

A VALIDATION OF TEACHER TUTOR SELECTIONS FOR CHILDREN WITH
AUTISM AND CONCORDANCE RATES WITH STUDENT NOMINATIONS

by

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(Under the Direction of Dr. Jonathan Campbell)

ABSTRACT

Students with autism are being included in regular education classrooms at an increased rate and these students often lack the social skills needed to interact effectively with their typical peers. Research has demonstrated that peer-mediated interventions, such as using peer tutors, are effective in increasing social and academic skills for the students with autism and typical peers. This investigation looks closer at the social characteristics of peers teachers are choosing to be tutors compared to students the teacher would not select as a tutor. This study also assessed the selected peers' attitudes and behavioral intentions toward an unfamiliar student with autism. Finally, concordance rates were calculated between teacher and peer nominations in the areas of social status, behavioral characteristics, and peer tutor selection. Participants were 31 general education teachers and 576 children (194 third-, 172 fourth-, and 210 fifth-graders) from 31 classrooms within five public elementary schools in Northeast Georgia. Students and teachers first completed social status and behavioral characteristic nominations. Next, the students watched two videotapes of a boy engaging in typical and autistic behaviors. Following the tapes, the students responded to measures of attitude and behavioral

intentions and were asked to choose peer tutors for each boy in the videotape. The teachers were also asked to choose peer tutors for each boy in the videotape and also nominate students they would not select as a peer tutor for the child with autism. Teacher selected tutors and teacher not selected tutors were compared on the following: gender, social status, behavioral characteristics, and attitudinal ratings and behavioral intentions toward the boy in the videotapes. Teacher selected tutors were more often boys, received higher peer nominations of *Like Most* and *Most Popular*, were more often categorized as sociometrically popular, and possessed high levels of prosocial behavior and leadership qualities. Overall, teacher selected tutors possessed higher attitudes and behavioral intentions for academic related tasks for the unfamiliar student whether typical or autistic. Correlation rates ranged from low to high between teacher and peer nominations of social status and behavioral characteristics. There was mixed agreement in regard to peer tutor selection.

INDEX WORDS: Autism, Peer tutors, Social status, Behavior characteristics, Teacher selected tutors, Attitudes, Behavioral intentions, Concordance rates

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DEDICATION

I dedicate my dissertation to my family. To my parents, Joe and Lois Neighbors, who have been my constant cheering section and who taught me the importance of education and to always follow my dreams. To my sisters, Beth Ann and Mary Cobb, who set the bar high and encouraged me all the way. To my husband, Brian, who is my constant companion and never ending support system. You all have inspired, encouraged, and supported me on this journey.

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Chapter 1: Introduction/Background

Autism is becoming more prevalent in today's society, with an estimated 5 out of 10,000 individuals diagnosed each year (American Psychiatric Association [APA], 2000). Research has shown that the prevalence rate of autism can range from 2 to 20 out of 10,000 individuals. The Centers for Disease Control and Prevention studied the prevalence rates of autism in five metropolitan counties near Atlanta, Georgia in 1996 (Yeargin-Allsopp et al., 2003). Results from the study found that 3.4 per 1,000 children between the ages of 3 and 10 were diagnosed with autism. The rate of autism was found to be higher in this study than in previous studies conducted in the United States during the 1980s and early 1990s, but is more consistent with recent studies. It is unclear whether the increase in prevalence rates is due to improved assessment, an actual increase in autism in the population (APA, 2000; Yeargin-Allsopp et al., 2003), or an improved awareness and recognition of the disorder by parents and professionals (Klinger & Dawson, 1996; Yeargin-Allsopp et al., 2003).

In clinical settings, the most commonly used criteria for diagnosing autism are those found in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR). In the DSM-IV-TR, autism is classified under pervasive developmental disorder and is called "Autistic Disorder" (APA, 2000). The symptoms of autism are grouped into three categories, and to meet diagnostic criteria the individual must show deficits in all three areas with some symptoms present before the age of three. Symptom areas include: qualitative impairment in social interaction; qualitative

impairment in communication; and, restricted and stereotyped patterns of behavior, interests, and activities (APA, 2000).

In school settings, eligibility for special education placement in the program for students with autism is set forth in each state's rules and regulations. Georgia state rule 160-4-7.02 defines autism as "a developmental disability, generally evident before age three, that adversely affects a student's educational performance and significantly affects developmental rates and sequences, verbal and non-verbal communication and social interaction and participation" (2000, p. 02-2). Special education eligibility for autism is based on the assessment of the following five characteristics: (a) developmental rates and sequences, (b) social interaction and participation, (c) communication (verbal and/or nonverbal), (d) sensory processing, and (e) repertoire of activities and interests, with deficits in the first three characteristics being mandatory for eligibility.

Autism is a heterogeneous disorder in which individuals range in their expression of certain characteristics. Impairment in social interaction is a defining feature of autism and a hindrance to appropriate interaction with peers, especially in school settings. One of the criteria for clinical diagnosis of autism is an impairment in social interaction in two of the following four areas: (a) impairments in nonverbal behaviors, (b) failure to develop peer relationships, (c) lack of spontaneous seeking to share enjoyment and interests in activities, and (d) lack of social or emotional reciprocity. In normal development, social skills such as forming attachments to others, developing relationships with others, understanding another person's emotions and responding appropriately, engaging in pretend play, and sharing attention with another person are typically learned early in development (Hart & Risley, 1999; Klinger & Dawson, 1996).

Individuals with autism who display any of these limitations will have difficulty interacting with others, which in turn could cause negative views by others.

Education in Inclusive Settings

With an increase in the number of children being diagnosed with autism, there has been an increase in the number of these children being served in the school system (Campbell, Morgan, & Jackson, 2004; Koegel, Koegel, Frea, & Fredeen, 2001). Under federal law, children are to be educated in the least restrictive environment possible, which means that children with disabilities may have the opportunity to be included in general education classes with the appropriate supports. The Individuals with Disability Education Improvement Act (IDEA) of 2004 recently continued the mandate that “to the maximum extent appropriate, children with disabilities, including children in public and private institutions or other care facilities, are educated with children who are not disabled, and special classes, separate schooling, or other removal of children with disabilities from the regular educational environment occurs only when the nature or severity of the disability of a child is such that education in regular education classes with use of supplementary aids and services cannot be achieved satisfactorily” (<http://thomas.loc.gov/cgi-bin/query/z?c108:h.r.1350.enr:>).

According to the United States Department of Education, Office of Special Education and Rehabilitative Services (<http://www.ed.gov/about/reports/annual/osep/2002/appendix-a-pt1.pdf>), during the 2000-2001 school year, 272 students between the ages of 3 and 5 in the state of Georgia were served under the eligibility for autism. For students ages 6 to 21, 1,916 children were served under the eligibility of autism. Including children with autism in general

education classes provides opportunities to interact with typically developing peers; however, with impairments in social interaction, children with autism are subject to rejection and teasing by other students (DiSalvo & Oswald, 2002; Koegel et al., 2001; Swaim & Morgan, 2001).

There are differing opinions about the appropriateness of inclusive education for children with disabilities (Harrower & Dunlap, 2001; Wilson, 1999). Arguments against inclusion focus on the lack of substantial empirical evidence of the benefits (Fuchs & Fuchs, 1994; Kennedy, Shukla, & Fryxell, 1997) and possible negative effects on school personnel and students, both special education and regular education students (Wilson, 1999). In contrast, proponents of inclusion argue that there are numerous benefits to inclusion for students with disabilities and their typical peers, and the research available documents generally positive results (Harrower & Dunlap, 2001). For example, Hunt, Farron-Davis, Beckstead, Curtis, and Goetz (1994) evaluated the effects of placement in a full-inclusion program versus a segregated class and found important differences in levels of engagement and participation between the students with disabilities (identified as having mental retardation, autism, Down Syndrome, Cerebral Palsy, or multiple disabilities) in the included, general education classes and those in the special education classes. Moreover, research has demonstrated no adverse educational outcomes for typical peers who are taught in mainstreamed classes (Hunt, Staub, Alwell, & Goetz, 1994), and, in some cases, inclusion promotes academic achievement for typical students (Cushing & Kennedy, 1997). Educational progress for students of all ages (Brinker & Thorpe, 1984) and social benefits for preschool (Jenkins, Odom, & Speltz, 1989) and elementary school students (Fryxell & Kennedy, 1995) have been documented for

students with severe disabilities (identified in these studies as developmentally delayed, and having severe and profound disabilities) who were included in regular education classes. Teacher and typical peer perceptions of inclusion have been shown to be positive at the elementary school (Giangreco, Dennis, Cloninger, Edelman, & Schattman, 1993), middle school (Giangreco et al., 1993; York, Vandercook, Macdonald, Heise-Neff, & Caughey, 1992), and high school levels (Helmstetter, Peck, & Giangreco, 1994).

For students with autism, research has demonstrated similar benefits to those identified above. Social improvements and generalization practices have been documented for students with autism who are educated in inclusive school settings (Bennett, Rowe, & Deluca, 1996; Owen-Deschryver, 2004; Roeyers, 1996; Strain, 1983). However, Ochs, Kremer-Sadlik, Solomon, and Sirota (2001) found mixed results on the integration into social groups for students with autism. Students whose disability was fully disclosed to their peers received more consistent social support while some students with autism were rejected and scorned by their classmates.

Benefits of Inclusion and Social Learning Theory

One of the proposed benefits of inclusion is behavioral modeling by typically developing peers (Mesibov & Shea, 1996). Research has found that peers can play a significant role in the development of social and communicative competencies of others (Koegel et al., 2001). However, positive outcomes are not guaranteed by merely placing students with disabilities into inclusive settings and sharing proximity to typically developing peers; therefore, specific social skills intervention is often needed. Bandura (1977) espoused the importance of modeling as a form of learning and reported that most human behavior is learned through observation and is subsequently modeled. He noted,

however, that learning will only occur when the models are attended to and perceived accurately. Consequently, without specific interventions to promote socialization, children with autism are less likely to attend to their peer models (DiSalvo & Oswald, 2002). Moreover, typical peers are more likely to initiate social interaction with other typically developing peers, and children with autism are less likely to attend to social behaviors of peers who are not making an effort to interact with them. Social learning theory posits that learning will occur when a behavior is modeled, reinforced, and practiced (Bandura, 1977).

Children's Perceptions of Disabilities

Regular education students' attitudes and behavioral intentions play an important role in supporting children with disabilities in inclusive education settings (Roberts & Lindsell, 1997). Acceptance of children with disabilities and the willingness of typically developing children to interact with these students are key factors for successful inclusion. Roberts and Lindsell (1997) found that fourth and fifth grade students' attitudes in regard to working with peers with disabilities, specifically peers with physical disabilities, were significant predictors of their behavioral intentions toward those same students. Students with positive attitudes toward students with physical disabilities indicated a higher intention of social interaction compared to those with negative attitudes.

In general, research has shown that children's initial attitudes toward other children with disabilities are usually negative, as demonstrated for obesity (Bell & Morgan, 2000), Tourette's Syndrome (Friedrich, Morgan, & Devine, 1996), and autism (Campbell, Ferguson, Herzinger, Jackson, & Marino, 2004; Swaim & Morgan, 2001).

Young children's understanding of disabilities plays a crucial role in their attitudes and behavioral intentions (Magiati, Dockrell, & Logotheti, 2002). Further, numerous factors such as age, social context, and contact and personal experience can affect a child's attitudes toward children with disabilities. Seventy-nine Greek children 8- to 11-years of age were interviewed to determine their understanding of different disabilities (Magiati et al., 2002). Results of the study found that the majority of the children expressed positive attitudes toward non-typical peers; however, the children demonstrated variable knowledge of different disabilities. Overall, the children knew more about sensory and physical disabilities than other disabilities, such as learning disabilities and hyperactivity, but no child was familiar with autism.

Some researchers have examined the effects of explanatory information for improving typical peers' attitudes toward a child with a disability. Findings have been mixed with some reporting improvements in attitudes toward the child with a disability (Bell & Morgan, 2000; Campbell, Ferguson, et al., 2004) while in other findings no change in attitudes was reported (Friedrich et al., 1996; Swaim & Morgan, 2001). Some improvements in attitude only occurred in younger children.

Techniques and Interventions to Improve Social Functioning

Because social dysfunction is a defining feature of autism, many interventions have focused on social functioning as an important outcome (Rogers, 2000). Social interventions discussed in the research for children with autism vary depending on the age group studied, the kind of social partner involved (peer or adult), and the intervention strategy used (Rogers, 2000). Most of the early social interventions for children with autism used adults as teachers and prompters and many programs continue this trend with

success. However, studies have demonstrated that use of adult partners to increase social interactions of children with autism does not easily generalize to peers. Peer-mediated procedures have been found to be more effective than adult-mediated techniques in teaching social skills for the following reasons: (a) the child is kept in a naturalistic setting (such as a classroom) which could increase generalization, and (b) there is no need to transfer learning from adults to peers (Rogers, 2000).

Adult-Mediated Interventions

The most common interventions using adults as therapists are discrete-trial instruction and incidental teaching (Krantz, 2000). In discrete-trial training, the adult gives an instruction to the child (e.g., “Say_____”), who either follows the instruction or not, and the adult then either delivers a reward for following the instruction or not; then the process begins again. In incidental teaching, the child initiates and the teacher responds to the child’s interest or initiation. For example, if the child picks up a toy, the teacher may then ask the child to name the toy or ask how it works. Both types of interventions may focus on a range of behaviors, such as building language skills and initiations, as well as building social interaction and increasing social skills.

Peer-Mediated Interventions

Numerous peer-mediated interventions have been found to have positive results on facilitating socialization in children with autism and other disabilities. Some peer-mediated interventions use one typical peer and one child with autism, and others use groups or entire classes to help increase the academic and/or social skills of children with autism. The most commonly used peer-mediated approaches are peer tutoring or peer buddy techniques (DiSalvo & Oswald, 2002; Rogers, 2000; Utley, Mortweet, &

Greenwood, 1997), class-wide peer tutoring (Utley et al., 1997), peer networks (DiSalvo & Oswald, 2002; Rogers, 2000; Utley et al., 1997), social skills groups (Rogers, 2000), and direct instruction of the child with autism to initiate social interaction with a typical peer, while other peers serve as confederates (DiSalvo & Oswald, 2002) (see Table 1). Each peer-mediated technique and subsequent outcomes will be discussed further in Chapter 2.

Peer Selection

Essential aspects of peer-mediated interventions are the typical peers who are chosen to interact with the child with autism. Teachers frequently select children to serve as tutors; however, there has been little study of *how* teachers select peers to serve and what *characteristics* teachers use to make their choices. DiSalvo and Oswald (2002) contend that peer-mediated programs usually involve socially competent peers, but in order for a program to be effective, peer expectations might need to be altered in order to promote peer effort. Similarly, Rogers (2000) concluded that many of the peer-mediated interventions are complex and require socially skilled typical peers and precise adult control in training the peers to interact with the child with autism in order for the program to be successful.

In many published investigations, there is limited discussion about how typical peers are chosen for their programs. Some studies only report that teachers chose typical children to serve as peer tutors (Brady, Shores, McEvoy, Ellis, & Fox, 1987; Gonzalez-Lopez & Kamps, 1997). However, a large number of researchers discuss the process of peer selection and the criteria used, such as regular school attendance and prosocial behavior (Belchic & Harris, 1994; Brady et al., 1984; Brady, Shores et al., 1987;

Garrison-Harrell, Kamps, & Kravits, 1997; Kamps, Dugan, Potucek, & Collins, 1999; Kamps, Potucek, Lopez, Kravits, & Kemmerer, 1997; McGee, Almeida, Sulzer-Azaroff, & Feldman, 1992; Morrison, Kamps, Garcia, Parker, & Dunlap, 2001; Ostrosky & Kaiser, 1995; Pierce & Schreibman, 1995; Roeyers, 1996; Shafer, Egel, & Neef, 1984; Strain, Kerr, & Ragland, 1979). In addition, several researchers have used peer-based and/or teacher-based ratings of social status to select peer buddies or tutors (Garrison-Harrell et al., 1997; McGee et al., 1992; Sasso & Rude, 1987). However, collecting peer social status ratings is often difficult and time consuming (Landau, Milich, & Whitten, 1984), and is frequently received with reservations from parents and school personnel when negative peer sociometric choices are used (Wu, Hart, Draper, & Olsen, 2001; Yugar & Shapiro, 2001). Therefore, it has been suggested that teachers' perceptions of sociometric status be used in place of peer ratings.

Overall, research demonstrates that peers and teachers provide similar ratings of sociometric status (Landau et al., 1984; Yugar & Shapiro, 2001), but concerns remain regarding the different social contexts that peers and teachers use in interpreting behavior. Use of social status ratings will be discussed further in Chapter 2.

Overview and Purpose

Chapter 1 provided an overview of autism, inclusive education, interventions and techniques used to help facilitate the social functioning of a child with autism, and peer selection for these interventions. A comprehensive literature review of the types of peer-mediated interventions used, the outcomes of the peer-mediated techniques, methods for peer selection, and the research questions and hypotheses for this study are provided in Chapter 2. The method of data collection for a data set that evaluated teacher

nominations of peer buddies for a child with autism and assessed typical students' perceptions of an unfamiliar child with autism is discussed in Chapter 3. Chapter 4 details the results of the analyses. The conclusion and implications for the findings are discussed in Chapter 5.

The purposes of the dissertation are to: (a) review literature on peer-mediated interventions for children with autism, (b) discuss the importance of the use of typical peers in facilitating the socialization of children with autism, (c) investigate predictors of teachers' peer tutor selection, and (d) evaluate the similarities between teacher and peer nominated peer tutor selections for a child with autism.

Table 1

Description of Types of Peer-Mediated Interventions Used with Children With Autism

Type of Intervention	Description
Peer Tutoring	<p>“Focus on dyads with one typically developing peer and one child with autism, rather than a group of children... Tutor-learner pairs that promote the incidental learning of social behaviors through natural interactions” (DiSalvo & Oswald, 2002, p. 200).</p> <p>“Represents a class of practices and strategies that employ peers as one-on-one teachers to provide individualized instruction, practice, repetition, and clarification of concepts” (as cited in Utley et al., 1997, p. 7).</p>
Peer Buddy	<p>“Focus on dyads with one typically developing peer and one child with autism, rather than a group of children... Peer buddy approaches involve assigning each child with autism to a buddy, who is told to stay with, play with, and talk to the child with autism” (DiSalvo & Oswald, 2002, p. 200).</p>

Class-Wide Peer Tutoring (CWPT)	Includes “one-on-one peer tutoring and group contingencies of reinforcement...during CWPT session, children are paired with a partner and each person is assigned to one of two competing teams. Tutor and tutee roles are reciprocal in that halfway through a session, tutors become tutees and vice-versa” (Utley et al., 1997, p. 11-12).
Peer Networks	<p>“Peer network interventions develop a social support network by soliciting an intact group of peers to provide support for individuals with disabilities” (DiSalvo & Oswald, 2002, p. 201).</p> <p>“...groups of individuals who demonstrate an interest in understanding the individual with disabilities and having an impact on that person’s life...Primary goal...is to promote a positive social environment for students with autism by creating a support system of friends and socially competent peers” (as cited in Utley et al., 1997, P. 6).</p>
Social Skills Groups	Groups consisting of three to five typically developing peers and one child with a disability. All children are taught specific social skills, such as initiating a conversation, and then are given the opportunity to practice these skills with each other.

Direct Instruction of the Child with Autism Teaching the target children (children with autism) initiation skills. The target child then practices his/her newly learned skills with peers. Peers are not taught to initiate with the target child, only to respond appropriately (DiSalvo & Oswald, 2002).

Chapter 2: Literature Review

Peer Mediated Interventions

As introduced in Chapter 1, there are numerous types of peer-mediated techniques used to increase academic and social skills for children with autism and other disabilities. Some of these approaches include: peer tutors or peer buddies, class-wide peer tutoring, peer networks, social skills groups, and direct instruction of the child with autism to initiate with a typical peer. With an increase in the number of children with autism and other disabilities being included in regular education classrooms, peer-mediated techniques may be essential in effectively integrating these children into the classroom. Each of the peer-mediated techniques and their outcomes are reviewed in this chapter (See Table 2 for a more comprehensive summary of studies investigating peer-mediated interventions).

Peer Buddy/Tutor

The most commonly discussed peer-mediated strategy used with children with autism in the research literature is the use of typical peer buddies or peer tutors to initiate and prompt a child with autism in a social or academic situation. Peer tutoring consists of pairing one child with autism with one typically developing peer to work on academic and/or social skills (Harrower & Dunlap, 2001). This procedure usually involves the typical child providing assistance, instruction, and feedback to the child with autism. This technique has been widely used with preschool, elementary, and middle school students.

Preschool findings. Goldstein, Kaczmarek, Pennington, and Shafer (1992) investigated the use of typical peers to increase the social interaction of preschool children with autism. Typical peers were taught to attend to, comment on, and acknowledge the behavior of their classmates with autism. The students were divided into triads, consisting of one child with autism and two typical peers. All the typical students in the classroom participated; therefore, no peer identification selection process was needed. The play sessions for the triads lasted approximately five minutes and all verbal and nonverbal communicative behaviors were recorded for all children during this time period. Improvements in social interactions were documented for four of the five target children in the study.

McGee et al. (1992) used peer tutors and incidental teaching to increase reciprocal peer interactions with preschoolers. Participants were enrolled in an integrated preschool program. Typical peers were chosen based on the following criteria: age, regular school attendance, teacher reports of high levels of compliance, age-appropriate social skills, and high status among peers based on teacher and peer sociometric ratings. No information was provided about actual assessment of social status. Three typical peers were taught how to use incidental teaching techniques to obtain verbal labels of preferred toys from three children with autism. Specifically, the peers were taught to: (a) wait for the child with autism to initiate a request, such as reaching for a toy; (b) ask the child for the name of the toy; (c) give the toy to the child when the child says the correct name; and, (d) praise the child for the correct answer. Results showed that peer incidental teaching is an effective method of promoting reciprocal interactions. Initiations and responses increased for both the children with autism and the typically developing peers.

Oke and Schreibman (1990) studied the effects of teaching two typical preschool peers to initiate social interaction to a high-functioning child with autism. This study used an alternating treatment design, in which, in addition to the typical peers being taught to initiate social interactions, the child with autism was also taught how to initiate to the typical peers. The goal of the program was to increase the social initiations and interactions of the child with autism, but also to decrease disruptive behavior. No information was provided as to how the two typical peers were selected, except they had no prior history of interaction with the child with autism. During the intervention phases in which the typical peers were prompted to initiate, there was an increase in social interaction of the child with autism, but the interactions decreased dramatically during the reversal phase. In addition, there was no decrease in disruptive behavior of the target child. However, when the child with autism was taught to initiate with the typical peers, his social interaction increased again and there was a decrease in his disruptive behavior. It appears that not only are peer social initiations effective, but also teaching a child with autism to initiate may be effective at increasing positive social interaction.

Elementary school findings. Studies have also been conducted on the effects of using peer buddies or peer tutors with elementary school students. Laushey and Heflin (2000) used a peer buddy approach to increase social skills of kindergarten children with autism. Each student in the class was assigned a daily buddy. The buddy cards were rotated daily to give each child in the class a chance to work with the child with autism. All students were trained to stay with, play with, and talk to their buddy during the free-play time. Results indicated that in comparison to “passive proximity” (baseline), the peer buddy system elicited more appropriate social skills from the children with autism.

Moreover, the peer buddy intervention also proved to be beneficial for all the children in the class in which everyone increased their social skills.

Lord and Hopkins (1986) used kindergarten peers to help increase the social interaction of six, 8- to 12-year old children with autism. In addition, same-age typical peers were also taught to initiate social interaction with the children with autism. Triads were formed using a kindergarten typical peer, a child with autism, and a typical peer within six months of the child with autism's chronological age. Kindergarten students were used because they closely matched the child with autism's mental age and these were students the children with autism would most likely be integrated with in these particular school programs. No other information, aside from chronological and mental age, was provided as to peer selection. The treatment phase consisted of 15-minute play sessions conducted 10 times a day over a two to three week period between the child with autism and either the kindergarten peer or same-age peer. After one-week of play with one typical peer, the typical partner was changed following a week-long break in the intervention. The typical peers were instructed to show the child with autism how to play with the toys and try to engage him in play. Overall, the play sessions were unstructured. Results demonstrated that same-age peers, when compared to younger children, initiated more frequently and were better able to modify their initiations that increased the likelihood of responses from the children with autism. Data also showed that all participants increased their proximity, orientation, and responsiveness when playing with both typical peers and peers with autism.

Middle school findings. In a study with middle school students, Brady, Shores et al., (1987) used a peer-initiation training procedure to increase the social interactions of

severely withdrawn children with autism in the sixth grade. Two students with autism and nine typically developing students participated in the study. Typical peers were nominated by their teachers based on the following criteria: regular attendance, level of compliance with adult requests, history of positive social behaviors with their classmates, average or better school performance, and willingness to participate. Pre-intervention training for the typical peers consisted of adult instruction on how to recognize and respond to initiations and then to continue interacting with the child with autism. At the conclusion of the study, one of the children with autism substantially increased in spontaneous interactions with both trained and untrained typical peers and continued the interactions even after the training procedures were removed. However, the other target student continued to initiate only to the trained peers.

Class-Wide Peer Tutoring

Class-wide peer tutoring (CWPT) programs involve all the students in the class working together either in pairs or in small groups to attain either academic or social goals. Cooperative learning groups are one type of a class-wide peer-tutoring program. In these groups, students work together to help maximize their own and each other's learning (Kamps, Barbetta, Leonard, & Delquadri, 1994). Cooperative learning, peer tutoring, and class-wide peer tutoring involve high levels of student interactions that provide abundant opportunities for students with and without disabilities to practice appropriate social skills (Kamps et al., 1994).

Elementary school findings. Kamps et al. (1994) studied the effectiveness of CWPT in second and third grade classes. In particular, they assessed the effects of CWPT on reading skills for three high functioning children with autism and the effects of

CWPT on the frequency and duration of social interactions that occurred during non-instructional time. A multiple baseline design was used in which baseline consisted of teacher-directed lessons on reading, and CWPT, or the intervention phase, consisted of peers reading aloud to each other and giving feedback on reading skills, errors, and administering comprehension questions. Results showed that reading rates and reading comprehension for the children with autism and typical students increased with the implementation of CWPT. The researchers also noted increased social interaction for all three students with autism and the other students.

Dugan et al. (1995) investigated the use of cooperative learning groups as an instructional learning strategy for integrating two fourth grade students with autism into a regular education classroom. The participants included two children with autism and sixteen typical peers. The intervention condition consisted of 10 minutes of teacher introduction of new material, followed by cooperative learning groups, and concluded with a whole class review. The cooperative learning groups consisted of four students, three typical peers (one academically high functioning, two moderate level) and one child with autism (low academic level). Group time consisted of tutoring on key words and facts of the new social studies material and a team activity (e.g., worksheets) or research projects (e.g., looking up new information). At the conclusion of the program, there was an increase in academic engagement during the group sessions, increases in answers correct on pre- and post-tests, and an increase in students' social interaction.

Peer/Social Networks

Peer networks are based on the idea that increasing peer understanding of and interest in children with disabilities will promote increased interactions between the two

groups (DiSalvo & Oswald, 2002). “Peer network interventions thus develop a social support network by soliciting an intact group of peers to provide support for individuals with disabilities” (DiSalvo & Oswald, 2002, p. 201). These supports could include helping to promote academic success, social competency, and friendship.

Elementary school findings. Garrison-Harrell et al. (1997) used a peer network approach to determine the effectiveness of this strategy on language and social interaction skills for students with autism across multiple settings. Two of the children with autism were being served in a self-contained classroom and one child was served in a regular education first-grade class with paraprofessional support. Fifteen typical peers from first-grade classrooms were selected to participate based on social status and teacher judgment. All students in the classrooms responded to the following questions: (a) what three students in your classroom would you invite to your birthday party, (b) what three friends do you like to play with, (c) what three friends do you want to play with on the playground, and (d) who are three friends in your classroom. In addition, students were asked to rank their classmates on how much they like to play with that person, on a scale of 1 (not at all) to 5 (a lot). The researchers’ criteria for high status were students who were nominated by a minimum of four peers on the first four questions and who were rated by at least four peers as someone he/she liked to play with a lot (rating of 5). Teachers also recommended participants based on level of compliance with teacher requests, consistent school attendance, demonstration of age-appropriate social skills, and demonstration of age-appropriate expressive and receptive language skills. Each student with autism was assigned one peer network and each network consisted of five typical peers. The peer networks were implemented during three specific times throughout the

day for each child; for example, during reading, lunch, recess, language arts, or computer. Pre and post peer nominations of social status and friendship rating scales were collected for each of the target child's classrooms to determine any changes in attitude toward the child with autism. Results showed that peer nominations of the children with autism were higher after the implementation of the peer networks, and social interaction and communication skills among the children increased. Disruptive behavior by the target children was also found to decrease.

Middle school findings. Haring and Breen (1992) used a social network approach in a junior high school to determine its effectiveness on social interactions of students with disabilities and the effects of peer satisfaction, attitude, and friendship development following involvement in a peer support network. One of the target students in this study was diagnosed with autism and the other with moderate mental retardation. Two typically developing students were chosen first based on prior contact with the students with disabilities and then those students recruited close friends to join the peer groups. Interaction times consisted of lunch periods and all breaks between classes. Results from this study showed that social interaction increased among these students inside and outside of school, whereas no interaction outside school was found before the implementation of the network strategy. The target students were asked to go shopping, eat dinner at each other's houses, and go on trips. The peers appeared to genuinely enjoy spending time with the students with disabilities and one group in particular made sure their friend had a support group the following academic year with a new set of peers. These results indicate that peer groups can foster maintenance of social interaction in contexts without adult prompts and reinforcement. "These data suggest that by enlisting

groups of peers to facilitate natural interaction, generalization and high levels of satisfaction may be found, perhaps due to increased group support” (Haring & Breen, 1992, p. 331).

Social Skills Groups

Peer-mediated intervention using social skills groups characteristically involve one child with a disability and 3-5 typically developing peers being taught specific social skills and then having the opportunity to practice these skills with each other during group time.

Elementary school findings. Gonzalez-Lopez and Kamps (1997) used this strategy to teach social skills to four young children with autism ranging in age from 5 to 7 (kindergarten and first grade). Four groups were formed with one child with autism and three peers of the same age per group. The only information provided about peer selection was that the teachers chose the participants. The groups met three to four times per week for 20 to 25 minutes. The first 10 minutes were used as teacher-led social skills training, which included greeting, sharing, imitating, taking turns, and asking for help, and the remaining time was used for free-play. Generally, the amount of social interaction time between the students and the frequency of the interactions increased over the course of the study, more so with the introduction of reinforcement. Disruptive behavior was also found to decrease overtime for the children with autism; however, some of the typically developing peers were seen as having disruptive behaviors and had to change groups during the middle of the study. This study postulates that the use of social skills training combined with a reinforcement system is effective in increasing social interaction among students with and without disabilities.

Kamps et al. (1992) also investigated the use of social skills groups to help promote increased social interactions between students with autism and typical peers in an integrated first-grade classroom. Three students with autism, eleven typical peers, and two peers with physical disabilities participated in the study. All students in the classroom participated; therefore, there was no peer selection process. Initial baseline data was collected during 20-minute play sessions four times a week before the social skills training was implemented. During the social skills training the following specific skills were taught to all the children: (a) initiating an interaction, responding to initiations, and sustaining an interaction; (b) conversations, greetings, and topics; (c) giving and receiving compliments; (d) taking turns and sharing; (e) helping others and asking for help; and, (f) including others in activities. Each skill was practiced for two to three weeks until mastered. Following the completion of the social skills training, students engaged in free play, and in the final month of the school year students engaged in free play groups in which the social skills were restated at the beginning of play. Results showed improved social performance and social interactions among the students with autism and typical peers. Specifically, there were increases in the frequency of, time engaged in, and the duration of the social interactions, along with increases in responsiveness of the students with autism and the typical peers.

Involving Peers in Direct Instruction of Children with Autism

Direct instruction of children with autism involves teaching social skills to children with autism and involving peers for practice of the skills. This approach generally does not teach the typically developing peers to initiate the interaction, but only to respond appropriately when the child with autism initiates.

Preschool findings. Belchic and Harris (1994) trained three preschool children with autism to initiate social interactions to five typical peers in their integrated classroom. The teacher nominated the typical peers based on the following criteria: regular attendance, compliance with adult instructions, history of positive social behaviors with classmates, at least average school performance, and willingness to participate in the study. In addition, one sibling of each target student participated in the study as a measure of generalization of social skills to the home environment. The three students with autism were first taught how to initiate social interactions with typical peers prior to actual interaction with the peers. The typical peers were asked not to initiate any social interaction with the child with autism only to respond naturally to any initiation by the child with autism. Results demonstrated differences between baseline and post-training sessions in regard to social interactions for all of the children with autism. Generalization of social interaction was found to occur on the playground, with an untrained typical peer, and to a sibling at home.

Middle school findings. Brady, McEvoy, Wehby, and Ellis (1987) used an approach that taught an 11-year-old diagnosed with autism to initiate with his peers versus teaching the typical peers to initiate. Seven typically developing children were chosen for the study, three of which were designated as training peers (taught how to respond appropriately), while the remaining four were non-training peers used to determine the effects of the strategy on generalization of skills. No information was provided regarding peer selection. Baseline data and training data were taken and teacher prompts were used to help the child initiate social interaction. Overtime, the target child increased his interaction with the trained peers and after five training days began to

initiate interaction with the non-trained peers, which indicates generalization of skills to multiple peers.

High school findings. Brady et al. (1984) examined the effects of training an adolescent with autism to initiate social interactions with typical peers. Eight typical peers were recommended for the study by their teacher on the basis of: high amounts of positive social behavior, average or better classroom performance, and an interest in participating. During the intervention phase, the adolescent with autism was prompted by the experimenter to initiate with a training peer and the adolescent was praised for successful initiations. Over time, three training peers were introduced with whom the adolescent with autism was prompted to initiate with. Results indicated that spontaneous initiations and interactions between the adolescent and a typical peer increased over time as more training peers were introduced. Generalization of social interactions to participants not used as training peers was more evident after the third peer was trained. Based on these results, the researchers posit that using multiple peers aids in producing generalization of social interactions.

Children with Autism as Tutors

Elementary school findings. Kamps et al. (1999) investigated using children with autism as tutors for younger children. They also included the component of peer networks consisting of students with autism and fourth grade peers. As a group, fourth grade typical students and students with autism were trained to tutor first grade students in sight word recognition. Following the tutoring time with the younger children, the peer networks of fourth graders would engage in free time activities to assess social interactions between the children with autism and the typical peers. This study was

replicated the following school year with new tutors and tutees to demonstrate the effectiveness of the program. Across both studies, results found increased interaction time for the target students and peers, mastery of tutoring skills by the entire network, and increased gains in sight word recognition by the first graders.

Comparing Peer-Mediated Techniques

Researchers have also compared peer-mediated strategies to determine which techniques demonstrate the greatest impact on the social functioning of a child with autism. Kamps et al. (2002) conducted two studies that compared different peer-mediated techniques. The first study examined the effects of social skills groups, cooperative learning groups, and control groups in which peer training was embedded within the interventions. Five students with autism and fifty-one general education peers participated in the study. The typical peers were familiar with the students with autism prior to the start of the study. Overall, the students with autism in the cooperative learning groups demonstrated higher levels of generalization than those in the social skills groups, but all students increased their social interactions over baseline data. Kamps et al.'s (2002) second study examined the maintenance and generalization effects based on results from the first study for peer groups sustained over time. In this study the effects of multiple peer groups were evaluated for each target student. Thirty-four students with autism and approximately 120 typical peers participated in this project. Peer groups consisted of social skills/games/play groups, lunch buddy groups, recess buddy groups, and tutoring groups. Each group consisted of three to five peers and one target child. Target students and typical peers received direct instruction in the use of

skills within the context of the specific activity. Results of this study showed greater generalization of skills with trained peers versus untrained peers.

Odom et al. (1999) also conducted a study that compared the effects of four different intervention approaches designed to increase peer-related social competence among children with disabilities. The intervention approaches consisted of: environmental arrangements (EA, teachers selected children with disabilities and socially competent peers to engage in play activity), child specific (CS, social skills were taught directly to the child with a disability), peer-mediated (PM, peers were taught ways of engaging with children with disabilities), and comprehensive (CM, combined EA, CS, PM). Ninety-eight preschool children with disabilities were originally recruited for the study, but only eighty-three participated in the follow-up assessments. Typical peers were recruited for each condition, but no information was provided as to how many or how they were chosen. Peer ratings and teacher ratings of social competence were collected prior to treatment, during the study, and at the follow-up assessments. Overall, the results ranged in demonstrating the effectiveness of the intervention approaches. The PM techniques had the greatest and most sustained effect on children's social interaction and on the quality of interaction, and the EA condition had the strongest effect on peer ratings. Based on these results, it appears that different intervention techniques are effective in different ways depending on the needs of the children with disabilities. The authors conclude that different types of interventions may be useful in addressing different goals.

The types of peer-mediated interventions programs discussed here (peer tutoring, peer buddy, CWPT, peer-networks, social skills groups, etc.) all appear to increase

academic and social skills of children with autism. However, little discussion was given as to how the characteristics of the typical peers might have affected the outcomes. Due to the diversity of characteristics displayed by children with autism, the needs of the individual student should be taken into account when developing a treatment program. Peer mediated programs should be tailored to the students.

Peer Selection

An important aspect of any peer-mediated intervention is the peer or peers chosen to interact with the target child. Some researchers do not provide information regarding peer selection criteria or its justification, only that teachers chose the peers. However, many researchers have identified peer selection criteria, such as: *regular attendance* (Belchic & Harris, 1994; Brady, Shores et al., 1987; Garrison-Harrell et al., 1997; McGee et al., 1992; Ostrosky & Kaiser, 1995; Roeyers, 1996), *level of compliance with adult instructions* (Belchic & Harris, 1994; Brady, Shores et al., 1987; Garrison-Harrell et al., 1997; McGee et al., 1992; Ostrosky & Kaiser, 1995; Roeyers, 1996; Sainato, Goldstein, & Strain, 1992; Strain et al., 1979), *history of positive behaviors with peers/good social skills* (Belchic & Harris, 1994; Brady et al., 1984; Brady, Shores et al., 1987; Garrison-Harrell et al., 1997; Kamps et al., 1999; Kamps et al., 1997; McGee et al., 1992; Morrison et al., 2001; Ostrosky & Kaiser, 1995; Pierce & Schreibman, 1995; Roeyers, 1996; Shafer et al., 1984; Strain et al., 1979), *average school performance* (Belchic & Harris, 1994; Brady et al., 1984; Brady, Shores et al., 1987; Kamps et al., 1999), *willingness to participate or parent consent* (Belchic & Harris, 1994; Brady et al., 1984; Brady, Shores et al., 1987; Haring & Breen, 1992; Kamps et al., 1997; Morrison et al., 2001; Ostrosky & Kaiser, 1995), and *similar in chronological age* (Lord & Hopkins,

1986, McGee et al., 1992; Ostrosky & Kaiser, 1995; Sasso & Rude, 1987; Shafer et al., 1984).

Advocates of the use of peer-mediated interventions discuss the need for the typical peers to be socially competent (DiSalvo & Oswald, 2002; Oke & Schreibman, 1990; Rogers, 2000; Utley et al., 1997). It has been postulated that socially competent peers have the ability to model and reinforce appropriate social behavior (DiSalvo & Oswald, 2002). Others have matched peers and target students based on age and gender because evidence exists that suggests that at a young age typically developing peers tend to interact with others of the same age and gender (Hartup, 1983). In addition, researchers have noted that using older students as peer tutors is beneficial because older peers are “developmentally more capable of implementing more structured training procedures” (Laushey & Heflin, 2000, p. 184).

When discussing peer selection criteria, researchers often cite other researchers’ work and criteria used, but provide no other information as to the reasoning behind the selection criteria (Belchic & Harris, 1994; Roeyers, 1996). A few researchers have used peer and teacher ratings of social status to select typical peers (Garrison-Harrell et al., 1997; McGee et al., 1992; Sasso & Rude, 1987). It has been demonstrated that the prestige and social status of the model may positively influence the imitative response of the target individual (as cited in Sasso & Rude, 1987).

Effect of Peer-Mediated Interventions on Typical Peers: Effects of High Status Peers

In contrast to previous studies, Sasso and Rude (1987) examined the effects of peer initiation interventions using high- and low-status typical peers on the behavior of other typical peers not trained to interact with a child with a disability versus evaluating

the effects of the intervention on the child with a disability. Specifically, high- and low-status typical peers, ages 7 to 10, were trained to direct social initiations to eight severely handicapped students (identified as having autism or mental retardation) during recess. High- and low-status was determined using peer nominations. Each student in the classroom was asked to respond to the following questions: (a) list three people in your class who are *your best friends*, (b) list three people in your class that *really like you*, and (c) list three people in your class that you would *like to play with best*. This type of peer nomination is a form of sociometric nomination, which can yield information about sociometric popularity. Sociometric popularity will be discussed in more detail later in this chapter. High-status for the Sasso and Rude study was determined by being nominated by at least eight peers and low-status was determined on having been chosen three or fewer times by peers. The researchers found that the use of high status peers increased the initiations toward children with disabilities from peers that were not involved in the study. It appears that using high status or well-liked peers to work with children with disabilities encourages other typically developing children to want to engage with the child with a disability. Results do not indicate what characteristics associated with high-status were responsible for the increase in typical peer initiations toward the child with a disability, but it is assumed that low-status children may lack the social skills necessary to influence the behavior of typical peers.

Similarly, Maheady and Sainato (1985) found positive results on academic and social skills from using high status peers to tutor low status classmates. This study did not specifically involve students with disabilities, but was included in the present literature review to discuss social status of peers and its effect on intervention outcomes.

Three regular education fifth-grade classrooms were selected to participate in the study. Social status of the children was determined using a variation of the How I Feel Toward Others (HIFTO) assessment. Each child in the classroom was asked to describe how he/she feels about each of the students in the class (“friend”, “ok”, “don’t like”, “don’t know”). High status peers received the most “friend” ratings and fewest “don’t like.” Low status students received the most “don’t like” and fewest “friend” ratings. This social status procedure is also a form of sociometric assessment and can yield information about sociometrically popular peers. Three target students (low status) and three peers (high status) were selected for the study. The structure of the project was to have the high status peers tutor the low status peers in the classroom with the opportunity of being observed by the other students in the class when they were working on other assignments. To assess for differences in social interactions between students as a result of the tutoring sessions, observations during lunchtime were recorded. Social behavior was recorded for positive verbal interactions (good talk directed toward another person), positive motor interactions (hugging, touching hands appropriately), negative verbal behavior (shouting, crying), and negative motor behavior (hitting, grabbing) among all the students. Numerous positive results were found from this project. Specifically, tutored students (low status) increased their academic performance, sociometric status improved slightly for tutored students, increased positive social contact among students was observed, and decreased negative social contact between low status peers and their classmates were found. Social status for the high status or well-liked peers was not affected following the peer tutoring of low status peers. Maheady and Sainato (1985) and Sasso and Rude (1987) provide evidence of the effectiveness of using high status or well-

liked peers versus low status peers as agents of change, whether the change is social or academic in nature.

Social Status

Peer status, which refers to the extent that children are accepted or rejected by their peers, has been shown to be a factor influencing a child's socio-emotional functioning, behavioral adjustment, and cognitive development (Coie & Dodge, 1983; Dodge, 1983; Ollendick, Oswald, & Francis, 1989; Vandell & Hembree, 1994). Social status is often measured using a variety of sociometric measures, and sociometric data are used for a variety of purposes. For example, sociometric data are sometimes used to predict academic and social behaviors, provide a basis for classroom instruction, provide a basis for intervention and prevention techniques, assess friendships and social status, and serve as outcome measures for social skills interventions (Vasa, Maag, Torrey, & Kramer, 1994).

Peer Sociometric Measures

Different types of sociometric measures exist. Two commonly used sociometric measures are peer nominations and peer ratings (Vasa et al., 1994; Wu et al., 2001; Yugar & Shapiro, 2001). During peer nomination procedures, children choose a limited number of peers on specific dimensions, such as "choose three students in your class that are your best friends." In contrast, peer-rating procedures ask children to provide a rating for all peers on particular dimensions. Peer ratings usually use a Likert scale and every child receives some type of evaluation, such as "rate on a scale of one to five on how much you like this person."

Using specific sociometric nominations, some research has focused on identifying two-dimensional sociometric status groups. These groups are often termed popular, average, rejected, neglected, and controversial (Coie & Dodge, 1983; Coie, Dodge, & Coppotelli, 1982; Dodge, 1983; Howes, 1988; Vandell & Hembree, 1994). In this tradition, sociometric groups are usually constructed based on the number of “*like most*” (LM) and “*like least*” (LL) nominations and result in sociometric popularity information. Other measurement traditions, such as those used in Maheady and Sainato (1985) and Sasso and Rude (1987), involve calculating the number of positive and negative choice questions (e.g., person is a leader, person starts fights) made on social status measures. Sociometrically popular children receive a high number of positive dimension and LM choices and few LL nominations, children classified as rejected receive few positive choices and a high number of negative and LL choices, neglected children receive few positive and few negative choices, children categorized as controversial receive many positive and LM nominations and many negative and LL nominations, and average children are classified by not fitting into the previously named categories.

Behavioral Characteristics Associated with Social Status Groups

The validity of these sociometric groups has been researched by using behavioral descriptors to differentiate the groups (Frederickson & Furnham, 1998; Newcomb, Bukowski, & Pattee, 1993). Particular behavioral profiles and characteristics have been found to be associated with each sociometric group, which helps to differentiate them from the other social groups. Sociometrically popular or well-liked children have been found to possess higher levels of prosocial behavior and cognitive abilities, possess and demonstrate strong leadership skills, are socially sophisticated, are cooperative, and are

more supportive of others compared to children categorized as average or rejected (Coie et al., 1982; Dodge, 1983; Foster, DeLawyer, & Guevremont, 1985; Frederickson & Furnham, 1998; Lease, Kennedy, & Axelrod, 2002; Lease, Musgrove, & Axelrod, 2002; Newcomb et al., 1993; Vandell & Hembree, 1994). These children have also demonstrated fewer academic difficulties compared to other social groups (Coie & Dodge, 1988), and sociometrically popular or well-liked children exhibit lower levels of aggression, disruptive behavior, social withdrawal, and other negative behaviors when compared to children categorized as average or rejected (Frederickson & Furnham, 1998; Newcomb et al., 1993).

In contrast, children categorized as least liked or rejected exhibit increased levels of aggression, fighting behavior, disruption, off-task behavior, and antisocial behavior compared to children categorized as popular or average (Coie & Dodge, 1988; Coie et al., 1982; Dodge, 1983; Foster et al., 1985; Frederickson & Furnham, 1998; Lease, Musgrove, et al., 2002; Newcomb et al., 1993; Vandell & Hembree, 1994). In addition, rejected children often demonstrate lower intelligence and achievement scores and their grades and work habits are poorer (Vandell & Hembree, 1994). Children classified as controversial tend to exhibit a combination of the behaviors described for the previous two social groups. Controversial children tend to be leaders and often engage in prosocial behaviors, but can also exhibit antisocial and aggressive behavior (Coie & Dodge, 1988; Coie et al., 1982; Newcomb et al., 1993). Children classified as neglected exhibit fewer antisocial behaviors compared to the rejected group of children, engage in more social withdrawal, display fewer social interactions, and are often viewed as shy or unnoticed by their peers (Coie & Dodge, 1988; Dodge, 1983; Newcomb et al., 1993).

Additional Distinctions of Social Status

Newer conceptualizations of peer social status have expanded the notions of popularity and status. For example, Lease, Kennedy et al. (2002) and Parkhurst and Hopmeyer (1998) have looked closer at the distinctions between “perceived popularity” and “sociometric popularity” for elementary and middle school students, respectively. These distinctions of social status arise from different research traditions, psychology-based research (sociometric popularity) and sociological research (perceived popularity), and provide different meanings of ‘popularity’ (Lease, Kennedy et al., 2002; Parkhurst & Hopmeyer, 1998). Sociometric studies conceptualize popularity as meaning well liked, accepted, or preferred as a friend; while research on perceived popularity often defines popularity based on a person’s attainments, attributes, possessions, and activities of social prestige and influence (Parkhurst & Hopmeyer, 1998). When teachers were asked about these distinctions of popularity, they reported that both types of popularity exist in the classroom and both play an important role in the classroom environment and social dynamics of the peer group (Lease, Kennedy et al., 2002).

Perceived popularity is assessed using students’ nominations of *most popular* and *least popular*, whereas, sociometric popularity is derived from *like most* and *like least* nominations. Different behavioral characteristics have been found to be associated with each group. Specifically, perceived popular children are often identified as “cool”, socially prominent, prestigious, and hold a level of dominance in their peer group; whereas, sociometric popular children are found to be prosocial and likeable, but not necessarily dominant or powerful in their peer group (Lease, Kennedy et al., 2002; Parkhurst & Hopmeyer, 1998). Lease, Kennedy et al. (2002) recruited fourth, fifth, and

sixth grade students to participate in their study assessing the different constructs of popularity and examining which behavioral/personal characteristics might be associated with each construct of popularity (e.g., perceived and sociometric popularity). The authors found that perceived popularity and sociometric popularity are related to an extent, but sociometric popularity and social dominance only accounted for half of the variability in perceived popularity; therefore, children perceive popularity as more than just likeability and dominance.

In regard to behavioral characteristics associated with each construct, for girls and boys who were thought of as perceived popular (*most popular* nominations) they were more often characterized as socially visible (e.g., cool, athletic) than sociometric popular children. In addition, the researchers examined and compared the characteristics of the following three groups: perceived popular-only, sociometrically popular-only, and children classified as both. Significant differences were found with each group. For boys who were categorized as perceived popular-only, they exhibited the following characteristics: socially visible, attractive/wealthy, socially aggressive, and not socially withdrawn. The boys categorized as both perceived and sociometrically popular exhibited similar characteristics for the exception of attractive/spending power and socially aggressive. Girls who were categorized as perceived popular-only were viewed by their peers as: bright, socially visible, socially aggressive, and with the expressive equipment of popularity. However, girls classified in both categories of popularity were not found to be socially aggressive or socially visible. In addition, visibility, power, and aggressiveness are more characteristic of perceived popular than sociometrically popular children. From this data and findings from previous research it appears that perceived

popular and sociometrically popular children differ on their behavioral characteristics, which helps to provide validity to both constructs.

Teacher-Rated Social Status

As mentioned in Chapter 1, collecting peer social status data is often difficult and time consuming (Landau et al., 1984), and is frequently received with reservations from parents and school personnel when negative peer sociometric choices are used (Wu et al., 2001; Yugar & Shapiro, 2001). Researchers often use teachers or parents as raters of social status or behavior, but results have been mixed as to the comparability to peer ratings (Hudley, 1993; Huesmann, Eron, Guerra, & Crawshaw, 1994). Often teachers and peers are given different rating forms to complete (Wu et al., 2001) and at times peers and teachers have different perceptions of social behavior and may draw different conclusions based on the same observance of behavior (Coie & Dodge, 1988; Hudley, 1993; Huesmann et al., 1994; Ladd & Profilet, 1996; Landau et al., 1984; Wu et al., 2001). However, researchers argue that teachers have numerous opportunities to observe peer relationships throughout the school day and are the best alternative when peer sociometric measures are not available (Ladd & Profilet, 1996; Ollendick et al., 1989).

Accounting for strengths and limitations when using peers or teachers as informants of social behavior is strongly recommended (Wu et al., 2001). Wu and colleagues compared peer and teacher sociometrics for preschoolers and found that both peer and teacher sociometric measures are reliable (internal consistency for both peer and teacher measures $r = .79$). Test-retest reliabilities for peer and teacher measures were found to be low to moderate (teacher measures $r = .34$ to $.72$; peer measures $r = .44$ to $.64$). The researchers individually asked eighty-four preschool children to look at

pictures of classmates and choose three children they liked to play with most and three children they least liked to play with (sociometric nominations). In addition, the children were asked to assign everyone in their class to a category/picture: happy face (“children like to play with a lot”), a neutral face (“children you ‘kinda’ like to play with”), or a sad face (“children you don’t like to play with”) (sociometric ratings). Teachers were asked to nominate six classmates for each child, specifically, three students that child liked to play with and three students the child did not like to play with (sociometric nominations). In addition, teachers were asked to rate how well other children liked to play with each child on a scale of 1 (very disliked) to 5 (very well liked) (sociometric ratings). The forms of teacher and peer ratings were parallel but not identical. Results indicated that peer and teacher sociometric instruments often measure both similar and distinct aspects of peer popularity. For example, meaningful overlap was found between teacher- and peer-perceived popularity (correlations = .26 to .62), suggesting, “shared realities” between peers and teachers, but through a structural equation modeling analysis teacher and peer ratings were also found to load on two different factors. Finally, Wu et al. found that teacher sociometrics produced greater stability ($r = .96$) over time versus peer sociometrics ($r = .77$); however, teacher sociometric ratings may not accurately reflect short-term fluctuations in social status perceived by peers.

Other researchers have found similar results in the comparability of peer and teacher measures. Landau et al. (1984) compared teacher and peer assessment of social status in kindergarten classrooms. Forty-nine kindergarten boys were recruited as subjects for the study. The boys’ classmates were then individually asked to nominate from this group of boys who they “liked the most” and “don’t like” (sociometric

nominations). Teachers were asked to rank order the group of boys based on popularity, more specifically the degree to which other children most like to play with him (sociometric ratings). Teachers' ratings of aggression were collected using the Conners' Teacher Rating Scale and observations of social behavior were collected during free-time activities. Results indicated that peers and teachers had similar perceptions of social status, but did not provide entirely redundant information (correlation for popular ratings = .50). The researchers strongly recommend including a measure of rejection when using teacher ratings in order to provide a holistic picture of peer relations and not just that of popularity.

Connolly and Doyle (1981) assessed the predictive validity of a teacher ranking measure of popularity versus peer sociometric nominations to demonstrated social competence of preschoolers. The children were individually asked to look at pictures of their classmates and choose three children they liked to play with the most (sociometric nominations). The teachers were asked to rank order the children according to both the frequency and the extensiveness with which peers selected them as a playmate (sociometric ratings). Teacher ratings and observations of social competence were also collected. Results indicated that teachers' ratings of popularity were more predictive of preschooler's social competence than peer ratings. The researchers postulated that at the preschool level the teacher popularity measure was a more powerful tool than the peer sociometric popularity measure.

Often teachers are asked to identify at-risk children, and their observances of social behaviors are essential for accurate identification. Research has shown that teachers can reliably identify sociometrically rejected children, who often evidence

aggression, disruptive behavior, and who are at risk for maladjustment (Coie & Dodge, 1988; Ledingham, Younger, Schwartzman, & Bergeron, 1982; Ollendick et al., 1989). Teachers have also been found to be reliable at predicting whom peers perceive as aggressive (Huesmann et al., 1994). However, Hudley (1993) found mixed results on the agreement between peer and teachers' perceptions of aggression for students in the third through eighth grade. Teachers were asked to rate each child in their class on his/her level of aggressive behavior using the aggression subscale of the Teacher Checklist (sociometric ratings). Students were administered group-wide sociometric questionnaires and asked to name three classmates they liked most and three classmates they liked least (sociometric nominations). In addition, students nominated classmates who met descriptions of aggressive behavior and prosocial behavior (sociometric nominations). Teacher and peer perceptions were found to be more congruent for boys ($r = .50$) than girls ($r = .36$). The author postulates that peers and teachers may hold conflicting beliefs about the norms and expectations of peer-directed behavior; for example, peers may characterize a particular behavior as aggressive, such as losing one's temper, when teachers may not define this behavior as aggressive. Malloy, Yaras, Montvilo and Sugarman (1996) found similar results in that teacher-peer agreement was higher for male students ($r = .46$ to $.61$) than female students ($r = .32$ to $.52$) in Grades 1 to 6. However, Malloy et al. concluded that overall peer and teacher ratings of interpersonal perceptions consistently agreed throughout middle childhood.

Based on the above information, it appears that, overall, peer and teacher sociometric data correlate and using peer versus teacher sociometric data should depend

on the research questions being addressed. One informant may be more useful than the other depending on the study (Ledingham et al., 1982; Wu et al., 2001).

Summary

Based on this literature review, it appears that peer-mediated interventions are successful in improving the social and academic functioning of children with autism and other disabilities, and the number and types of peers chosen are important aspects of the peer-mediated interventions. However, there has been very little study of how teachers select peers, what characteristics teachers use to make their decision, and which peer characteristics, if any, directly affect the outcome of the intervention. Due to the complexity of the interventions, precise training and use of socially skilled peers may be an important element in the success of the program (DiSalvo & Oswald, 2002; Rogers, 2000). Research has demonstrated that high status or well-liked peers (sociometrically popular) are highly effective change agents (Maheady & Sainato, 1985; Sasso & Rude, 1987). Sociometric measures are often used to assess social status and provide information about academic and social behaviors, provide a basis for classroom instruction, intervention and prevention techniques, assess friendships, and serve as outcome measures for social skills interventions (Vasa et al., 1994). Children rated as well-liked or sociometrically popular possess particular positive behavioral characteristics, such as high levels of prosocial behavior and cognitive abilities, strong leadership skills, cooperativeness, empathy, and are supportive of others (Coie et al., 1982; Dodge, 1983; Foster et al., 1985; Lease, Kennedy, et al., 2002; Lease, Musgrove, et al., 2002; Newcomb et al., 1993; Vandell & Hembree, 1994). Sociometrically popular children have also demonstrated fewer academic difficulties compared to other social

groups and exhibit lower levels of aggression, disruptive behavior, and social withdrawal (Coie & Dodge, 1988; Newcomb et al., 1993).

Overall, well-liked or sociometrically popular children appear to possess the qualities needed to successfully implement peer-mediated interventions and are likely more socially skilled than low status peers as Sasso and Rude (1987) suggest. There is no information available about the use of perceived popular peers as positive agents of change. Due to the difficulty of collecting peer measures of social status, teachers are often asked their perceptions of the peer groups. In general, teacher and peer measures of sociometric status are comparable with correlations ranging from .26 to .62, although differences in perceptions of social behavior are common (Coie & Dodge, 1988; Huesmann et al., 1994; Landau et al., 1984; Ledingham et al., 1982; Ollendick et al., 1989; Wu et al., 2001). Based on the findings of the literature comparing teacher and peer sociometric ratings, teachers appear to be able to choose socially competent individuals to participate in peer-mediated interventions with children with autism.

Purpose of the Study

The purpose of this study is to aide researchers and school personnel on how to facilitate the inclusion of a student with autism into a regular education classroom. One way to facilitate this inclusion is by choosing peer buddies to help the student with autism work more successfully in a regular education classroom. Most often, teachers are asked to choose the typical peers to help a new student with autism and information provided from this study may assist in helping teachers choose appropriate peer tutors for a child with autism. In addition, this study examines the ability of teachers to understand and

recognize the social status and social behavior of the students in their class. Some of the information provided will be descriptive in nature, not experimental.

Research Questions and Hypotheses

Based on the information found in this literature review the following research questions and hypotheses are proposed:

1. If teachers are not provided selection criteria, what are common characteristics associated with teacher tutor nominations for children with autism compared to unselected peers? In this study the characteristics assessed are: (a) gender, (b) peer nominations of social status, (c) placement in sociometric categories based on peer sociometric nominations, and (d) peer nominations of behavioral characteristics. I predict that teachers will more often choose boys than girls to be a peer buddy for a male student with autism. I also predict that teachers will choose peer buddies who are well-liked by their peers and possess a positive social status. I predict that teachers will not select peers that are liked least or rated as least popular by their peers. I predict that teachers will more often choose students sociometrically categorized as popular and would not choose students categorized as rejected or neglected. Further, I predict that teachers will choose peer buddies who possess prosocial behavior and good social skills compared to students the teacher would not select.
2. What is the degree of concordance between teacher and peer nominations of social status, behavioral characteristics, and peer tutor nominations?

- a. Sociometric and Perceived Popularity. I predict that teachers and students will make similar nominations of sociometric and perceived popularity and the concordance rate will be moderate to high.
 - b. Behavioral Characteristics. I predict that teachers and students will make similar nominations of behavioral characteristics and the concordance rate will be moderate to high.
 - c. Peer Tutor Selections For a Child with Autism. I predict that teachers and students will make similar nominations of peer buddies for a child with autism.
3. Are teachers choosing appropriate peer tutors for children with autism? Will teacher nominated peer buddies for a student with autism report more positive attitudinal and behavioral ratings for an unfamiliar child with autism than unselected tutors? Does the presence of explanatory information about autism make a difference on tutors' attitudes? I predict that teacher-nominated peer buddies for a student with autism will possess higher attitudinal and behavioral ratings for the unfamiliar child with autism than the students the teachers would not choose as a peer buddy. Specifically, I predict that the students nominated as peer buddies will use more positive adjectives versus negative adjectives to describe an unfamiliar student with autism than the students not selected as a peer buddy. In addition, I predict that the students nominated as peer buddies will be more willing to engage in academic, social, and recreational activities with the student with autism than the students not selected as a peer buddy. I predict that

attitudinal and behavioral ratings will also be higher in the presence of explanatory information about autism.

Table 2

Summary of Studies Investigating Peer Mediated Interventions with Children with Autism

<u>Authors</u>	<u>Type of Intervention</u>	<u>Design</u>	<u>School Level</u>	<u>Participants</u>	<u>Targeted Behavior</u>	<u>How typical peers chosen</u>	<u>Outcome</u>
Belchic & Harris (1994)	<ul style="list-style-type: none"> • Train children with autism to initiate • Typical peer responds naturally only to initiation, he/she does not initiate with child with autism 	Multiple Baseline	Preschool	3—autism 5—typical 1—sibling of child with autism (generalization participant)	Initiate social interaction	<ul style="list-style-type: none"> • Regular attendance • Compliance with adult instructions • History of positive behaviors with peers • Average school performance • Willing to participate 	Differences found between baseline and post-training across all peers. Able to generalize skills to playground, untrained child with autism, and home
Brady, McEvoy, Wehby, & Ellis (1987)	<ul style="list-style-type: none"> • Teach child with autism to initiate 	A-B instructional design	6 th	1—autism 7—typical (3—trained, 4—non-trained)	Increase social interaction	No information	During loose training, child began interacting with training peers, also engaged in spontaneous interactions with both trained and untrained peers. After 5 days of training began initiating to non-trained peers during generalization sessions

Brady, Shores, Gunter, McEvoy, Fox, & White (1984)	<ul style="list-style-type: none"> • Trained adolescent with autism to initiate to typical peers 	Multiple Baseline	6 th	1—autism 8—typical (3 were trained, 5 were used for generalization) 3—additional handicapped classmates	Increase rate of social initiations and percentage of time spent in continuous, spontaneous interactions with trained and untrained peers	<ul style="list-style-type: none"> • Recommended by teacher • High amount of positive social behavior with other non-handicapped peers • Average or better classroom performance • Expressed interest in participating 	Spontaneous initiations to and interactions with typical peers increased with introduction of second peer. Across-peer generalization was more evident after training with third peer and continued even after cessation of training practices.
Brady, Shores, McEvoy, Ellis, & Fox (1987)	<ul style="list-style-type: none"> • Peer Initiation Procedures 	Multiple Baseline	6 th	2—autism 9—typical	Increase social interaction	<ul style="list-style-type: none"> • Nominated by teachers • Regular Attendance • Compliance w/ adult requests • History of positive social behavior with classmates • Average or better school performance • Willingness to participate 	One target child substantially increased in spontaneous interactions with trained and untrained peers and continued after training procedures were removed. The other child only initiated to trained peers
Dugan, Kamps, Leonard, Watkins, Rheinberger, & Stackhaus (1995)	<ul style="list-style-type: none"> • Cooperative Learning Groups • Tutoring on key words and facts, team activity, whole class wrap-up and review (social studies) 	ABAB	4 th	2—autism 16—typical	Increase academics and interaction	No information	Increases for target students and peers for the number of items gained on weekly pretests and posttests, the percentage of academic engagement during session, and durations of student interaction during the intervention

Garfinkle & Schwartz (2002)	<ul style="list-style-type: none"> • Peer Imitation • Small group activity 	Single subject across 4 participants	Preschool	3—autism 1—developmental delays Classroom peers—half special ed., half typical	Increase peer imitation and social interaction	No information	Participants increased peer imitation behaviors in small group and free-play settings. Increase in social behavior (proximity and number of interactions), increase in levels of nonsocial engagement.
Garrison-Harrell, Kamps, & Kravits (1997)	<ul style="list-style-type: none"> • Peer network • Social skills training of typical peers • Students with autism taught social skills & how to use augmentative communication sys. 	Multiple Baseline	First Grade	3-autism 15-typical	Duration of social interaction & social-communicative skills	<ul style="list-style-type: none"> • Social status (two sociometric assessments) • Teacher judgment: compliance attendance age-appropriate social skills age-appropriate expressive and receptive language skills 	Increased social interaction time and use of augmentative communication system by all 3 autism and increased expressive language for 2 students
Goldstein, Kaczmarek, Pennington, & Shafer (1992)	<ul style="list-style-type: none"> • Triads (1 target & 2 typical) • Peers taught to attend to, comment on, & acknowledge behavior of target students 	ABCB reversal design	Preschool	5—autism 10—typical	Increase social interaction	No information	Improved rates of social interaction during play was associated w/ peer intervention for 4 of 5 children with autism
Gonzalez-Lopez & Kamps (1997)	<ul style="list-style-type: none"> • Social Skills Training • Feedback & Reinforcement component 	Reversal design with two intervention conditions	K & 1 st	4—autism 12—typical	Increase positive social interaction	• By teachers (no other information provided)	Increased frequency and duration of interactions for all target students

Haring & Breen (1992)	<ul style="list-style-type: none"> • Social Networks • Social skills intervention during transition times 	Multiple Baseline	Middle School	1—autism 1—Moderate MR 9—Typical	Increase social interaction	Two initial peers chosen: <ul style="list-style-type: none"> • Mainstreamed class with child with disability • Sharing on-campus job • Having common interest • Sharing Hobby • Prior acquaintanceship • Expressed interest by student with disability 	Social network intervention was successful in increasing quantity and quality of interactions, network strategy promoted development of friendships
Kamps, Barbetta, Leonard, & Delquadri (1994)	<ul style="list-style-type: none"> • Class-wide Peer Tutoring vs. Traditional reading instruction • Tutor-learner pairs • Unstructured free time after instruction time 	Multiple Baseline across subjects w/ reversal	8 to 9 years old	3—autism All students in three classrooms (14 selected for data collection—6 LD, 8 typical)	Reading skills (fluency & comprehension) Social Interaction	No Information	Classwide peer tutoring increased reading fluency and correct responses to reading comprehension questions for students with autism and peers. Increased total duration of free-time social interactions for students with autism and peers.
Kamps, Dugan, Potucek, & Collins (1999)	<ul style="list-style-type: none"> • Peer Tutoring Networks • 4th grade students with autism tutoring first grade typical peers • Network consisted of typical and children w/ autism 	Reversal Design w/ multiple baseline	1 st & 4 th	2—autism (4 th) 5—typical (4 th) 6—typical (tutees) (1 st)	Determine if students with autism could be trained as effective tutors and how successful are networks	<ul style="list-style-type: none"> • Selected by teachers • Capable of tutoring • Grade level academics • Good models of social behavior 	Peer network increased their time and social engagement with typical peers, and provided a productive, socially acceptable activity for increasing academic performance for first graders exhibiting delays

Kamps, Leonard, Vernon, Dugan, & Delquadri (1992)	<ul style="list-style-type: none"> • Teach children with autism social skills • Social Skills Groups 	Multiple Baseline across subjects	1 st	3—autism Classroom—11 typical, 2 with physical disabilities	Increase social interactions for students with autism and typical peers	Entire Class	Increases in frequency of, time engaged in, and duration of social interactions, as well as responsivity of students and peers to each other. Results maintained over time.
Kamps, Potucek, Lopez, Kravits, & Kemmerer (1997)	<ul style="list-style-type: none"> • Peer Networks • Reinforcement • One child with autism + ~12 peers/group • Some peers rotated in and out of groups—lunch/recess 	Multiple probe design	K & 2 nd	3—autism (2-2 nd & 1-K) ~ 31—typical (~22—2 nd & ~9—K))	Increase social interaction for 10-20 minutes	<ul style="list-style-type: none"> • Selected by teachers • Good social skills • No negative history with target child • Parent consent 	Increased interaction time for all target students with generalization to non-intervention settings for two students
Kamps, Royer, Kravits, Gonzalez-Lopez, Garcia, Cernazzo, Morrison, Kane (2002)	<u>Study 1:</u> Social Skills and Cooperative learning groups <u>Study 2:</u> (3 years) Social Skills groups Lunch Buddy Groups Recess Buddy groups Tutoring Groups	<u>Study 1:</u> Single subject reversal design No treatment baseline & social skills or cooperative learning group intervention	<u>Study 1:</u> 3 rd & 4 th <u>Study 2:</u> Age range 7 to 14 years old	<u>Study 1:</u> 5—autism 51—typical <u>Study 2:</u> 34—autism 130—typical (initial) 120—typical (final year)	<u>Study 1:</u> Increase duration of social interaction <u>Study 2:</u> Maintenance and generalization effects. Examine effects of peer groups sustained over time	<u>Study 1:</u> • Control group familiar with autism & prior social groups with one of the children <u>Study 2:</u> • Trained Peers • Familiar peers (same general education class) • Stranger peers	<u>Study 1:</u> Peer training increased social interactions with children with autism & generalization of interaction skills to non-training settings vs. peers only familiar with autism (control) <u>Study 2:</u> Improved social interaction skills for target children. More social behaviors found in groups not the control group. Generalization of skills to non-trained peers.

Laushey & Heflin (2000)	<ul style="list-style-type: none"> • Peer Buddy • Treatment phase an active peer tutor training program implemented during free lay center time—"buddy system" • Daily buddies assigned to each student in class • Peers trained to stay with, play with, & talk to a buddy • Dyads changed daily 	ABAB design Reversal design	K	2—autism or PDD Classmates	Increase non-adult directed interactions (peers)	Whole class participated	Peer buddy approach significantly increased social interactions. Follow-up data with one student indicated generalization of appropriate social interaction in a new classroom.
Lord & Hopkins (1986)	<ul style="list-style-type: none"> • Dyad play groups 	Baseline/ Post Treatment	K	6—autism (8 to 12 years old) 12—typical (half younger peers-K, half within 6 months of chronological age)	Social behavior of children with autism in naturalistic setting with typical peers of different ages. Effects of regular interaction on the behavior of the child with autism when they were with typical and non-typical peers	<ul style="list-style-type: none"> • K picked who closely matched autistic subjects mental age and in programs where more than likely to be integrated • Same age peers chosen 	After intervention all subjects showed gains in proximity, orientation, and responsiveness when playing with typical peers and with autistic classmates. Same-age peers initiated more frequently than did younger peers and were better able to modify their initiations in ways that increased likelihood of response from target child.

McGee, Almeida, Sulzer-Azaroff, & Feldman (1992)	<ul style="list-style-type: none"> • Peer Incidental Teaching • Peer tutoring 	Multiple Baseline	Preschool	3—autism 5—typical (3-tutors & 2—comparison subjects)	Increasing reciprocal peer interactions by children with autism in a socially integrated preschool	<ul style="list-style-type: none"> • Age • Regular attendance • Teacher reports of high levels of compliance and age-appropriate social skills • High status among peers—teacher ratings and peer sociometrics 	One child increased interactions in free-play periods, but none showed increases at lunch
Morrison, Kamps, Garcia, Parker, & Dunlap (2001)	<ul style="list-style-type: none"> • Social Skills • Self-monitoring • Peer monitoring • 4 Groups formed 	Multiple Baseline across skills Counterbalanced reversal design	10 to 13 year olds	4—autism 8 to 12—typical	Increase initiations and social interaction skills	<ul style="list-style-type: none"> • Nominated by teacher • Ability to demonstrate appropriate social behavior w/ other students • Parent permission • One group were volunteers from the child's study hall, with permission from teacher and parent 	Adult teaching and peer mediation of skills, paired with reinforcement for skill use and student monitoring, increased initiations and social interaction time with peers during intervention, as well as use of targeted social skills. Little difference between self-and peer-monitoring strategies.
Odom, McConnell, McEvoy, Peterson, Ostrosky, Chandler, Spicuzza, Skellenger, Creighton, & Favazza (1999)	<p>4 Interventions:</p> <ul style="list-style-type: none"> • Environmental arrangements (play groups) • Child Specific (social skills taught to child with disability) • Peer mediated (peers taught how to engage) • Comprehensive • Control 	Pre/Post/Control	Preschool	98—initial w/ disabilities (only 92 completed post-test and 89 completed follow-up)	Promote peer related social competence	No information	Peer mediated intervention had the greatest and most sustained effect on children's participation in social interaction and quality of interaction, child-specific also has a strong-effect. Environmental arrangements had strongest effect on peer ratings.

Oke & Schreibman (1990)	<ul style="list-style-type: none"> • Intervention 1: Peer social initiations • Intervention 2: Target child initiations 	Multiple treatment design (case study) ABCADA	Preschool	1—high functioning autism 2--typical	Increase social initiations and interaction, decrease disruptive behavior	No information except no prior history with child with autism	When peers initiated there was an increase in social interaction, but it dramatically decreased with reversal phase. But when target child taught to initiate, social interaction increased again. No decrease in disruptive behavior during peer initiation, but decreased to a low rate during target child initiations.
Ostrosky & Kaiser (1995)	<ul style="list-style-type: none"> • Triads • Non-disabled peers taught five social communication facilitation strategies 	Multiple Baseline across three triads	3 rd & 4 th	3—children with moderate to severe cognitive disabilities 6—typical	Extent of behavioral changes in all students as a result of the intervention	<ul style="list-style-type: none"> • Similar chronological age • Teacher nomination as being highly interactive during free-play and responsive to adult direction • Regular attendance • Parent permission 	Typical peers able to apply all five strategies. Changes evident in typical peers' frequency of verbal behavior directed toward target child and the percentage of communicative attempts to which non-disabled peers verbally responded. Three students with special needs displayed positive, but variable changes in their frequency of nonverbal and verbal communicative attempts.

Pierce & Schreibman (1997a)	<ul style="list-style-type: none"> • Peer-implemented pivotal response training (PRT) • Dyads 	Multiple Baseline across peer trainers	8 to 9 years old	2—autism 8—typical 2—typical for generalization effects	Generalization of treatment effects	No information	Target children engaged in increased levels of social behavior
Pierce & Schreibman (1997b)	(SAME AS ABOVE)						
Pierce & Schreibman (1995)	<ul style="list-style-type: none"> • Peer-implemented pivotal response training (PRT) taught to children w/ autism • Typical peers taught to implement PRT strategies by modeling, role playing and didactic instruction • Dyads 	Multiple Baseline across subjects	10 year olds	2—autism 2—typical	Increase motivation and promote generalization	<ul style="list-style-type: none"> • Teacher recommendation • Cooperative • Friendly 	Both children with autism maintained prolonged interactions with peers, initiated play and conversations, and increased engagement in language and joint attention behaviors. Teachers reported positive changes in social behavior
Roeyers (1996)	<ul style="list-style-type: none"> • Dyads—matched on chronological age and sex 	Experimental design with random assignment	5 to 13 years old	85—autism or PDD 48--typical	Social Behavior	<ul style="list-style-type: none"> • Regular school attendance • Frequently interacts with peers in an appropriate way • Compliant • Able to follow through with task for a long period of time 	Significant improvements in social behavior of children with PDD in treatment group, several gains generalized to unfamiliar typical peers, another child with PDD, and to large school setting

Sainato, Goldstein, & Strain (1992)	<ul style="list-style-type: none"> • Self-Evaluation procedures • Triads • Determine if trained peers increased their use of strategies after self-evaluation 	Multiple Baseline across subjects	Preschool	3—autism 6—typical (3-trained & 3-untrained)	Use of facilitative strategies Social Interaction Generalization	<ul style="list-style-type: none"> • Teacher nominated trained peers • More compliant • Played better 	Self-evaluation enhanced the use of social interaction strategies on the part of normally developing peers during social skills interventions
Sasso & Rude (1987)	<ul style="list-style-type: none"> • Peer initiation intervention • High and low status peers • During recess 	Counterbalanced withdrawal design	1 st , 2 nd , 3 rd	8—Severe handicaps (5-male & 3 female) 8—Typical (5-male & 3 female)	High vs. Low status peers and initiations by untrained peers toward child with disability	<ul style="list-style-type: none"> • Chronological age compared to child with disability • Sociometric ratings to determine status 	Interactions of high-status peers resulted in higher levels of initiations by untrained peers toward the students with disabilities. Social response levels also differentially affected by status of peer
Shaffer, Egel, & Neef (1984)	<ul style="list-style-type: none"> • Peer training strategy 	Multiple Baseline across subjects	5 to 6 years	4—autism 16—non-autistic (LD, MMR, Conduct problems)	Duration of interaction between autistic students and non-autistic peer-trainers	<ul style="list-style-type: none"> • Groups match sex and age • Referred by teachers • More appropriate social repertoires than other classmates 	Direct prompting produced immediate and substantial increases in occurrences and durations of positive social interactions between peer-trained and autistic students, increases maintained across time, untrained peers increased their interactions with autistic students in 3 or 4 groups, generalization occurred, interactions between untrained and peer-trainers decreased following training.

Strain, Kerr, & Ragland (1979)	<ul style="list-style-type: none"> • Social Initiations and prompting/reinforcement procedures • One intervention—peer emitted positive social initiations • Other setting peer prompted and reinforced play 	Withdrawal of treatment design	9 to 11 years old	4—autism 1—typical peer	Increasing positive social behavior	<ul style="list-style-type: none"> • Chosen because of social play with others • Responsiveness to adult requests 	Positive and comparable behavior changes in treatment setting, but no increase in positive social behavior was observed during generalization assessment
Wolfberg & Schuler (1993)	<ul style="list-style-type: none"> • Play Groups (3 groups) 	Multiple-probe design	6 to 8 years old	3—target autism 3—autism 9—typical (3/group)	Promote peer play	No information	Decrease in isolated play and collateral gains in more social forms of play. Decreases in stereotyped object play and collateral gains in functional object play. Generalization of play behaviors found in other contexts, and language gains.

Chapter 3: Methods

This data set was collected as part of a larger research project assessing typical peers' attitudes toward an unfamiliar student with autism (Campbell, Ferguson, et al., 2004; Campbell, Ferguson, Herzinger, Jackson, & Marino, 2005). I was a part of the research team who developed the project, organized it, and collected the data. This data was collected during the school year, between November 2002 and March 2003.

Participants

Participants were 31 general education teachers and 576 children (194 third-, 172 fourth-, and 210 fifth-graders) from 31 classrooms within five public elementary schools in Northeast Georgia. The classrooms chosen to participate in the study did not include children with autism; therefore, the child participants' initial perceptions of children with autism were easily assessed. Children were also screened in regard to their prior knowledge of autism. They were asked to respond "yes" or "no" that they had heard of autism and then provide a definition if they had circled "yes." Forty-one of the 576 child participants (7%) reported that they had heard of autism; however, none were able to provide a correct definition of the disorder.

Child participants were recruited through a parental consent form sent home from school with each eligible child. At the start of the study, children were told that the researchers were interested in "learning what they thought about a new child who might be coming to their school." Following this introduction, the children provided assent to participate. Participation rates ranged from 76.47 to 100% across the 31 classrooms ($M =$

87.75; $SD = 6.21$) and did not differ across grades, $F(2, 28) = 1.05$, *ns*, or across schools, $F(4, 26) = 1.29$, *ns*.

Child participants were 294 boys (51.04%) and 282 girls (49.86%) who ranged in age from 8.00 to 12.50 years of age ($M = 10.06$; $SD = .98$). The child participants were asked to identify their race/ethnicity and the following were self-identified results: African-American, 8.9%; Caucasian, 80.6%; Hispanic/Latino, 4.5%; Asian-American, 0.7%; and Other, 5.2%. Based on demographic information for the participating schools provided by the State of Georgia's Department of Education (GDOE), the gender and racial/ethnic compositions of the child participants were representative of the larger school population (Georgia Department of Education, 2002). For the five participating elementary schools the following median percentages were reported by the GDOE: 52.2% males (range 51.3-54.6%), 47.8% females (range 45.4-48.7%), 6.1% African-American (range 3.4-13.0%), 85.0% Caucasian (range 78.1-93.6%), 4.6% Hispanic/Latino (range .9-7.0%), and .1% Asian (range .0-3.4%). Socioeconomic information was not collected from children or parents; however, it can be inferred that the sample was comprised of a low socioeconomic group as evidenced by the high percentage of students eligible to receive free or reduced-price lunch, as based on GODE data (median = 50.1, range 19.5-54% for all schools).

Participating classroom teachers were 12 third-grade, 9 fourth-grade, and 10 fifth-grade regular education teachers. Demographic information was not collected from the teachers. A review of the data files indicates that of the 31 teachers, 26 were female and 5 were male.

Procedure

Experimenters worked in two-member teams to collect data from all 31 classrooms. Children, who were given consent by their parents to participate in this study and who provided assent at the start of the data collection, first completed peer nominations of social status (e.g., like most, like least nominations; most popular and least popular nominations), behavioral characteristics (e.g., helps those who are hurt, sick or sad), and social influence (e.g., chosen by others as a leader).

After completing the social status, behavioral characteristics, and social influence nominations, classrooms then watched two videotapes and answered questionnaires about the children in the videos. The videotaped vignettes had also been used previously in a study of acceptance of children with autism (Swaim & Morgan, 2001). The data from the current study were collected as part of a larger study examining the effect of explanatory information about autism on children's attitudes toward an unfamiliar child with autism; therefore, classes were randomly assigned to view videotapes with or without explanatory information about autism. Fifteen of the 31 classrooms received explanatory information about autism. Each class watched a videotape of a typical 12-year-old boy and a second tape of the same child displaying autistic behaviors, such as motor stereotypies (e.g., body rocking and hand flapping) and gaze aversion. After viewing each videotape, children were asked to complete two questionnaires, the Adjective Checklist (ACL) assessing their cognitive attitudes towards the child and the Shared Activities Questionnaire (SAQ) assessing their willingness to engage in social, academic, and recreational activities with the child seen in the videotape. Additional questions asked the children to choose from their class list who would make a good peer buddy for each

child in the videotape and then identify a “best” buddy. One experimenter read instructions and all items aloud while the other experimenter circulated within the classroom to ensure privacy of responding and to answer respondents’ questions. After completing the data collection, participants and non-participants received small gifts (See Appendix A for student questionnaires).

During data collection with the classrooms, teachers were asked to complete nominations of social status, behavioral characteristics, and social influence for the students in their classroom given permission to participate in the study. Teachers also nominated three peer buddies for a child with autism and a typical child and then asked to choose one of the three they thought would make the “best peer buddy.” Teachers also nominated three children they would not choose as a peer buddy for a child with autism (See Appendix B for teacher questionnaire).

Instruments

Behavioral Characteristics and Social Influence

Children were provided rosters of all children in their classroom whose parents provided consent for participation and were asked to complete nominations of behavioral characteristics and social influence using a modified version of the Revised Class Play (RCP; Masten, Morison, & Pellegrini, 1985), a measure of peer reputation, behavioral characteristics, and social influence. The original RCP consists of 30 roles, 15 positive and 15 negative. The procedure consists of students nominating classmates that fit into particular roles/characteristics (e.g., “This person is very good at many outdoor games and sports”, “This person acts bossy and like a know-it-all”). The RCP shows good internal consistency with .95 and .93 found for the Positive Scale, as measured by

Cronbach's alpha coefficient (Masten et al., 1985). In the present study, an 11-item modified version of the RCP was used that focused on the positive traits of the measure. The modified RCP was the measure of behavioral characteristics and social influence. These ratings were also standardized within classroom and gender (e.g., $M = 0$; $SD = 1$). All RCP items also follow closely to a reasonably normal distribution, for example, the "Tries hard at school" standardized item yielded the following: $M = .08$ (range: -1.95, 2.89), $SD = .94$, Skewness = .52, Kurtosis = -.29.

As part of the proposed analyses for this study, a factor analysis was run on the 6-items from the modified RCP that assess personal attributes and behavioral characteristics to confirm factor loadings reported by Lease, Kennedy et al. (2002). The positive items from the RCP are divided into categories of: personal attributes/behavioral characteristics (i.e., helps others, social skills, smart, values school, athletic, and cool) and social prerogatives of status/social reputation (i.e., influence, admiration, leadership, and control). Lease, Kennedy et al. (2002) found that the six personal attributes/behavioral characteristics yielded two distinct factors. Of the behavioral characteristics used in the current study, Lease and colleagues found two distinct factors: prosocial/bright and socially visible. Analyses were run to determine if the scores from the current study confirm these factors.

Peer Nominations of Sociometric Status

Using the rosters provided, the children were also asked to nominate three classmates they "*like to play with the most*" (LM) and three classmates they "*like to play with the least*" (LM). Using Coie and Dodge's (1983) method, LM and LL nominations were standardized within classroom and gender by computing z -scores (e.g., $M = 0$; $SD =$

1) for each nomination. Young children tend to nominate same-gender peers and because of the inequality of gender within the classrooms this standardization allows for comparisons across classrooms with different number of participants. When evaluating the normality of the standardized scores, the factors appear to follow a reasonably normal distribution across the entire sample of students. For example, for the standardized LM item the following statistics were computed across the entire sample: $M = .07$ (range: $-1.84, 2.53$), $SD = .95$, Skewness = .50, Kurtosis = -.58.

Using Coie and Dodge's (1983) method, the standardized LM and LL scores were used to generate social preference (SP) and social impact (SI) scores. Social preference often refers to a measure of likeability and social impact is often a measure of visibility, saliency, or influence. SP scores equal the difference between LM_Z and LL_Z scores ($LM_Z - LL_Z$), while the SI scores are the sum of the LM_Z and LL_Z scores ($LM_Z + LL_Z$). SP and SI scores were again standardized within classroom and gender using a z-statistic (e.g., $M = 0$; $SD = 1$). Coie and Dodge (1983) used derivations of the social status scores to construct five status groups: popular, rejected, controversial, neglected, and average. The social status groups are formed based on the following criteria: (a) *popular*, if standardized SP score > 1.0 , standardized LM score > 0 , and standardized LL score < 0 ; (b) *rejected*, if standardized SP score < -1.0 , standardized LM score < 0 , and standardized LL score > 0 ; (c) *controversial*, if standardized SI score > 1.0 , and standardized LM and LL scores > 0 ; (d) *neglected*, if standardized SI score < -1.0 , and standardized LM and LL scores < 0 ; (e) *average*, all other children not classified in these categories.

Test-retest reliabilities for the LM and LL nominations have been found to range from .27 to .57 over a five year period (Coie & Dodge, 1983), .46 to .88 over a 12-week

period (Coie et al., 1982), and for the SP and SI scores .70 to .79 and .50 to .59, respectively over a five week period (Frederickson & Furnham, 1998). Statistics demonstrate that the popular and rejected categorization usually have higher stability over time ($r = .21$ to $.30$) than the controversial and neglected groups ($r = .14$ to $.24$) (Coie & Dodge, 1983; Frederickson & Furnham, 2001). See Chapter 2 for discussion on the validity of the sociometric groups.

Peer Nominations of Perceived Popularity

The children were also asked to nominate three classmates from the class rosters who they believed were the “*most popular* at school” (MP) and three classmates who were the “*least popular* at school” (LP). Nominations were standardized within classroom and gender using a z -statistic (e.g., $M = 0$; $SD = 1$). Standardized scores again follow closely to a reasonably normal distribution for the entire sample. For MP nominations the following statistics were computed across the sample: $M = .07$ (range: -1.64, 3.51), $SD = .97$, Skewness = 1.03, Kurtosis = .27.

Research demonstrates that perceived popular nominations and sociometric nominations are found to correlate low to moderately using Pearson correlations. More specifically, Lease, Kennedy et al. (2002) found that LM and MP nominations correlate .62, and LL and LP nominations correlate .59. Parkhurst and Hopmeyer (1998) reported the following correlations: perceived popular and social preference $r = .28$, perceived popular and dislike $r = .05$, perceived popular and peer impact $r = .41$, and perceived popular and liking $r = .47$.

Peer Buddy Nominations

After watching each videotape, both the vignette of the typical boy and the one where he exhibits autistic features, the children were asked to nominate three classmates from their class roster who they would “pick as a ‘buddy’ to help him fit in with other kids” in the class. The children were then asked to circle the person that would make the “best buddy.” Nominations were again standardized within classroom and gender (e.g., $M = 0$; $SD = 1$). These standardized items also appear to follow closely to a reasonably normal distribution with the standardized autism tutor item having the following statistics reported: $M = .07$ (range: -1.94, 2.67), $SD = .94$, Skewness = .34, Kurtosis = -.68.

The Adjective Checklist (ACL)

The ACL (Siperstein, 1980; Siperstein & Bak, 1977) has been used extensively in research that examines elementary school children’s attitudes toward children with disabilities. The measure lists 32 adjectives; 16 adjectives have a positive valence (e.g., smart; neat) and 16 adjectives have a negative valence (e.g., dumb; sloppy). Each rater endorsed all adjectives that they believed best described the child portrayed in the videotape. The ACL is scored by subtracting the total number of negative adjectives endorsed from the total number of positive adjectives endorsed and adding a constant of 20. Internal consistency reliability for the ACL ranges from .81 to .91 (Siperstein, 1980; Swaim and Morgan, 2001).

Shared Activities Questionnaire, Short Form (SAQ)

The SAQ is an experimental scale developed to assess the willingness of elementary school children to engage in social, academic, and recreational activities with a target child. The SAQ consists of 24 items grouped according to activity areas:

General Social (e.g., “Eat lunch next to [target child] at school.”), Academic (e.g., “Work math problems in class with [target child].”), and Recreational (e.g., “Go to a ball game with [target child].”). The SAQ yields a total score and three scores for each activity area derived from a principal components factor analysis (Morgan, Walker, Bieberich, & Bell, 1996). The SAQ shows good internal consistency reliability, as measured by Cronbach’s alpha coefficient, for the total score (.95) and the three factor scores (.87 for Academic, .88 for General Social, and .90 for Recreational; Morgan et al., 1996). In the present investigation, a 12-item short form of the SAQ was used that consisted of four items per scale. Short form items were those that showed the strongest factor loadings for the three SAQ factors (Morgan et al., 1996).

Teacher Nomination Form (TNF)

Teachers were provided copies of the class roster of children given parental permission from their classroom to participate in the study and asked to answer the questions on the TNF using the rosters provided. The TNF contained three parts and was developed from the student questionnaires. The first section of the TNF contained 11 questions similar to the RCP that the children completed. The only difference was the wording on some of the questions.

The second part of the TNF contained the four questions of social status, similar to what the students answered (e.g., who do you believe are *like least* by their classmates and who is *most popular* at school). Again the wording of the questions was the only difference between the student and teacher questions.

The third part of the TNF asked the teachers to nominate three children from the class roster who they would select as a peer “buddy” for a typical boy and three children

they would select as a peer “buddy” for a boy with autism. Afterwards the teachers were asked to select the “best buddy” out of the children nominated. Teachers were also asked to choose three children from the class roster who they would not select as a peer “buddy” for a boy with autism. See Chapter 2 for a review of statistics of teacher measures used in the research literature.

Statistical Analyses

The research questions and hypotheses detailed in Chapter 2 were answered using the following statistical methods:

1. If teachers are not provided selection criteria, what are common characteristics associated with teacher tutor nominations for children with autism compared to unselected peers?

- a. Gender Differences

A two-variable chi-square analysis was used to test for different proportions of males and females between three groups: (a) teacher nominated peer buddies for a child with autism (CWA), (b) peers teachers would not select as a peer buddy for a CWA, and (c) those students not nominated by the teachers to be a peer buddy for a CWA (teacher nominated, inappropriate peers, and not nominated).

- b. Characteristics of Social Status

Four separate single group repeated-measures analyses were used to compare the group means between teacher tutor nominations for a CWA (teacher nominated, inappropriate peers, and not nominated) and peer standardized LM, LL, MP, and LP nominations.

- c. Sociometric Category

A chi-square analysis was used to assess the relationship between teacher tutor nominations for a CWA (teacher nominated, inappropriate peers, and not nominated) and students classified into sociometric categories (Popular, Rejected, Average, Controversial, Neglected) using Coie and Dodge's (1983) method.

d. Behavioral Characteristics

The 6-items from the RCP measuring personal attributes and behavioral characteristics were factor analyzed to confirm factor loadings reported by Lease, Kennedy et al. (2002). Items were then grouped based on these findings according to the new factors identified (prosocial/bright and socially visible). These two factors and the remaining five Revised Class Play (RCP) items were assessed using separate single group repeated-measures analyses to compare the group means between teacher tutor nominations for a CWA (teacher nominated, inappropriate peers, and not nominated) and peer standardized ratings of these behavioral characteristics as measured by the RCP.

2. What is the degree of concordance between teacher and peer nominations of social status, behavioral characteristics, and peer tutor nominations?

A series of paired sample *t*-tests were used to assess the concordance rates of teacher and peer nominations of social behavior (sociometric and perceived popularity) and behavioral characteristics (RCP). Correlations and effect sizes were computed based on the *t*-values obtained. Two separate single group repeated-measures analyses was used to compare group means between teacher tutor nominations for a CWA (teacher nominated, inappropriate peers, and not nominated) and standardized peer nominations of peer buddies for a CWA, and also teacher tutor nominations for a CWA and standardized peer "best" buddy nominations for a CWA.

3. Are teachers choosing appropriate peer tutors for children with autism? Will teacher nominated peer buddies for a student with autism report more positive attitudinal and behavioral ratings for the unfamiliar child with autism than unselected tutors? Does the presence of explanatory information about autism make a difference on tutors' attitudes?

For assessing the students' cognitive attitudes toward the unfamiliar child with autism, using the Adjective Checklist's positive and negative items, a mixed-model analysis of variance (Autism x Tutor x Information) was used to examine differences regarding the number of positive and negative adjectives used between these groups: (a) teacher nominated peer buddies for a CWA, (b) peers teachers would not select as a peer buddy for a CWA, and (c) those students not nominated by the teachers to be a peer buddy for a CWA (teacher nominated, inappropriate peers, and not nominated) in the presence and absence of information. The dependent variable was the difference score of the number of positive and negative adjectives (positive-negative) selected by the students. The within-subjects factors were tutor selection and presence of autism, and the between subjects factor was explanatory information. Follow-up pair-wise comparisons were also computed.

To assess the students' behavioral attitudes toward the unfamiliar child with autism, using the Shared Activities Questionnaire's three domain scores (general social, academic, and active recreational), a four-factor mixed-model ANOVA was used to examine differences in behavioral intentions on these three dimensions between teacher tutor nominations for a CWA (teacher nominated, inappropriate peers, and not nominated) in the presence and absence of information. The dependent variables were

the domain scores. The within subjects factors were tutor selection and presence of autism, and the between subjects factor was explanatory information. Follow-up analyses of interactions and pair-wise comparisons were also computed.

The multivariate approach was used with all analyses using the mixed-model design. The univariate assumption of sphericity is not assumed with the multivariate analysis. Further for the mixed-model analysis, the number of classrooms receiving information ($n = 15$) is almost the same as the number of classrooms not receiving information. For this design, the multivariate analysis is robust to a violation of the equal covariance matrices assumption. The statistical validity of the analysis will not be threatened for the balanced design.

Data Structure

The original data set for the Campbell, Ferguson et al. (2004, 2005) studies consisted of data files on each of the 576 children. For the current study, the data was converted to represent information based on the 31 classrooms; therefore, information was grouped based on classroom. For the questions addressing the three levels of teacher tutor selection, the original scores for the variables of interest (ACL ratings, SAQ ratings, peer social status nomination z-scores, RCP rating z-scores, and peer tutor selection z-scores) were averaged by tutor selection and classroom. For example, for classroom one, the teacher-selected tutor scores on each of the afore mentioned variables were isolated and averaged together to create a new variable (e.g. Teacher selected tutor P-N ACL score, Teacher selected SAQ social domain score, etc.). In addition, the scores from non-selected tutors were isolated and averaged to create a new variable (e.g., Teacher not selected tutor P-N ACL score, Teacher not selected tutor SAQ social domain score, etc.).

This procedure was also completed for the students not nominated as tutors (e.g., Teacher not nominated tutor P-N ACL score, Teacher not nominated tutor SAQ social domain score). This procedure was completed for each of the thirty-one classrooms on all dependent variables.

For the question addressing teacher and student concordance rates, the original scores for the variables of interest were teacher selected or not selected on the particular domains (e.g., Like Most, Really Cool, etc.) and student nominations on the particular domains, which were standardized z -scores. New variables for each classroom were computed based on these factors. Teacher selected students were isolated on each domain and their scores, which were z -scores provided by peer nominations, were averaged to create the new variables.

Chapter 4: Results

This study contrasts gender, social status, and behavioral characteristics between teacher-selected tutors and non-selected tutors for a student with autism. In addition, this study evaluates the concordance rates of teacher and peer nominations of social status, behavioral characteristics, and tutor nominations to assess the degree to which teacher and peer observations are similar. Finally, this study addresses the question of whether teacher selected tutors possess more favorable attitudinal and behavioral intentions toward an unfamiliar child with autism when compared to students not selected as tutors.

The statistical analyses of data to address the research questions for this study are reported in the order of data collection. First, teachers' and students' nominations of social status and behavioral characteristics are assessed, in terms of: (a) characteristics associated with teacher tutor selection, and (b) the agreement and concordance rates of teacher and peer nominations of social status and behavioral characteristics. Next, attitudinal and behavioral ratings are compared for tutor groups and the concordance between peer and teacher nominations of peer tutors for a student with autism is assessed. The information about concordance rates of teacher and peer nominations has been separated in this chapter in order to follow the sequence of data collection. The information about peer tutor nominations was collected following the videotapes and the completion of the ACL and SAQ; therefore, the data regarding concordance of teacher and peer tutor selections is discussed last in this chapter.

Characteristics of Tutor Selections

Gender

A chi-square analysis revealed a significant gender difference across teacher tutor selections as presented in Table 4.1. The analysis revealed that males were selected with greater frequency when compared to females for teacher-selected and not selected tutors. Females were also less frequently selected as inappropriate peer tutors than expected.

Table 4.1

Observed and Expected Frequencies of Teacher Tutor Selections Based on Gender

<u>Gender</u>	<u>Teacher Tutor Selection</u>			χ^2	<u>df</u>	<u>p</u>
	<u>Selected</u>	<u>Not Selected</u>	<u>Not Nominated</u>			
Male	55 (43)	71 (41)	168 (210)			
Female	29 (41)	9 (39)	244 (202)	69.897	2	.001
Total	84	80	412			

Note. Expected count is in parentheses.

Social Status

Table 4.2 reports descriptive statistics of peer social status nominations by teacher tutor selection across all 31 classrooms.

Table 4.2

Means and Standard Deviations for Peer-Based Social Status and Teacher Tutor Selection

<u>Social Status Nominations</u>	<u>Teacher Selected</u>	<u>Teacher Not Selected</u>	<u>Teacher Not Nominated</u>
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Like Most	.42 (.62) _{a, b}	-.08 (.57) _a	.02 (.22) _b
Like Least	-.28 (.75) _a	.54 (.64) _{a, b}	.02 (.23) _b
Most Popular	.42 (.60) _{a, b}	-.02 (.53) _a	-.01 (.20) _b
Least Popular	-.26 (.81) _{a, b}	.32 (.59) _{a, c}	.06 (.22) _{b, c}

Note. Standard deviations are in parentheses. Actual scores represent the average of peer nominations (represented as *z*-scores) of social status, which are grouped by teacher tutor group. Within each row, means with like subscripts differed on Bonferroni post hoc tests ($p < .05$)

Four separate single group repeated-measures analyses of variance resulted in a main effect for *Like Most* nominations for tutor selection, Wilks $\Lambda = .744$, $F(2, 29) = 4.99$, $p < .014$, $\eta^2 = .256$, a main effect for *Like Least* nominations, Wilks $\Lambda = .582$, $F(2, 29) = 10.41$, $p < .001$, $\eta^2 = .418$, a main effect for *Most Popular* nominations, Wilks $\Lambda = .728$, $F(2, 29) = 5.41$, $p < .010$, $\eta^2 = .272$, and a main effect for *Least Popular* nominations, Wilks $\Lambda = .777$, $F(2, 29) = 4.16$, $p < .026$, $\eta^2 = .223$. Follow up contrasts using the Bonferroni correction method ($p < .05$) resulted in significant differences on the *Like Most* nominations between teacher selected tutors and not selected tutors ($M_{Difference} = .50$, $SE = .17$, $p < .007$) and selected tutors and not nominated tutors ($M_{Difference} = .40$, $SE = .13$, $p < .005$). For *Like Least* nominations, differences were found between selected tutors and not selected tutors ($M_{Difference} = -.82$, $SE = .19$, $p < .001$) and not selected tutors and not nominated tutors ($M_{Difference} = .52$, $SE = .14$, $p < .001$). For *Most Popular* nominations, differences were found between selected tutors and not selected tutors ($M_{Difference} = .43$, $SE = .16$, $p < .010$) and selected tutors and not nominated tutors ($M_{Difference} = .43$, $SE = .13$, $p < .002$). For *Least Popular* nominations, differences were found between selected tutors and not selected tutors ($M_{Difference} = -.58$, $SE = .20$, $p < .007$) and not selected tutors and not nominated tutors ($M_{Difference} = .26$, $SE = .13$, $p < .048$).

Teacher selected tutors were rated higher than teacher not selected tutors as *Like Most* and *Most Popular*. Teacher not selected tutors were rated higher than teacher selected tutors as *Like Least* and *Least Popular*. See Appendix C, Table C1 for full Multivariate tables.

Additional analyses using paired sample *t*-tests, looked closer at the relationship between student's nominations of *Liked Most* and *Most Popular*. No difference was found between teacher-selected tutor's *LM* and *MP* nominations, $t(30) = .015, p < .988$. Moreover, there was no statistically significant difference found between students' nominations of *LM* and *MP*, $t(573) = .068, p < .946$. It appears that students are choosing similar students for both constructs.

Sociometric Groups

A chi-square analysis of teacher tutor selection and sociometric group revealed significant differences as presented in Table 4.3. Sociometrically popular students were selected as peer tutors more frequently than expected and selected more often than rejected or controversial students as selected tutors. Similarly, rejected and controversial students were selected as inappropriate peer tutors more frequently than expected.

Table 4.3

Observed and Expected Frequencies of Teacher Tutor Selections Based on Sociometric Categorization

<u>Sociometric Category</u>	<u>Teacher Tutor Selection</u>			χ^2	<u>df</u>	<i>p</i>
	<u>Selected</u>	<u>Not Selected</u>	<u>Not Nominated</u>			
Popular	22 (13)	4 (12)	61 (62)			
Rejected	4 (13)	23 (12)	60 (62)			

Average	37 (43)	35 (41)	222 (210)			
Controversial	8 (6)	12 (6)	22 (30)			
Neglected	13 (9)	6 (9)	47 (48)	41.97	8	.001
Total	84	80	412			

Note. Expected count is in parentheses.

Behavioral Characteristics as Measured by The Revised Class Play

Prior to testing for the effect of tutor selection, a factor analysis was completed using the six RCP items measuring personal attributes and behavioral characteristics (i.e., helps others, social skills, smart, values school, athletic, and cool) to determine if the items resulted in two factors (i.e., prosocial/bright and socially visible) reported in the social influence literature (Lease, Kennedy et al., 2002). The six behavioral variables from the current study were submitted to a principal components factor analysis with varimax rotation ($N=576$). Results are presented in Table 4.4.

Table 4.4

Factor Loadings of the Six Personal/Behavioral Characteristics on the RCP Compared with Factor Loadings Reported in the Social Influence Literature

<u>RCP Items</u>	<u>Components</u>	
	<u>1</u> (“Prosocial/Bright”)	<u>2</u> (“Socially Visible”)
Really Cool	.29 (.26)	.85 (.80)
Good at Solving Problems/Social Skills	.84 (.88)	.23 (.10)
Helps Others	.70 (.82)	.16 (.09)
Good at Sports/Athletic	.16 (.06)	.89 (.89)
Smart/Gets Good Grades	.81 (.85)	.19 (.02)
Tries Hard in School/Values School	.71 (.81)	.16 (.13)

Note. Factor loadings in parentheses are reported in Lease, Kennedy et al. (2002). Higher factor loading presented in bold.

The principal components factor analysis produced a two-factor structure very similar to that reported by Lease, Kennedy et al. (2002). Based on this information, two variables, *prosocial/bright* and *socially visible*, were created in the current study by averaging the *z*-scores for the individual variables for each of the teacher tutor selections by classroom.

Table 4.5 reports descriptive statistics of the variables of the RCP by teacher tutor selection.

Table 4.5

Means and Standard Deviations for Peer-Based RCP Variables and Teacher Tutor Selection

	<u>Teacher Selected</u>	<u>Teacher Not Selected</u>	<u>Teacher Not Nominated</u>
<u>RCP Factors</u>			
Prosocial/Bright	.69 (.49) _{a, b}	-.30 (.25) _{a, c}	.01 (.14) _{b, c}
Socially Visible	.43 (.59) _{a, b}	-.04 (.59) _a	-.01 (.18) _b
<u>RCP Items</u>			
Leader	.60 (.71) _{a, b}	-.20 (.59) _a	-.03 (.22) _b
Admire	.49 (.63) _{a, b}	-.08 (.57) _a	.00 (.19) _b
Influence	.64 (.68) _{a, b}	-.11 (.50) _a	-.03 (.20) _b
Control	.12 (.64)	.08 (.72)	.04 (.17)
Self-Confident	.64 (.55) _{a, b}	-.31 (.45) _{a, c}	.09 (.19) _{b, c}

Note. Standard deviations are in parentheses. Actual scores represent the average of peer nominations (represented as *z*-scores) for the RCP variables, which are grouped by teacher tutor group. Within each row, means with like subscripts differed on Bonferroni post hoc tests ($p < .05$)

A series of seven separate single group repeated-measures analyses were run on the following factors/items based on teacher tutor selection: prosocial/bright, socially

visible, leader, admire, influence, control, and self-confident. Main effects were found for six variables: *Prosocial/Bright*, Wilks $\Lambda = .204$, $F(2, 29) = 56.62$, $p < .001$, $\eta^2 = .796$, *Socially Visible*, Wilks $\Lambda = .707$, $F(2, 29) = 6.00$, $p < .007$, $\eta^2 = .293$, *Leader*, Wilks $\Lambda = .603$, $F(2, 29) = 9.56$, $p < .001$, $\eta^2 = .397$, *Admire*, Wilks $\Lambda = .686$, $F(2, 29) = 6.65$, $p < .004$, $\eta^2 = .314$, *Influence*, Wilks $\Lambda = .581$, $F(2, 29) = 10.46$, $p < .001$, $\eta^2 = .419$, and *Self-Confident*, Wilks $\Lambda = .372$, $F(2, 29) = 24.50$, $p < .001$, $\eta^2 = .628$. Peer ratings for Control were not statistically significant based on teacher tutor selection, Wilks $\Lambda = .987$, $F(2, 29) = .186$, $p < .831$, $\eta^2 = .013$. Follow up contrasts using the Bonferroni correction method ($p < .05$) resulted in significant differences between teacher-selected and not selected tutors on the *Prosocial/Bright* factor ($M_{\text{Difference}} = .99$, $SE = .10$, $p < .001$), teacher-selected and not nominated tutors on the *Prosocial/Bright* factor ($M_{\text{Difference}} = .68$, $SE = .10$, $p < .001$), and teacher not selected and teacher not nominated tutors on the *Prosocial/Bright* factor ($M_{\text{Difference}} = -.31$, $SE = .06$, $p < .001$). For the *Socially Visible* factor, differences were found between teacher-selected and not selected tutors ($M_{\text{Difference}} = .47$, $SE = .17$, $p < .010$) and teacher-selected and not nominated tutors ($M_{\text{Difference}} = .44$, $SE = .13$, $p < .001$). Differences were found on the *Leader* item between teacher-selected and not selected tutors ($M_{\text{Difference}} = .80$, $SE = .20$, $p < .001$) and teacher-selected and not nominated tutors ($M_{\text{Difference}} = .62$, $SE = .15$, $p < .001$). For the *Admire* item, differences were found between teacher-selected and not selected tutors ($M_{\text{Difference}} = .57$, $SE = .18$, $p < .004$) and teacher-selected and not nominated tutors ($M_{\text{Difference}} = .49$, $SE = .13$, $p < .001$). For the *Influence* item, differences were found between teacher-selected and not selected tutors ($M_{\text{Difference}} = .75$, $SE = .18$, $p < .001$) and teacher-selected and not nominated tutors ($M_{\text{Difference}} = .67$, $SE = .14$, $p < .001$). Differences on the *Self-Confident*

item were found between teacher-selected and not selected tutors ($M_{Difference} = .94, SE = .13, p < .001$), teacher-selected and not nominated tutors ($M_{Difference} = .54, SE = .12, p < .001$), and not selected and not nominated tutors ($M_{Difference} = -.40, SE = .10, p < .001$).

Teacher selected tutors were rated higher than teacher not selected tutors on the following items: prosocial/bright, socially visible, leader, admire, influence, and self-confident. See Appendix C, Table C2 for full Multivariate tables.

Concordance of Teacher and Peer Nominations of Social Status and Behavioral Characteristics

Table 4.6 reports descriptive statistics for the teacher and peer nominated social status and Revised Class Play nominations.

Table 4.6

Means and Standard Deviations for Peer Social Status and Revised Class Play Nominations According to Teacher Nominations on These Same Dimensions

<u>Factors</u>	<u>Teacher Nominated</u>	<u>Teacher Not Nominated</u>	<u>N</u>
Like Most	.62 (.45)	-.05 (.14)	31
Like Least	1.05 (.75)	-.14 (.17)	31
Most Popular	1.09 (.55)	-.13 (.13)	31
Least Popular	1.16 (.73)	-.15 (.15)	31
Prosocial/Bright	.79 (.39)	-.06 (.09)	31
Socially Visible	1.11 (.46)	-.12 (.08)	30
Cool	1.07 (.56)	-.12 (.11)	30
Leader	1.22 (.67)	-.12 (.11)	31
Admire	1.06 (.64)	-.09 (.14)	31
Solving Problems	.95 (.70)	-.08 (.15)	31
Helps Others	.56 (.57)	.00 (.14)	31
Influence	.80 (.72)	-.07 (.16)	31
Control	1.09 (.61)	-.09 (.12)	29
Sports	1.17 (.63)	-.12 (.10)	31
Smart	1.35 (.52)	-.18 (.09)	31
Tries Hard	.31 (.73)	.03 (.14)	31
Self-Confident	.62 (.56)	.002 (.11)	31

Note. Standard deviations are in parentheses. Differences in *N* sizes are due to the fact that not every teacher rated students on all the factors. Actual scores are the average of peer nominations (represented as *z*-scores) on each domain, which is grouped by teacher selection on each domain.

Social Status

To calculate the concordance of teacher and peer nominations of social status, paired sample *t*-tests were used to compare peer ratings for students chosen by teachers with peer ratings of students not chosen by teachers on nominations of *Like Most*, *Like Least*, *Most Popular*, and *Least Popular*. The paired sample *t*-tests revealed significant correlations that ranged in magnitude from moderate to high. See Table 4.7 for results.

Table 4.7

Comparisons Between Peer- and Teacher-Nominated Social Status Variables

	<u>Mean Difference</u>	<u><i>t</i></u>	<u><i>Df</i></u>	<u><i>p</i></u>	<u><i>r</i></u>	<u><i>d</i></u>
Like Most	.67	7.05	30	.001	.79	2.02
Like Least	1.20	7.55	30	.001	.81	2.20
Most Popular	1.22	10.68	30	.001	.89	3.05
Least Popular	1.31	9.03	30	.001	.86	2.50

Note. *r* = correlation statistic computed using *t*-statistic and *df* = degrees of freedom. *d* = effect size statistic computed using standard deviations and mean differences.

Behavioral Characteristics

To calculate the concordance of teacher and peer nominations of behavioral characteristics, paired sample *t*-tests were used to compare peer ratings for students chosen by teachers with peer ratings of students not chosen by teachers on nominations on the RCP factors/items. The paired sample *t*-tests revealed significant correlations that

ranged in magnitude from low of .33 (Tries Hard) to a high of .94 (Smart). See Table 4.8 for results.

Table 4.8

Comparisons Between Peer- and Teacher-Nominated Behavioral Characteristic Variables from RCP

	<u>Mean</u> <u>Difference</u>	<u>t</u>	<u>df</u>	<u>p</u>	<u>r</u>	<u>d</u>
<u>Factors</u>						
Prosocial/Bright	.85	10.27	30	.001	.88	1.77
Socially Visible	1.23	13.48	29	.001	.93	3.73
<u>Individual Items</u>						
Really Cool	1.19	10.21	29	.001	.88	2.93
Leader	1.35	10.17	30	.001	.88	2.80
Admiration	1.15	8.69	30	.001	.85	2.49
Solving Problems	1.03	6.86	30	.001	.78	2.03
Helps Others	.56	4.59	30	.001	.64	1.35
Influence	.87	5.71	30	.011	.72	1.67
Control	1.19	9.59	28	.001	.87	2.70
Sports	1.29	10.77	30	.001	.89	2.87
Smart	1.52	14.48	30	.001	.94	4.11
Tries Hard	.28	1.88	30	.069	.33	.53
Self-Confidence	.62	5.38	30	.001	.70	1.55

Note. r = correlation statistic computed using t -statistic and df = degrees of freedom. d = effect size computed using standard deviations and mean differences.

Attitudinal and Behavioral Ratings of Teacher Tutor Selections

Attitudinal Ratings

Table 4.9 reports descriptive statistics of ACL difference scores for the different groups of tutor selection across the 31 classrooms.

Table 4.9

Means and Standard Deviations for ACL Difference Scores (P-N) for Teacher Tutor Selections Based on Presence of Autism and Presence of Explanatory Information

	<u>Information</u>	<u>Means</u>	<u>Standard Deviations</u>
<u>Teacher Selected Tutors</u>			
Typical	Yes	11.83	1.93
	No	12.08	2.65
	Total	11.96	2.29
Autism	Yes	4.34	4.05
	No	2.62	5.93
	Total	3.45	5.10
<u>Teacher Not Selected Tutors</u>			
Typical	Yes	7.57	5.33
	No	8.29	4.70
	Total	7.94	4.95
Autism	Yes	2.50	4.90
	No	0.02	7.74
	Total	1.22	6.54
<u>Teacher Not Nominated Tutors</u>			
Typical	Yes	11.13	1.89
	No	10.71	1.65
	Total	10.91	1.75
Autism	Yes	5.09	2.64
	No	1.02	4.86
	Total	2.99	4.40

Note. Scores are the peer ratings on the ACL grouped by teacher tutor selection, presence of autism, and presence of information.

The overall distribution of scores for the ACL factors was assessed using a Stem and Leaf Plot and five outlier scores were identified. Statistics were run again to determine if computing errors or input errors were made. No errors were found. Additional analyses were run assessing the symmetry of the distribution and based on skewness and kurtosis statistics the outlier variables did not indicate a statistically

significant departure from symmetry; therefore, the statistical distribution follows an approximately normal distribution and these points are included in the analysis. ACL statistics were as follows for one of the variables: Skewness = $-.75$, Kurtosis = $.05$.

The mixed-model analysis of variance, with information about autism (Information) as the between subjects factor and tutor status (Tutor) and presence of autism (Autism) as the within subjects factors resulted in no interactions; however, main effects were found for Tutor, (teacher selected $M = 7.72$, teacher not selected $M = 4.60$, and teacher not nominated $M = 6.99$), Wilks $\Lambda = .664$, $F(2, 28) = 7.10$, $p < .003$, $\eta^2 = .336$, and Autism, (typical $M = 10.27$, autism $M = 2.60$), Wilks $\Lambda = .219$, $F(1, 29) = 103.41$, $p < .000$, $\eta^2 = .781$. Follow up contrasts using the Bonferroni correction method ($p < .05$) resulted in significant differences between teacher-selected tutors and not selected tutors ($M_{\text{Difference}} = 3.12$, $SE = .82$, $p < .002$), and differences between not selected and not nominated tutors ($M_{\text{Difference}} = -2.39$, $SE = .73$, $p < .008$). No difference was found between teacher selected tutors and those not nominated ($M_{\text{Difference}} = .73$, $SE = .49$, $p < .432$). An additional follow-up contrast indicated a greater difference in attitudinal ratings for the typical child versus the child displaying autistic features ($M_{\text{Difference}} = 7.67$, $SE = .75$, $p < .001$) as also reported in Campbell, Ferguson et al. (2004). No difference was found in regard to presence of information ($M_{\text{Difference}} = 1.285$, $SE = .947$, $p < .185$). See Appendix D, Table D1 for full Multivariate tables.

Behavioral Ratings

Table 4.10 reports descriptive statistics for the SAQ domain scores.

Table 4.10

Means and Standard Deviations for the SAQ Domain Scores for Teacher Tutor Selections Based on Presence of Autism and Presence of Explanatory Information

	<u>Information</u>	<u>Means</u>	<u>Standard Deviations</u>
<u>Teacher Selected Tutors</u>			
SAQ Social			
Typical	Yes	10.10	1.13
	No	10.94	1.10
	Total	10.53	1.18
Autism			
	Yes	8.54	1.25
	No	9.21	1.52
	Total	8.89	1.41
<u>Teacher Selected Tutors</u>			
SAQ Academics			
Typical	Yes	10.08	1.08
	No	10.75	1.05
	Total	10.43	1.10
Autism			
	Yes	8.69	1.28
	No	9.27	1.96
	Total	8.98	1.66
<u>Teacher Selected Tutor</u>			
SAQ Active Recreational			
Typical	Yes	9.10	1.05
	No	10.07	1.39
	Total	9.60	1.32
Autism			
	Yes	8.56	1.14
	No	8.37	2.08
	Total	8.46	1.66
<u>Teacher Not Selected Tutors</u>			
SAQ Social			
Typical	Yes	10.20	1.85
	No	10.11	1.52
	Total	10.16	1.66
Autism			
	Yes	9.00	2.13
	No	8.03	2.51
	Total	8.50	2.35
<u>Teacher Not Selected Tutors</u>			
SAQ Academics			
Typical	Yes	10.49	1.15

	No	10.08	1.72
	Total	10.28	1.46
Autism	Yes	9.51	1.86
	No	8.31	2.59
	Total	8.89	2.31
<u>Teacher Not Selected Tutors</u>			
SAQ Active Recreational			
Typical	Yes	9.10	2.25
	No	9.47	2.21
	Total	9.29	2.20
Autism	Yes	8.51	2.08
	No	7.86	2.71
	Total	8.18	2.41
<u>Teacher Not Nominated Tutors</u>			
SAQ Social			
Typical	Yes	10.23	.62
	No	10.24	.93
	Total	10.24	.78
Autism	Yes	8.96	.93
	No	8.12	1.32
	Total	8.53	1.21
<u>Teacher Not Nominated Tutors</u>			
SAQ Academics			
Typical	Yes	10.37	.81
	No	10.38	.78
	Total	10.38	.79
Autism	Yes	9.25	.75
	No	8.14	1.32
	Total	8.68	1.21
<u>Teacher Not Nominated Tutors</u>			
SAQ Active Recreational			
Typical	Yes	9.73	1.10
	No	9.34	.95
	Total	9.53	1.03
Autism	Yes	8.59	1.07
	No	7.65	1.16
	Total	8.10	1.20

Note. Scores are the peer ratings on the SAQ grouped by domain, teacher tutor selection, presence of autism, and presence of information.

The overall distribution of scores for the SAQ domains was assessed using a Stem and Leaf Plot and eight outlier scores were identified. Statistics were run again to determine if computing errors or input errors were made. No errors were found. Additional analyses were run assessing the symmetry of the distribution and based on skewness and kurtosis statistics, the outlier variables did not indicate a statistically significant departure from symmetry; therefore, the statistical distribution follows an approximately normal distribution and these points are included in the analysis. An example of normality statistics for one of the SAQ domains scores follows: Skewness = -.70, Kurtosis = .65.

A four-factor mixed-model ANOVA was used to analyze the three domain scores on the Shared Activities Questionnaire (SAQ) with information about autism (Information) as the between subjects factor and tutor status (Tutor) and presence of autism (Autism) as the within subjects factors. A significant 4-way Tutor by Autism by Domain by Information interaction was found, Wilks $\Lambda = .625$, $F(4, 26) = 3.91$, $p < .013$, $\eta^2 = .375$. See Appendix D, Table D2 for full Multivariate tables.

Further analysis of the 4-way interaction (Tutor x Autism x Domain x Information) was conducted by evaluating if the three-way interaction of Tutor x Domain x Information was similar in the presence or absence of Autism. Results for the Typical factor revealed no interactions only a main effect for Domain, (social $M = 10.30$, academic $M = 10.36$, active recreational $M = 9.47$), Wilks $\Lambda = .299$, $F(2, 28) = 32.89$, $p < .001$, $\eta^2 = .701$. See Appendix D, Table D3 for full statistical tables. Follow-up contrasts for the Domain factor using the Bonferroni correction method ($p < .05$) resulted in significant differences between the social and active recreational domains ($M_{\text{Difference}} =$

.84, $SE = .14$, $p < .001$) and the academic and active recreational domains ($M_{Difference} = .89$, $SE = .11$, $p < .001$). Results for the Autism factor resulted in a 2-way interaction for Tutor and Information, Wilks $\Lambda = .747$, $F(2, 28) = 4.74$, $p < .017$, $\eta^2 = .253$ and a main effect for Domain, (social $M = 8.64$, academic $M = 8.86$, active recreational $M = 8.26$), Wilks $\Lambda = .622$, $F(2, 28) = , p < .001$, $\eta^2 = .378$. See Appendix D, Table D4 for full statistical tables. Follow-up contrasts for the Domain factor using the Bonferroni correction method ($p < .05$) resulted in significant differences between the social and academic domains ($M_{Difference} = -.22$, $SE = .11$, $p < .050$), social and active recreational domains ($M_{Difference} = .39$, $SE = .13$, $p < .006$), and academic and active recreational domains ($M_{Difference} = .61$, $SE = .14$, $p < .001$).

Further analysis of the 2-way interaction within the Autism factor (Tutor x Information) included a series of repeated-measures ANOVA tests with Information being held constant. The SAQ scores for each domain on the Autism factor were averaged across tutor selection to obtain total values (e.g., teacher selected autism total, teacher not selected autism total, teacher not nominated autism total). Table 4.11 reports descriptive statistics for the SAQ total score by tutor selection and presence of information.

Table 4.11

Means and Standard Deviations for SAQ Total Score on the Autism Factor by Tutor Selection and Presence of Information

<u>Information</u>	<u>N</u>	<u>Teacher Selected</u>	<u>Teacher Not Selected</u>	<u>Teacher Not Nominated</u>
Yes	15	8.60 (1.03)	9.01 (1.91)	8.93 (.86)
No	16	8.95 (1.65)	8.07 (2.50)	7.97 (1.23)

Note. Standard deviations are in parentheses.

Data revealed no significant differences for teacher tutor selection when information was provided, $F(2, 28) = .436, p < .651$. When information was not provided, again no significant results were obtained, $F(2, 28) = .190, p < .167$. See Appendix D, Table D5 for full statistical ANOVA tables.

Concordance of Teacher and Peer Nominations of Tutor Selection for a Student with Autism

Separate single group repeated-measures analyses were used to compare teacher tutor nominations and (a) peer tutor nominations and (b) peer “best” tutor selection for a student with autism. Descriptive statistics are reported in Table 4.12 for peer nominated tutors and Table 4.13 for peer nominated “best” tutors.

Table 4.12

Means and Standard Deviations of Teacher Nominated Tutors and Peer Nominated Tutors for a Student with Autism

	<u>Teacher Selected</u>	<u>Teacher Not Selected</u>	<u>Teacher Not Nominated</u>
Peer Selection	.33 (.75)	.09 (.55)	.03 (.20)

Note. Peer selections are z-scores standardized within classroom. Standard deviations are in parentheses.

Table 4.13

Means and Standard Deviations of Teacher Nominated Tutors and Peer Nominated “Best” Tutors for a Student with Autism

<u>Teacher Selected</u>	<u>Teacher Not Selected</u>	<u>Teacher Not Nominated</u>
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Peer Best Selection	.37 (.76) _{a, b}	.00 (.60) _a	-.06 (.27) _b
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Note. Peer “best” selections are z-scores standardized within classroom. Standard deviations are in parentheses. Within the row, means with like subscripts differed on Bonferroni post hoc tests ($p < .05$)

No significant differences were found between teacher tutor selections based on peer tutor selection, Wilks $\Lambda = .858$, $F(2, 29) = 2.40$, $p < .109$, $\eta^2 = .142$. However, a significant difference was found between teacher tutor selections and peers’ “best” tutor nominations, Wilks $\Lambda = .787$, $F(2, 29) = 3.76$, $p < .035$, $\eta^2 = .213$. Follow up contrasts using the Bonferroni correction method ($p < .05$) revealed significant differences between teacher-selected and not selected tutors ($M_{Difference} = .38$, $SE = .19$, $p < .050$) and between teacher- selected and teacher not nominated tutors ($M_{Difference} = .44$, $SE = .16$, $p < .009$). Additional analyses regarding the effect of explanatory information on tutor selection resulted in similar findings.

Chapter 5: Discussion

The purposes of this investigation were to: (a) review literature on peer-mediated interventions for children with autism, (b) discuss the importance of the use of typical peers in facilitating the socialization of children with autism, (c) investigate predictors of teachers' peer tutor selections, and (d) evaluate the similarities between teacher and peer nominated peer tutor selections for a child with autism. Children with autism are being included in regular education classrooms at an increased rate and often interventions are needed to help these students succeed in a mainstream educational setting. Students with autism exhibit impairments in social functioning and interventions are needed to help them interact with typical peers. Based on the literature review in Chapter 2, peer-mediated interventions have been found to be successful in helping students with autism transition into a regular education classroom and use of these interventions have resulted in increased social and academic skills for both students with autism and typical peers.

The goal of this study is to provide information that might aide researchers and school personnel on how to facilitate the inclusion of a student with autism into a regular education classroom by taking a closer look at the peers teachers are choosing to engage in peer-mediated interventions with a student with autism. Most often studies do not provide criteria or a rationale for the criteria used in selecting typical peers (Belchic & Harris, 1994; Roeyers, 1996), but hopefully information provided from this study will help guide teachers and school personnel in selecting appropriate peer tutors. In addition,

this study looked at the ability of teachers to understand and recognize social dynamics of their classroom.

Characteristics of Tutor Selection

Gender

In the current study, males were more often selected than females to be a peer tutor for a male student with autism. Of the 84 students selected to be a peer tutor, 65% were males. In addition, males were more often selected than females not to be an appropriate peer tutor. Of the 80 students who would not be selected as a peer tutor, 89% were males. Teachers were asked to choose a peer tutor for a *male* student with autism who might be entering their classroom. The fact that the student with autism was male likely contributed to the higher number of males chosen as peer tutors. Research has documented that at a young age, typically developing children are more likely to choose same-sex playmates (Hartup, 1983). Another study asking teachers to choose a peer tutor for a *female* student with autism may yield different results. In regard to the elevated number of males also *not* chosen as tutors, it has been found that boys often display more disruptive and behavioral problems (Hinshaw & Anderson, 1996) in the classroom compared to females and in some cases may not be appropriate tutors.

Social Status and Sociometric Grouping

Differences in social status were found among the three teacher tutor groups (teacher selected, teacher not selected, and teacher not nominated tutors). Teacher selected tutors were rated higher as *Like Most* and *Most Popular* than either other group. In addition, students the teachers would not choose as a peer tutor were rated higher by their peers as *Like Least* and *Least Popular* than the other groups. Using the *Like Most*

and *Like Least* nominations, differences in placement in sociometric groups was also found among the three teacher tutor groups. Of the students selected as peer tutors, there were more sociometrically popular students chosen than rejected or controversial students. Moreover, of the students *not* selected as peer tutors, there were more rejected and controversial students chosen than sociometrically popular. Overall, the teachers appear to select tutors who are considered sociometrically popular and perceived popular by their peers. There appears to be overlap between students' nominations of *Liked Most* and *Most Popular* and students are choosing many of the same students for both domains.

The social status literature reviewed in Chapter 2 discussed characteristics commonly associated with sociometric group membership and social status in general (Coie et al., 1982; Dodge, 1983; Foster et al., 1985; Frederickson & Furnham, 1998; Lease, Kennedy et al., 2002; Lease, Musgrove et al., 2002; Newcomb et al., 1993; Parkhurst & Hopmeyer, 1998; Vandell & Hembree, 1994). Based on that literature review and the findings of the current study, it appears teachers are nominating peer tutors who possess higher levels of prosocial behavior and cognitive abilities, possess and demonstrate strong leadership skills, are socially sophisticated, are cooperative, are more supportive of others, and exhibit lower levels of aggression, disruptive behavior, social withdrawal, and other negative behaviors compared to students the teachers would not choose as peer tutors. In addition, a level of dominance and influence may be characteristics these tutors possess.

Behavioral Characteristics as Assessed by The RCP

Factor analysis of the six items from the RCP measuring personal attributes and behavioral characteristics produced a two-factor structure similar to that reported in the

social influence literature (Lease, Kennedy et al., 2002). Therefore, these findings add support about the factor structure of the RCP reported in the social influence literature. Results of the current study found that teacher selected tutors were rated higher by their peers on all but one item (“Control”) on the RCP when compared to their counterparts. Children nominated on the “Control” item (e.g., This type of person has a lot of control—they decide who gets to be in the “in crowd” or popular group) might have been thought of somewhat “bossy” or “snotty” and were not thought to make good tutors. Consequently, teachers are selecting students whom their peers believe are smart, good at sports, helpful, good problems solvers, possess leadership qualities, are self-confident, are influential, and who are admired when compared to students the teachers would not select. The research literature has shown these positive qualities along with high social status to be important in the facilitation of peer-mediated interventions (DiSalvo & Oswald, 2002; Maheady & Sainato, 1985; Rogers, 2000; Sasso & Rude, 1987). Maheady and Sainato (1985) and Sasso and Rude (1987) demonstrated the effectiveness of using high status peers to evoke change in other peers. However, high status in these studies is found to be very similar to sociometric popularity; therefore, there is very little research in regard to the use of perceived popular students as peer tutors and the success of these peers on peer-mediated interventions.

Concordance of Teacher and Peer Nominations

Social Status

Results revealed moderate (.79) to high (.89) correlations between teacher and peer nominations of social status (*Like Most, Like Least, Most Popular, Least Popular*).

It appears teachers and peers have a similar view of which peers are sociometrically and perceived popular.

Behavioral Characteristics

Results revealed low (.33) to high (.94) correlations of behavioral characteristics as assessed by the RCP. The “Tries Hard” item demonstrated the lowest correlation and the “Smart” item (i.e., person who makes good grades, is smart, and usually knows the right answer) demonstrated the highest correlation. It appears that teachers and students may have differing opinions or perceptions of students who try hard at school; however, being smart and getting good grades is an easily observable phenomenon.

Tutor Selection

Teacher and peer tutor nominations for a child with autism were dissimilar. There was not much difference between whom peers would choose and whom teachers would choose and not choose as peer tutors. However, when teacher nominations and peer “best” tutor nominations were compared, there were similarities in nominations found. Differences were found in regard to peer nominations and teacher nominated and not nominated tutors. Peer nominations of peer tutors were not analyzed in regard to what kind of students peers were choosing as a tutor (e.g., most liked, most popular, cool, leader, etc.). It appears that peers may not share the same perceptions about an appropriate peer tutor as teachers do, but follow-up analyses would reveal where differences occur.

Overall, the findings of this study continue to support the literature on the concordance of peer and teacher measures of social behavior (Coie & Dodge, 1988; Huesmann et al., 1994; Landau et al., 1984; Ledingham et al., 1982; Ollendick et al.,

1989; Wu et al., 2001). In some instances the correlations found in this study are higher than correlations found in previous studies. This may be a result of differences in measures, the age group studied, or the fact that these subjects were from rural communities in which there might be very little mobility and the teachers and students know each other well. Wu et al. (2001) found correlations between teacher and peer measures of popularity to range from .26 to .62, Landau et al. (1984) obtained a correlation of .50 for peer and teacher popularity ratings, and Hudley (1993) found correlations between .36 and .50 for teacher and peer ratings. In general, teachers appear to have a reasonably accurate perception of the social dynamics in their classrooms.

Attitudinal and Behavioral Ratings of Teacher Tutor Selections

Attitudinal Ratings

Results of the analysis of attitudinal ratings based on teacher tutor group revealed that teacher selected tutors possessed higher cognitive attitudes toward unfamiliar students than those students teachers would not select. In addition, teacher not nominated tutors reported more favorable attitudes than students not selected. Presence of information about autism was not found to make a difference in attitudinal ratings. Although, selected tutors endorsed more favorable attitudes toward the unfamiliar child with autism than not selected tutors, there was not a significant interaction found between presence of autism and teacher tutor group. However, it appears that, overall, teachers are choosing students who report more positive attitudes toward unfamiliar students in general.

Behavioral Ratings

There were no significant differences found between the three tutor groups on their behavioral intentions toward an unfamiliar child with autism. However, differences were found based on the individual SAQ domains of academic behaviors (e.g., reading together in class), social behaviors (e.g., eating lunch together), and active recreational behaviors (e.g., going to an amusement park together) for the students as a whole. In general, students reported greater willingness to engage in academic and social activities over active recreational activities, and students were more willing to engage in academic activities over social activities for both the typical student and the student with autism. It appears that students are more willing to interact with an unfamiliar student at school in school related activities, but not necessarily in other day-to-day activities.

Roberts and Lindsell (1997) stated that typical students' attitudes and behavioral intentions play an important role in supporting inclusive education for children with disabilities. They found that typical students' attitudes toward a child with a disability were a significant predictor of their behavioral intentions toward those same children; therefore, students with positive attitudes were more willing to interact with the student with a disability than those with negative attitudes. Research has demonstrated that children's initial attitudes toward other children with disabilities are usually negative (Bell & Morgan, 2000; Friedrich et al., 1996, Campbell, Ferguson et al., 2004; Swaim & Morgan, 2001). There has been very little research conducted about the attitudes of the peer tutors toward the child with a disability and its effect on the outcome of a peer-mediated intervention; although, some studies list willingness of the student to participate as a selection criterion (Belchic & Harris, 1994; Brady et al., 1984; Brady, Shores et al., 1987; Haring & Breen, 1992). Based on this literature review and the results of this

investigation, peer attitudes play a large part in predicting behavioral intentions, and action should be taken to ensure that peer tutors possess positive attitudes toward the student with autism (or another disability) with whom they are working. In addition, peer tutors should be asked to engage in activities that they feel comfortable and competent in when working with a student with a disability. Screening measures, such as the ACL and SAQ, may be beneficial in addressing these issues when choosing peer tutors.

Limitations of Study and Suggestions for Future Research

The results and conclusions of this study must be considered within the context of its limitations. First, the study is an experimental analogue and may be limited in regard to its social validity. Students were only asked their opinions and perceptions of autism based on watching a videotaped vignette of a boy displaying autistic features as opposed to interacting with a child diagnosed with autism. In conjunction with this is the difference between answering a questionnaire about attitudes and behavioral intentions and actual behavior the students would engage in with a real student with autism in their class. Reports of attitude and behavioral intentions do not necessarily predict children's actual behavior. A future research study might focus on assessing students' attitudes and behavioral intentions toward a child with autism prior to introducing the students to a child with autism and then measuring actual behaviors toward that child with autism to determine the accuracy of their previous responses.

Another limitation to this research project was the lack of experimental research of actually allowing these students to be tutors for a student with autism and measuring the effect of the tutors' social and behavioral characteristics on the outcome of a peer-mediated intervention. The task of applying the knowledge learned here of choosing

particular students based on social status and behavioral characteristics could be a future research investigation in which the characteristics of the tutors are measured and assessed, an experimental design is used in which the typical peers engage in a peer mediated intervention with a student with autism, and the outcome of the intervention is examined with respect to the tutors' characteristics. As a part of this type of investigation, looking closer at the differences between well-liked and most popular students may provide additional information about which of these students would make the best peer tutors.

A third limitation to this study was the restricted response set on social/behavioral ratings that were provided for the teachers and students. The participants were only administered the positive traits from the Revised Class Play, which limits their ability to identify students who might possess negative behavioral characteristics (e.g., starts fights). It is assumed in this study that the students not chosen on the positive dimensions may have negative behavioral associations. More distinction may have been made between the teacher tutor selections if the negative behavioral traits had been administered. Future investigations should use both positive and negative behavioral characteristics to offer more distinction between groups of students.

Finally, the majority of the students were Caucasian, of lower socioeconomic status, and in the third-, fourth-, and fifth grades; therefore, interpretation of results should be restricted to this sample of the population. Future investigations should include a more diversified sample of students and include students in lower and higher-grade levels.

Clinical and Educational Implications

Peer-mediated interventions have been found to be successful in improving the social and academic skills of children with autism in inclusive settings. The typical peers chosen are an important aspect of those interventions and the process of peer tutor selection should be given careful consideration. Findings from this study may help provide teachers and school personnel with some tools to use when choosing peer tutors. Teacher and peer nominations of social status and behavioral characteristics demonstrated moderate to high correlation rates; therefore, teacher ratings of social status and behavioral characteristics may be used when using peer sociometric ratings are too time consuming and difficult to obtain. Based on the present findings, teachers provide a reasonable picture of the social dynamics of their class as a whole and have a good idea of whom the students would choose on these dimensions (e.g., social status and behavioral characteristics). Using peer tutors for students with autism is just one peer-mediated approach available for teachers and school personnel. Careful consideration should be given to the disability of the child and the intervention being employed when choosing a peer tutor.

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APPENDIX A
STUDENT QUESTIONNAIRE PACKET

DSF

My Number: _____

My Grade: _____

My Age: _____

My Birth date: _____

My Teacher: _____

My Race/Ethnicity _____

I am a: BOY GIRL (Circle one)

1. Have you ever heard of autism? Circle one:

YES

NO

2. If yes, what is autism? Write your answer below.

Revised Class Play

Instructions: Pretend that you are assigning roles in the upcoming class play. We would like for you to nominate three children who fit each role as listed below. First, find the person you'd like to nominate on the list of names we gave you. Now look at the number next to their name. Write down the number of the person in one of the blanks beside the description. You can nominate a person for more than one role.

Part 1

1. This person is really cool. Just about everyone
in school knows this person. _____
2. This person gets chosen by others as the leader.
Other people like to have this person in charge. _____
3. This is a person who others in class admire. Other
children want to be like this person and to be around him/her. _____
4. This is the type of person who is good at solving problems:
when kids are arguing and having trouble getting along,
this person can help them solve the problem. _____
5. This is the type of person who helps others who are hurt, sick,
or sad: they show a lot of concern for others. _____
6. Somebody who others listen to—this person has a lot of influence. _____
7. This type of person has a lot of control—they decide who gets
to be in the “in crowd” or popular group. _____
8. This person is very good at many outdoor games and sports. _____
9. This person makes good grades, is smart, and usually knows
the right answer. _____
10. This is a person who *tries hard* to do good schoolwork. _____
11. This is a person who seems to have a lot of self-confidence
(believe in himself or herself) _____

Instructions: Now, I want you to answer some questions about your friendships with your classmates. We'll be using the same list of students and their numbers.

Part 2

1. Which children do you like to play with the most? _____
2. Which children do you like to play with the least? _____
3. Which of your classmates are the most popular at school? _____
4. Which of your classmates are the least popular at school? _____
5. Which are your very closest friends?
(go back and circle your best friend) _____

WATCH VIDEOTAPE

Question about Videotape:

1. If Robby joined your class tomorrow, who would you pick as a “buddy” to help him fit in with the other kids in your class? (**Circle** who you think would make the **best** “buddy.”)

AC

If you had to describe Robby to your classmates, what kinds of words would you use? Below is a list of words to help you. CIRCLE the words you would use. You can use as many or as few as you want. Here is the list:

smart

dumb

greedy

weak

slow

bright

dirty

friendly

honest

helpful

healthy

selfish

sad

kind

stupid

lazy

alert

nice

happy

careless

ugly

lonely

cheerful

neat

sloppy

foolish

careful

ashamed

clever

unhappy

handsome

glad

SAQ

If Robby moves to your school and is in your class, here is a list of things that you might do with him. Circle the face and answer that shows how you feel about doing each of these things with Robby.

1. Work in the school library with Robby.

No

Maybe

Yes

2. Share my games or books with Robby.

No

Maybe

Yes

3. Be in the same reading group with Robby.

No

Maybe

Yes

4. Study spelling words with Robby at school.

No

Maybe

Yes

5. Invite Robby to my birthday party.

No

Maybe

Yes

6. Ask Robby to go to the zoo with me.

No

Maybe

Yes

7. Go on a picnic with Robby and his family.

No

Maybe

Yes

8. Do art with Robby in class.

No

Maybe

Yes

9. Ask Robby to join my club.

No

Maybe

Yes

10. Go to the movies with Robby.

No

Maybe

Yes

11. Be good friends with Robby.

No

Maybe

Yes

12. Go to McDonald's with Robby.

No

Maybe

Yes

SRF

How much like other kids in your class is Robby? CIRCLE your answer below.

1	2	3	4
Very different from other kids in my class	Sort of different from other kids in my class	Sort of the same as other kids in my class	Very much the same as other kids in my class

WATCH VIDEOTAPE

Question about Videotape:

1. If Robby joined your class tomorrow, who would you pick as a “buddy” to help him fit in with the other kids in your class? (**Circle** who you think would make the **best** “buddy.”)

AC

If you had to describe Robby to your classmates, what kinds of words would you use? Below is a list of words to help you. CIRCLE the words you would use. You can use as many or as few as you want. Here is the list:

smart

dumb

greedy

weak

slow

bright

dirty

friendly

honest

helpful

healthy

selfish

sad

kind

stupid

lazy

alert

nice

happy

careless

ugly

lonely

cheerful

neat

sloppy

foolish

careful

ashamed

clever

unhappy

handsome

glad

SAQ

If Robby moves to your school and is in your class, here is a list of things that you might do with him. Circle the face and answer that shows how you feel about doing each of these things with Robby.

1. Work in the school library with Robby.

No

Maybe

Yes

2. Share my games or books with Robby.

No

Maybe

Yes

3. Be in the same reading group with Robby.

No

Maybe

Yes

4. Study spelling words with Robby at school.

No

Maybe

Yes

5. Invite Robby to my birthday party.

No

Maybe

Yes

6. Ask Robby to go to the zoo with me.

No

Maybe

Yes

7. Go on a picnic with Robby and his family.

No

Maybe

Yes

8. Do art with Robby in class.

No

Maybe

Yes

9. Ask Robby to join my club.

No

Maybe

Yes

10. Go to the movies with Robby.

No

Maybe

Yes

11. Be good friends with Robby.

No

Maybe

Yes

12. Go to McDonald's with Robby.

No

Maybe

Yes

SRF

How much like other kids in your class is Robby? CIRCLE your answer below.

1	2	3	4
Very	Sort of	Sort of	Very much
different	different	the same	the same
from other	from other	as other	as other
kids in my	kids in my	kids in my	kids in my
class	class	class	class

APPENDIX B
TEACHER NOMINATION FORM

Teacher Nomination Form

Name _____

Please refer to the list of children's names we gave you and answer the following questions. Only write the number corresponding to the child and not the child's name.

Part 1

1. This student is really cool. Just about everyone in school knows this person. _____
2. This student gets chosen by others as the leader. Other students like to have this person in charge. _____
3. This is a student who others in class admire. Other children want to be like this student and to be around him/her. _____
4. This is the type of student who is good at solving problems: when kids are arguing and having trouble getting along, this person can help them solve the problem. _____
5. This is the type of student who helps others who are hurt, sick, or sad: they show a lot of concern for others. _____
6. Somebody who others listen to—this person has a lot of influence. _____
7. This type of student has a lot of control—they decide who gets to be in the “in crowd” or popular group. _____
8. This student is very good at many outdoor games and sports. _____
9. This student makes good grades, is smart, and usually knows the right answer. _____
10. This is a student who *tries hard* to do good schoolwork. _____
11. This is a person who seems to have a lot of self-confidence (believe in himself or herself) _____

Part 2

1. Select three students from the list who you believe are liked most by their classmates.

2. Select three students from the list who you believe are liked least by their classmates.

3. Select three students from the list who you believe are the most popular at school.

4. Select three students from the list who you believe to be the least popular at school.

5. If you had a typical boy transfer into your classroom, who would you select as a peer “buddy” to help the child fit in with other children in the class? (**Circle** who you think would make the **best** peer “buddy.”)

6. If you had an autistic boy transfer into your classroom, who would you select as a peer “buddy” to help the child fit in with other children in the class? (**Circle** who you think would make the **best** peer “buddy.”)

7. Who would you not select as a peer “buddy” for the autistic boy?

APPENDIX C

STATISTICAL TABLES FOR CHARACTERISTICS OF TUTOR SELECTION

Table C1:

Social Status Characteristics of Teacher Tutor Selection

Factor	Λ Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Like Most	.744	4.999	2.000	29.000	.014*	.256
Like Least	.582	10.412	2.000	29.000	.000*	.418
Most Popular	.728	5.414	2.000	29.000	.010*	.272
Least Popular	.777	4.156	2.000	29.000	.026*	.223

Note. * = statistically significant difference at .05.

Table C2:

Behavioral Characteristics of Teacher Tutor Selection

Factor	Λ Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Prosocial	.204	56.632	2.000	29.000	.000*	.796
Socially Visible	.707	6.000	2.000	29.000	.007*	.293
Leader	.603	9.562	2.000	29.000	.001*	.397
Admire	.686	6.652	2.000	29.000	.004*	.314
Influence	.581	10.464	2.000	29.000	.000*	.419
Control	.987	.186	2.000	29.000	.831	.013
Self-Confident	.372	24.502	2.000	29.000	.000*	.628

Note. * = statistically significant difference at .05.

APPENDIX D

STATISTICAL TABLES FOR ATTITUDINAL AND BEHAVIORAL RATINGS

Table D1:

Attitudinal Ratings for Teacher Tutor Selections

Factor	Λ Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Tutor	.664	7.098	2.000	28.000	.003*	.336
Tutor * Information	.910	1.391	2.000	28.000	.266	.090
Autism	.219	103.414	2.000	29.000	.000*	.781
Autism* Information	.884	3.813	1.000	29.000	.061	.116
Tutor * Autism	.944	.826	2.000	28.000	.448	.056
Tutor * Autism * Information	.967	.471	2.000	28.000	.629	.033

Note. * = statistically significant difference at .05.

Table D2:
Behavioral Ratings for Teacher Tutor Selections

Factor	Λ Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Tutor	.945	.820	2.000	28.000	.451	.055
Tutor * Information	.732	5.124	2.000	28.000	.013*	.268
Autism	.228	98.113	1.000	29.000	.000*	.772
Autism * Information	.823	6.257	1.000	29.000	.018*	.177
Domains	.406	20.453	2.000	28.000	.000*	.594
Domains * Information	.969	.452	2.000	28.000	.641	.031
Tutor * Autism	.953	.694	2.000	28.000	.508	.047
Tutor * Autism * Information	.975	.352	2.000	28.000	.706	.025
Tutor * Domains	.919	.571	4.000	26.000	.686	.081
Tutor * Domains * Information	.863	1.033	4.000	26.000	.409	.137
Autism * Domains	.627	8.343	2.000	28.000	.001*	.373
Autism * Domains * Information	.942	.854	2.000	28.000	.436	.058
Tutor * Autism * Domains	.905	.685	4.000	26.000	.608	.095
Tutor * Autism * Domains * Information	.625	3.905	4.000	26.000	.013*	.375

Table D3:

Behavioral Ratings for Typical Factor

Factor	Λ Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Tutor	.970	.435	2.000	28.000	.652	.030
Tutor * Information	.828	2.918	2.000	28.000	.071	.172
Domain	.299	32.891	2.000	28.000	.000*	.701
Domain * Information	.952	.711	2.000	28.000	.500	.048
Tutor * Domain	.909	.650	4.000	26.000	.632	.091
Tutor * Domain * Information	.791	1.721	4.000	26.000	.176	.209

Note. * = statistically significant difference at .05.

Table D4:

Behavioral Ratings for Autism Factor

Factor	Λ Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Tutor	.922	1.191	2.000	28.000	.319	.078
Tutor * Information	.747	4.743	2.000	28.000	.017*	.253
Domain	.622	8.506	2.000	28.000	.001*	.378
Domain * Information	.963	.544	2.000	28.000	.586	.037
Tutor * Domain	.936	.477	4.000	26.000	.774	.064
Tutor * Domain * Information	.865	1.016	4.000	26.000	.417	.135

Note. * = statistically significant difference at .05.

Table D5:

ANOVA of Teacher Tutor Selection and Behavioral Ratings Toward Child with Autism Based on Presence of Information

Source (Sphericity Assumed)	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Tutor (with Information)	1.437	2	.719	.436	.651	.030
Tutor (without Information)	9.356	2	4.678	1.900	.167	.112