

## INFORMED CONSENT- TEACHER (GROUP 2)

Dear Teacher/Administrator,

My name is Emily Tremaine and I am currently working towards completing the doctoral program for the Division of School Psychology at Alfred University. In order to do so, I must create a research project (dissertation) in an area of interest to me, as well as relevant to the field of school psychology. I have designed a project to assess whether or not siblings of children with a diagnosis of Autism display different patterns of social interactions in a preschool setting as compared to siblings of children who are considered to be typically developing.

I have been in contact with the parents of \_\_\_\_\_, and they have given me permission to complete this project with their child. ***Based on the necessary data required for this project, the study will need to be implemented in your school.***

This project will occur between now and the end of the school year. The project will include an observation of your student in the classroom for two 15-minute periods. Specific attention will be directed towards the child's prosocial, as well as aggressive, behavior with other students and with you. Another behavioral rating scale will also be given to you to complete at the end of the observation. This rating scale is called the *Social Skills Improvement Scale*. The entire process should take less than one hour. Once all of the data has been collected and analyzed, overall results will be available upon request.

There is a very small possibility that a project like this one might cause some inconvenience to your student. Every possible effort will be taken to minimize this risk. Every effort by the observer will be made, so that your student does not get distracted by his or her presence in the room. Participation is voluntary and the teacher can decide at any time to stop the observation without consequence.

All information regarding your school information, as well as the rating scale information you will provide, will be carefully guarded and remain confidential. Please note that you will not receive individualized scores or information related to the observation. Each child's information will correspond with a code number, not their name. The only people who will have access to individual surveys will be me and the graduate students who have received permission to assist in analyzing the data. Results of the project will be reported to all of the participating schools based on large group comparisons.

It is unlikely that your student will receive any direct benefit from participation in this project. On the other hand, it is quite possible that the information gained from this project will help your school and your student's parents in better understanding the importance of sibling relationships, and how they can impact a child's behavioral development.

***If you have any questions about this project or would like to withdraw your child from participation (which you may do without consequence) please contact me, Emily Tremaine at 203-321-5980 or eat2@alfred.edu .*** In addition, you may also contact my dissertation chairperson, Dr. Cris Lauback, Division of School Psychology, Alfred University, at 607-871-2212, or Chair of the Human Subjects Research Committee, Alfred University, Dr. Jana Atlas at 607-871-2212. Thank you for your consideration.

Sincerely,

Emily Tremaine, MA, NCSP  
Alfred University

Permission Slip for Participation

I, \_\_\_\_\_ (Teacher/Administrator) agree to participate in research conducted by Emily Tremaine, an Alfred University doctoral student. I understand that one or more students student in my classroom will be observed for two 15-minute sessions by an Alfred University graduate student, and that their name will not be attached with this demographic data collection. I further understand that I will be asked to complete two brief rating scales in regard to the child's behavior in the classroom. Again, this information will be kept confidential, and no identifying information will be connected to the responses.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
School Name

\_\_\_\_\_  
Date

APPENDIX E:

DEMOGRAPHICS QUESTIONNAIRE-GROUP 1

**Child's Number:** \_\_\_\_\_

**DOB:** \_\_\_/\_\_\_/\_\_\_      **Age:** \_\_\_\_\_ years, \_\_\_\_\_ months

**Gender:** Male / Female      **Ethnicity:** \_\_\_\_\_

**Preschool School:** \_\_\_\_\_

**Date of Collection of Data:** \_\_\_/\_\_\_/\_\_\_

**Sibling Disability:** Autism / Asperger's/ PDD-NOS

**Sibling's School:** \_\_\_\_\_

**Sibling Age:** \_\_\_\_\_

**Number of Siblings:** \_\_\_\_\_

**Other Relevant Information:**

**Noted Difficulties in School:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Noted Speech/Language Concerns:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Noted Significant Medical Information:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

APPENDIX F:

DEMOGRAPHICS QUESTIONNAIRE-GROUP 2

**Child's Number:** \_\_\_\_\_

**DOB:** \_\_\_/\_\_\_/\_\_\_      **Age:** \_\_\_\_\_ years, \_\_\_\_\_ months

**Gender:** Male / Female      **Ethnicity:** \_\_\_\_\_

**Preschool School:** \_\_\_\_\_

**Date of Collection of Data:** \_\_\_/\_\_\_/\_\_\_

**Sibling Age:** \_\_\_\_\_

**Number of Siblings:** \_\_\_\_\_

**Other Relevant Information:**

**Noted Difficulties in School:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Noted Speech/Language Concerns:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Noted Significant Medical Information:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_