FRIENDSHIPS OF PRESCHOOL CHILDREN WITH DISABILITIES: THE ROLE OF CHILD, ADULT, AND PROGRAM CHARACTERISTICS

Tracey West

A dissertation submitted to the faculty of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the School of Education.

Chapel Hill
2008

Approved by:

Sam Odom

Virginia Buysse

Harriet Boone

Peg Burchinal

Barbara Goldman

ABSTRACT

Tracey West: Friendships of Preschool Children with Disabilities in Inclusive Settings: The Role of Child, Adult, and Program Characteristics
(Under the direction of Sam Odom, Ph.D.)

The expectation that children with disabilities will form friendships with their peers is a key premise of inclusion. This study examined the association between child, adult, and program characteristics and the number of friends of preschool children with disabilities in inclusive settings. The study included 143 children with a range of type (e.g., developmental delay, speech and language disorders, autism/PDD) and severity of disability (mild, moderate, and severe) enrolled in four models of inclusive programs: Public School, Head Start, Community-based, and Blended. The majority of children, across type and severity of disability, were found to have at least one teacher-reported friend and to increase their number of friends across the school year. Aspects of program and adult characteristics found to be associated with higher numbers of friends for children with disabilities include the general quality of the early childhood program, the quality of inclusion, and active facilitation of learning.

ACKNOWLEDGEMENTS

I would like to thank the members of my committee for their generous support and guidance and in particular my chair, Sam Odom, for his time and encouragement. Most of all, I thank my family, my husband Robert, my children Lauren, Jessica, and Zeke, and my mother, Jacqueline West. Their belief in my ability and their unfailing support made this accomplishment possible, thank you all!

.

TABLE OF CONTENTS

LIST OF TABLES

Table Page

CHAPTER 1: INTRODUCTION AND LITERATURE REVIEW

The pleasure of having a friend may be experienced at an early age. One has only to observe two young children playing together, see the laughter, the give-and-take, the shared jokes and games, the joy taken from the other's company and complicity, to realize the importance of having a friend. While it is generally accepted that friendships are important for the enjoyment and pleasure they provide, friendships in young children also play a role in development outside of the social realm. Friendships provide a context for the development of communication and cognitive skills and are associated with academic and social adjustment. However, making friends can be a challenge for children with disabilities and support may be needed to help them meet this challenge.

This chapter will provide a review of the literature on friendship. It will first offer a definition of friendship, then examine the importance of friendships for preschool children (children from 3 to 5 years old), describe what is known about friendships for children with disabilities, and identify factors that may impact friendships for children with disabilities. Following this review of the friendship literature, a conceptual framework for this study will be described and a set of research questions will be proposed. The study will investigate friendships of preschool children with disabilities in inclusive settings.

Defining Friendship

Four components derived from the literature will serve as the basis for the definition of friendship used in this dissertation. For the purpose of the study's literature review, friendship is defined as a positive, voluntary, mutual relationship between two children.

Defining friendship is a complex task. Definitions of friendship in the literature vary according to the age of the friends, the focus of the study, and the emphasis of the authors. The forms and features of friendship change as children grow and develop, with mutual affection, shared interests, and shared activities representing essential elements of emerging friendships of young children.

When defining friendships for toddlers, attention must be given to the toddler's behavior. Relationships at this stage are focused on topic-related behavior; attention is generally directed to and centered around toys, food or objects (Hay, Payne & Chadwick (2004). Game-like behaviors, mutual touching and laughing, rough and tumble play and imitation of motor behaviors directed at specific, preferred peers, are significant indictors of emerging friendships (Goldman & Buysse, 2007; Ladd, 1988). As reported in a review of literature on the friendships of toddlers, companionship, intimacy, and affection, which are dimensions of preschool friendships, are seen on a more basic level in toddlers (Howes, 1996).

By the time children reach preschool, most have formed meaningful friendships. Children plan, organize, and develop elaborate play scripts reflecting the developmental changes taking place cognitively, communicatively and socially (Guralnick, 2001). Children's friendships also reflect these developmental changes.

Preschool children spend more of their available time with their friends, engaging in higher rates of interactions with friends than with other familiar peers and participating in more complex play when playing with friends than with non-friends (Guralnick, 1999; Ladd, 1988; Ladd & Coleman, 1993). Preschool children are able to verbalize their feelings about friends. In a study examining friendships in preschool children, children frequently mentioned positive regard ("I like her.") or shared activities ("We both like to swing.") when asked why a particular child was a friend (Buysse, Nabors, Skinner, & Keyes, 1997). Preschool friendships are less fleeting than those of younger children; stability is considered a defining element of preschool friendships (Ladd, Herald, & Andrews, 2006). Preschool children often maintain a friendship with a specific individual over an extended period of time (e.g., from several months to years) (Ladd, Herald, & Andrews; Lindsey, 2002).

These outward manifestations of friendship help adults target children who are friends, and point the way toward a definition of friendship. There are four components of friendships that are accepted as being essential. Friendships are dyadic (Buysse, Goldman, West, & Hollingsworth, 2007; Ladd, 1988; Ladd & Kochenderfer, 1996), reciprocal (Bukowski, Newcomb, & Hartup, 1996; Buysse et al; Vaughn et al., 2000), voluntary (Bukowski, et al.; Buysse et al; Ladd, 1988; Ladd & Kochenderfer, 1996), and contain an element of liking and affection (Bukowski, et al.; Buysse et al.; Howes, 1996; Ladd, 1988; Ladd, Herald, & Andrews, 2006). The dyadic nature of the relationship is integral to friendship. Friendship is a specific relationship between two children, a relationship completely distinct from group culture or status. Friendships are reciprocal, a *shared* relationship based on the mutual desire to be friends. Friendships are voluntary. Children, even young children, choose the peers that become their friends. Children as young as two show strong preferences for specific peers, and while children may have numerous playmates, friendships are formed with only a select few. Finally, friendships are characterized by affection. Friendships of preschool children are distinguished by shared affection and enjoyment, observed in the delight in shared activities exhibited by young friends.

It is important to differentiate between friendship and popularity. Popularity, or social status, is generally defined as the degree to which a child's classmates like or dislike the child (Ladd, 1988). Peer status focuses on an individual child's acceptance by their peer group. This is a distinctly different concept than friendship. A friendship is a mutual, positive, *relationship* between two children. A child can be unpopular with their peers but still have a friend or friends.

Importance of Friendships for Young Children

Evidence of emotional and social bonds can be observed as early as the toddler years and as these bonds develop they can evolve into the more sophisticated realm of preschool friendships (Goldman & Buysse, 2007; Hay et al., 2004; Howes, 1996; National Research Council, 2000). Although it is accepted that friends are important for the enjoyment they provide, there is also evidence to suggest that they contribute to the development of young children through two main avenues: the provision of emotional support and security, and the facilitation of higher level cognitive skills. Additional research has found the number of friends a child has and the stability of the friendships may also play a role in these developmental areas.

Friends provide children with a sense of security from which they can more readily explore their environment. In the absence of parents, friends may help provide necessary emotional support (Howes, 1996), and appear to be a primary source of support when children are adjusting to the challenges of a new environment (Ladd, 1990). Children with friends have been found to experience a more successful transition to kindergarten than children without friends (Johnson, Ironsmith, Snow, & Poteat, 2000; Ladd, 1990; Ladd & Kochenderfer, 1996). Friendships in early childhood have been linked to later adjustment (Brown, Odom, & Conroy, 2001; Johnson et al.), sense of self worth, the formation of a world view (National Research Council & Institute of Medicine, 2001), and competence in adolescence and adulthood (Bagwell et al., 2001; Hartup, 1999).

Friendships that develop during the preschool years have been found to positively affect a range of skills and abilities that facilitate learning and development. Preschool children have been found to participate in the most sophisticated level of play, fantasy and dramatic play, most frequently when in the presence of friends (Guralnick, 1999; Guralnick & Groom, 1988; Ladd & Coleman, 1993; Ladd & Kochenderfer, 1996). Participation in this type of sophisticated play encourages the development of cognitive skills and skills in communication and cooperation (Guralnick; 2001; Hartup, 1996; Ladd & Kochenderfer; Newcomb & Bagwell, 1996). Children who have friends have been found to exhibit higher levels of problem-solving skills (Hartup, National Research Council, 2000; Newcomb &

Bagwell), have fewer discipline problems in school and are less likely to drop out of school before graduating (Landy, 2002). It also appears that friendship creates a social context that can positively influence motivation and academics (Newcomb & Bagwell) and to provide a framework within which socially competent behavior, such as communication and cooperation, can be practiced and enhanced (Vaughn et al., 2001).

Number and Stability

A limited body of research has examined the unique impact of the number and stability of friendships. Children with greater numbers of friends have been found to make the initial adjustment to school more successfully than children who make the transition with one friend (Johnson et al., 2000; Ladd, 1990; Ladd & Kochenderfer, 1996), although children with a single friend make the transition and adjustment to kindergarten more successfully than those children without friends. Stability of friendships has also been associated with school adjustment. Ladd (1990) found that children who maintained their friendships, i.e., had stable friendships), had better long-term school adjustment. Children who maintained friendships were better able to cope with school pressures and had more positive attitudes and perceptions of school across the academic year. This research suggests that having multiple friends and stable friendships may provide additional support and security to children.

It is clear that children who have friends derive numerous benefits from the relationship. The enhanced opportunities to develop and practice behaviors related to social, emotional and cognitive growth are important for all young children and may prove even more critical for children with disabilities.

Friendships and Children with Disabilities

While the research base on friendships of typically developing children is well established, research on friendships of children with disabilities is more limited. Much of what is known about friendships for young children with disabilities highlights friendships as an area of concern. Research has found that children with disabilities experience fewer social interactions during preschool than typically developing children (Guralnick, 1999). Children with disabilities are at increased risk of rejection (Odom, 1999; Odom & Diamond, 1998; Odom et al., 2002), experience and initiate fewer social bids (Guralnick et al., 1996b), and have fewer friends than children without disabilities (Guralnick; Odom, 1999). However, it is important to note that children with disabilities do make friends and the majority of interactions between children with and without disabilities are positive in nature (Guralnick, 2001). Studies have found that most children with disabilities have at least one friend (Buysse, Goldman, & Skinner, 2002; Odom & Diamond 1998; Odom et al., 2002), and their interaction and engagement level has been found to be close to that of their peers, important factors in the development of friendships.

When considering friendships for children with disabilities, two factors are of particular importance: 1) typically developing children's perceptions of their peers with disabilities, and 2) characteristics of play of children with disabilities. The literature pertaining to each of these areas is briefly reviewed in the subsequent section.

Peer Perceptions of Children with Disabilities

A basic element when considering friendships for children with disabilities is typically developing children's perception of their classmates with disabilities. Children without disabilities must be receptive to playing and interacting with their peers with disabilities before they will begin to form friendships. The National Research Council (2000) reports children with disabilities as being the least preferred playmates of typically developing children. Research has found that typically developing children prefer other typically developing children as friends and children with disabilities appear to be more isolated socially than their peers without disabilities (Odom et al., 2002). However, it has been hypothesized that this may be more the result of benign neglect than an intentional exclusion of the child with disabilities (Guralnick, 1999).

Other findings are more encouraging. Typically developing children do not appear to view children with disabilities negatively because of their disability. The reasons given by typically developing children for choosing or not choosing a child with disabilities as a friend are similar to those given for choosing or not choosing another typically developing peer (Buysse et al., 1997). Rather than focusing on personal characteristics, children's reasons for selecting peers as playmates focused on shared activities and positive regard or liking (Buysse et al., 1997; Guralnick & Groom, 1988). Preschool children show marked preference for specific peers and tend to choose friends who are similar to them. Similarity is often based on age, gender, and race (Lindsey, 2002; Vaughn, et al., 2001); however, similarity can be based on other factors that are important to the particular dyad. Shared activities can be the basis for emerging friendships, and similarity may consist of a shared passion for swinging or building with blocks (Buysse et al., 1997). Also encouraging are findings from Okagaki, Diamond, Kontos, & Hestenes, (1998). These researchers found that the attitudes of typically developing children who participate in inclusive settings and interact with children with disabilities have been linked to the amount of time they interact with children with disabilities during free play. Children who spent more time in inclusive settings had more positive attitudes toward their peers with disabilities. In a study investigating typically developing preschool children's acceptance of their peers with disabilities, Diamond (2001), had similar findings. Typically developing children who had contact with peers with disabilities had higher scores on acceptance and emotional understanding of children with disabilities than did children who had contact only with children without disabilities. This research suggests that when children with and without disabilities spend time together in activities they choose and enjoy, they may be taking the first step toward forming friendships.

Characteristics of Play and Children with Disabilities

Play can be a precursor to friendship, the context for making a friend, and a venue for sustaining friendships and is consequently of importance when considering friends for children with disabilities. Fantasy or pretend play, the most complex and sophisticated play engaged in by preschool children, takes place most often between friends. Pretend play appears to nurture friendships (Hay et al., 2004), and supports the development of higher levels of cooperation and interactions. Children with disabilities have been found to participate in these more complex levels of play less frequently than their typically developing peers, a factor that could limit their attractiveness as a play partner and their ability to develop or maintain friendships.

In a study of the play of children with mild developmental delays, Guralnick (1999) compared the play of children with mild developmental delays and play of typically developing children. He found that the children with delays were less involved in intermediate and advanced levels of play than their peers without disabilities. Children with delays tended to interact as frequently and to behave similarly to their peers without disabilities during passive or parallel play. However, in the intermediate level, frequency of interactions and participation dropped, and when examining the highest level of play and interactions, children with delays participated at a much lower level.

In a related study (Guralnick & Groom, 1988), children with mild developmental delays were found to establish few reciprocal relationships, and of those children who did form friendships, the friendships did not result in more advanced social play. Children with mild delays exhibited similar patterns of interactions across friends and playmates rather than participating in more advanced levels of interactions with friends. This suggests that the children with disabilities did not tend to receive the advantages often associated with friendships of typically developing children.

The emphasis on elaborate play scripts and interactions integral to preschool friendships may prove to be a barrier for establishing and/or maintaining friendships for some children with disabilities. Disabilities that impede communication or inhibit participation in play may hinder the development of friendships or interrupt beginning friendships (Harper & McClusky, 2002). Additional information on friendships of children with different types and level of disability related to their engagement and choice of activities would expand the knowledge base and provide information useful for facilitating the development of friendships.

Summary

Preventing difficulties in relationships with peers must begin early (Hay et al., 2004). While Hay and colleagues base this finding on research with typically developing children, the point is relevant for children with disabilities. Children with disabilities are at risk for having fewer friends and when they do form friendships they may experience few of the expected developmental benefits (Guralnick & Groom, 1988). Although the research base on friendships for children with disabilities is more limited than that for typically developing children, and has more often focused on social skills or social competence than friendship, several influences on friendship formation have been examined in the literature. Multiple factors, including the child care environment, teachers, and child characteristics influence the opportunities for children with disabilities to form friendships.

Factors that Impact Friendships for Children with Disabilities

Most children in the United States, both with and without disabilities, spend time in group care well before entering public school. Group care, which provides regular and consistent contact between peers, presents children with opportunities for establishing friendships at an early age, and may prove to be the optimal setting for facilitating friendships for children with disabilities. When examining the influences of group care or preschool for children with disabilities as it relates to friendship, there are at least three important aspects to be considered: characteristics of the program, teacher, and child.

In 2003, 600,000 preschoolers, representing 5 percent of the nation's 3-5 year old children, received special education services (Children's Defense Fund). The majority of these children with disabilities were served in inclusive settings (U.S. Department of Education, 2005). The inclusion of preschool children with disabilities into general early childhood programs is well established and research has examined the efficacy of inclusion through comparison between inclusive and segregated or specialized settings. With the numbers of children in inclusive settings steadily increasing and the great variability within inclusive settings, it has become necessary to examine types of inclusive settings in relation to outcomes for children with different disabilities. Currently, an empirical basis for choosing one type of inclusive setting over another is lacking (Guralnick, 2000).

It is generally accepted that the preschool environment can limit or enhance a child's opportunities for making friends (Asher, Parker, & Walker, 1996). Therefore, providing a match between the child's individual needs and the type of setting is crucial. Inclusive settings provide consistent and regular contact with a group of peers, a precursor to friendship formation (Guralnick, 2001). Inclusive settings can also provide the opportunities necessary for finding peers with common interests and the opportunity to develop these shared interests: a foundation for forming friendships. In this section a brief historical background of inclusion is provided followed by a review of the research on models of inclusive programs, quality of inclusive programs, and friendships in inclusive settings. While it is recognized that inclusion impacts a variety of developmental outcomes for children with disabilities, the findings presented here are limited to the body of research relevant to friendships of children with disabilities in inclusive settings.

Inclusion

Although the roots of inclusion extend back to the beginning of the century, inclusion for preschool children with disabilities has developed over the last several decades. Shifting societal and theoretical perspectives on diversity and education, in combination with federal policies, laid the groundwork for inclusion (Wolery & Wilbers, 1994).

In 1968, the Handicapped Children's Early Education Act (HCEEP) was enacted. HCEEP was fundamental in establishing a basis for early childhood special education. It provided funding for the development, assessment, and dissemination of information about model programs for infants, toddlers, and preschool children with disabilities. These programs were influential in the development of future inclusive programs and policy (Bicker, 2000). In a landmark decision in 1974, the federal government passed legislation that required that 10% of the spaces in Head Start be reserved for children with disabilities, thus creating the first nationwide, inclusive setting for preschool-age children with disabilities. Head Start was then and continues to be the largest provider of inclusive services for this age group in the United States. In 2000-2001 13% of the children enrolled in Head Start consisted of children with disabilities (Children's Defense Fund, 2003; Office of Head Start, 2007).

P.L. 94-142, passed in 1975, established the right to an education for children with disabilities from ages 3-21 and included the preschool incentive grant which encouraged states to provide services to children 3-5 years of age with disabilities. Part B of P.L. 94-142 stated that all children were entitled to a free and appropriate education alongside their non-disabled peers to the maximum extent appropriate, the basis for inclusion. Subsequently, major policy initiatives provided the legal foundation for inclusion for preschool children. The most important of these initiatives; P.L.99-457, was passed in 1986. This law mandated that by 1991 states provide services for preschool children in the least restrictive environment and alongside their typically developing peers.

Accountability has added another dimension to inclusion. The Government Performance and Results Act (GPRA), enacted in 1993, mandated that all federal agencies, including Part B (Preschool Special Education) develop goals and specific indicators for reporting progress (Harbin, Rous, & McLean, 2005). As reported by Harbin and colleagues, indicators for Part B, the Preschool Special Education Programs, include reporting the percentage of preschool children receiving services in inclusive settings.

As inclusion has become an accepted practice, the social aspect of inclusion has become paramount (Odom, 2001; Wolery & Wilbers, 1994). The importance of social interactions for children with disabilities in inclusive settings is a part of nationally recommended standards for young children and is an integral element of Developmentally Appropriate Practices (DAP) endorsed by the National Association for Young Children (NAEYC) and the Division of Early Childhood (DEC) (Brown, Odom, & Conroy, 2001).

Program Characteristics

Models of Inclusion. Research on inclusive settings for children with disabilities has most often focused on a comparison of segregated and inclusive settings. Despite the wide range of programs currently enrolling children with disabilities, little research has focused on outcomes across different models of inclusion.

Odom and colleagues (1999) provide a framework for examining models of inclusion. They classify programs on two dimensions: organizational context and method of service delivery. The organizational context for inclusion encompasses a range of programs including Head Start, community-based child care, and public school. Within these contexts, service delivery methods may vary. Special education services are provided by an array of personnel including itinerant teachers, specialists, team teachers (e.g., special education, regular education, specialist), or a classroom teacher with a degree in special education, regular education, or a related degree. Numerous combinations of the organizational contexts and service delivery methods are possible, providing for variability in programming options.

Ratio of Children with and without Disabilities. When examining models of inclusion, the ratio of children with and without disabilities may also play a role. In a study comparing three levels of inclusion and cognitive and developmental outcomes for children with disabilities, Mills, Cole, Jenkins, and Dale (1998), found outcomes differed based on the ratio of children with and without disabilities.

Children with milder disabilities benefited more from integrated special education placement (the majority of children had disabilities). Children with more severe disabilities benefited more from self-contained classes (all children had disabilities) and from mainstreamed classes (the majority of children were typically developing). While this research focused on developmental outcomes, it is also possible that the ratio of children with and without disabilities may affect the development of friendships.

Another study comparing friendships in inclusive and specialized settings, Buysse, Goldman, and Skinner (2002) investigated friendships related to the ratio of children with and without disabilities. Both types of setting included children with and without disabilities, but in the inclusive settings, the majority of children were typically developing while in the specialized settings, the majority of the children had disabilities. The children with disabilities had more friends in the inclusive settings where there was a higher ratio of typically developing children. The higher percentage of typically developing children in the inclusive settings may have provided a larger pool of playmates and a more optimal environment for finding a potential friend. Exploring the effects of specific ratios of children with and without disabilities for children with specific characteristics is important (Holahan & Costenbader, 2000) and could be one factor on which parents and childcare providers make placement decisions for children with disabilities.

Quality of Inclusive Preschool Programs

Programs of high quality are associated with more competent peer relationships (National Research Council, 2000), and better social skills (Howes, Phillips, & Matheson, 1992; Peisner-Feinberg et al., 2001) for typically developing children. It is likely that program quality, with its link to higher levels of social skills for typically developing children, could play a role in friends for children with disabilities.

A limited number of studies specifically address the quality of inclusive programs (Odom et al., 2004) and findings from these studies vary. A study comparing the quality of inclusive and segregated settings conducted by La Paro, Sexton, and Snyder (1998) found similar levels of quality for both program types, with most programs being of good quality. In another study examining the quality of inclusive and non-inclusive early childhood programs Buysse and colleagues (1999) found that global quality was significantly higher in programs that included a child with disabilities than in programs that did not include children with disabilities. However, the majority of both programs fell into the mediocre range. In their review of research on preschool inclusion, Odom and colleagues (2004) concluded that the quality of inclusive settings was at least as high as the quality of segregated and regular early childhood programs, and that in general, overall quality ratings were mediocre.

Quality early childhood settings may provide increased opportunities for children to form and maintain friendships. In quality settings, children are provided with opportunities to choose preferred activities and playmates, allowing them to find peers with whom they share common interests, a foundational element for forming friendships (Bukowski et al., 1996, Buysse et al., in 2007, Howe, 1996). Characteristics of quality classrooms (e.g., availability of materials, time provided for free play, stimulating activities) can encourage social interactions and play (Sainato

& Carta, 1992). The number and nature of materials and activities and the design and structure of the space all play a role in creating opportunities for facilitating friendships (Ladd & Coleman, 1993; Goldman & Buysse, 2007, Guralnick, 2001; Guralnick 1999; Guralnick 2000; & Ladd & Coleman 1993). While specific information linking the quality of the inclusive setting and friendship outcomes for children with disabilities is lacking, research suggests that the support provided by a quality environment will create a context conducive to making friends.

Friendships in Inclusive Settings

Results of studies on inclusion and friendships for children with disabilities have been mixed, but overall, findings have supported inclusion. Research indicates that in general, children with disabilities profit as much from inclusive settings as they do from segregated settings and that inclusive settings may provide developmental and behavioral advantages (Buysse & Bailey, 1993; Odom et al., 2004). Children with disabilities have been found to interact more frequently in inclusive settings than in segregated settings and to be as engaged in activities as typically developing children (Guralnick et al., 1996a, 2001; Odom et al., 2004). Research has also found that typically developing children in inclusive settings developed greater sensitivity to and acceptance of children with disabilities (Guralnick, 2001), a basic step toward forming friendships.

In a study comparing friendships in specialized and inclusive settings, most children with and without disabilities were reported as having at least one friend (Buysse, Goldman & Skinner, 2002). Buysse and colleagues found that in inclusive settings, the number of friends of children with and without disabilities was not significantly different. Results also indicated that children with disabilities enrolled in inclusive child care settings were more likely to have typically developing friends than children with disabilities enrolled in specialized settings.

Howes (1996) proposed two prerequisites for young children in forming friendships: the opportunity for regular, interactive play, and peers that know each other well and consequently have the opportunity to build sophisticated play interactions or scripts. Inclusive settings provide these important prerequisites for children with and without disabilities.

Teacher Characteristics

Teachers play a pivotal role in supporting emerging friendships of children. Teachers provide a foundation: the environment, materials, and opportunities for play and interactions that encourage and nurture friendships for children. Teachers are the heart and soul of early childhood programs. However, research examining the association between teacher characteristics and friendship outcomes for children with disabilities is limited. Teacher characteristics that have been found to be associated with child outcomes are: teacher-child relationship; teacher education and experience; and teacher facilitation of friendships. Information on these topics as related to *friendships* of preschool children with disabilities is provided below.

Teacher-Child Relationship. The research base on teacher-child relationships is built on studies conducted with typically developing children, but this work suggests the teacher-child relationship could play a similar role for children with disabilities. The relationship between the teacher and the child has been found to provide support for children in developing peer relationships. The closeness of a child's relationship with the classroom teacher is a predictor of a child's social and behavioral skills in the classroom (Peisner-Feinberg et al., 2001); which could be associated with the success children have in making friends. Similarly, the sensitivity of the caregiver-child relationship is related to more competent peer relationships (National Research Council, 2000). Howes (1996) proposed that emotional support and supervision provided by a stable caregiver is a necessity for the development of peer play and affectionate relationships. The relationship between the teacher and child appears to support and facilitate social competence and peer relationships for typically developing children and has the potential to fill this role for children with disabilities.

Education and Experience. The education and experience of teachers has been found to be positively related to the quality of early childhood programs (Kontos. & Wilcox-Herzog, 2001; NICHD Early Child Care Network, 2000) and, as discussed previously, quality is associated with more positive outcomes for children. Of the few studies found which specifically investigate the relationship between teacher characteristics and the quality of *inclusive* programs, variable results have been reported. One study found no association between teacher education, age and experience and program quality (La Paro, Sexton, & Snyder, 1998). Another study, conducted by Buysse and colleagues (1999), found teachers with higher levels of education and teachers with more early childhood experience had higher scores on quality ratings. While the association between teacher education and experience and quality of regular early childhood programs is clear, the influence of these factors on friendships for children with disabilities is less apparent.

Use of Strategies for Facilitating Friendships. Teachers influence and create the opportunities afforded to children to make friends and can actively facilitate and encourage friendships (Johnson, Ironsmith, Snow, & Poteat, 2000). While there is information and research related to strategies for facilitating child interactions and social skills, there is less research available related to strategies typically used by teachers to encourage *friendships* for children with disabilities. Available information indicates that teachers often use a "hands off" policy when it comes to friendships. In a study examining teacher practices, teachers most frequently reported use of passive strategies for supporting friendships, rarely reporting use of active strategies (Buysse, Goldman, & Skinner, 2003). Active strategies were most often used when one or both children in the friendship dyad had a disability. This finding suggests that teachers are aware of the need to encourage emerging friendships for children with disabilities.

Similar findings were reported by Brown, Odom, and Conroy (2000). Formal and intensive interventions for facilitating friendships in young children exist, but are seldom used by teachers in general early childhood settings. As the importance of friendships in young children continues to emerge, the passive role often seen in early childhood may give way to a more active facilitation of friendships for children who have difficulties in this area. In their review of research on inclusion, Odom and colleagues (2004) reported a range of interventions and strategies found to be effective in encouraging social interactions. Teachers can play an important role in promoting social integration of children with disabilities thereby setting the stage for children to make friends.

Child Characteristics

Research on children with disabilities has most often focused on children with disabilities as a heterogeneous group (Guralnick, 1999). However, characteristics associated with specific types of disability impact children's functioning and outcomes in very different ways.

Research on the impact of child characteristics on friendships is limited. Evidence suggests that child characteristics, including the nature and magnitude of disability, impact children's friendships (Buysse, 1993). Characteristics of specific disabilities (e.g., limited language or communication, autism, physical disabilities) can limit a child's opportunities for interaction and play (Harper & McClusky, 2002), the process through which children make friends. What is known about child characteristics and their relationship to friendships is reviewed as well as research on engagement as it relates to forming and maintaining friendships.

Nature of Disability. Children's individual skills and temperament affect their ability to interact and play with peers (Hay et al., 2004). Similarly, the specific disabilities of children may affect their social skills and social competence. In their study of children with communication disorders and children who lacked mobility, Harper & McClusky (2002) found that social initiations and peer interactions were linked to disability type. Children with a lack of mobility were dependent on teachers to initiate play (e.g., move the children to a play center), but once involved, these children were able to maintain play with their peers. Children with communication disorders were able to join play, but were found to do so less frequently than their peers. Even when assisted in entering play, their play maintenance and interactions lagged. Teacher behavior was found to differ according to the characteristics of the child and activity.

The nature or type of disability has been linked to peer acceptance and rejection. A recent study on social acceptance and rejection of preschool children with disabilities in inclusive settings (Odom, et al., in 2006), found disability type was linked to social acceptance. Children whose delays were less apparent, and who were more developmentally sophisticated, tended to be socially accepted by their peers without disabilities. Differential outcomes by type of disability were reported; none of the children in the study who had autism or severe behavioral disorders were in the accepted group. Few of the children who had physical disabilities or speech impairments were rejected, although the lack of an effective method of communication was linked to social rejections. Based on their findings, the authors recommended research into the role of communication skills in the development of peer relationships.

Guralnick and colleagues have conducted a series of studies of children with communication delay, a high incidence disability in preschool children. In a study examining interactions in inclusive playgroups, Guralnick and colleagues (1996b) reported that children with communication disorders exhibited a lower rate of positive social behaviors and participated less often in conversations with peers than did typically developing children. Although the work of these researchers focused on peer interactions rather than friendships, their findings have implications for friendship development. In another study also conducted in inclusive playgroups (Guralnick at al., 1996b) found typically developing children were more successful with social bids than children with communication disorders. Children who lack communication skills, as well as children who have limited or less sophisticated play skills, appear to be at a disadvantage in finding playmates (Howes, 1996), a prerequisite for making friends.

In a study related directly to friendship, Guralnick & Groom (1988) examined friendship patterns of mildly developmentally delayed four year old children participating in inclusive playgroups. The children with delays had more difficulty forming friendships than the typically developing children of the same age. In another study, it was found that typically developing children preferred other typically developing children over children with disabilities as friends (Guralnick, 1999). However, on a more positive note, it was also reported that the vast majority of interactions between the children with and without disabilities were positive. Also relevant, typically developing children were able to make adjustments in relation to the developmental level of children with disabilities, altering their level of communication and using multiple methods to communicate (e.g., more directive phrasing, nonverbal cues).

This research indicates the significance of the nature of a child's disability in developing the skills leading to friendships and in forming friendships. Another child characteristic that bears investigating is the impact of the magnitude of the disability on friendships.

Magnitude of Disability. The magnitude or severity of a child's disability can profoundly impact the opportunities available to the child. Severity of disability has been found to influence factors as basic as the educational placement of the child.

Traditionally, children with milder disabilities were more often included in regular early childhood settings while children with more severe disabilities were enrolled in specialized or segregated programs (Buysse & Bailey, 1994). This trend may be changing (Odom et al., 2004). In a study on outcomes of preschool inclusion by Odom and Buysse (2005), 20% of the children with disabilities in a study of inclusive early childhood settings had a severe disability.

While research on the impact of the severity level of children's disability varies, existing research indicates a differential response to setting. Much of the research related to severity of disability has focused on developmental, rather than social, outcomes. In a study investigating the effects of inclusive and segregated programs, Cole, Mills, Dale, and Jenkins (1991) found that the children with milder disabilities made greater developmental gains in integrated classes while children with more severe disabilities made greater developmental gains in segregated classes. Expanding on this line of research, Mills and colleagues (1998), noted previously, compared cognitive and language outcomes in inclusive and segregated settings and had similar results. Children with more severe disabilities had better outcomes in the segregated (special education only) and mainstreamed (majority typically developing children) settings while children with less severe disabilities benefited more from integrated settings (majority children with disabilities). While this research does not examine friendships for children with disabilities, it does suggest the type of setting can have a significance impact on outcomes when related to magnitude of disability.

Social and emotional outcomes may also be affected by degree of disability. Holahan & Costenbader (2000) examined developmental and social and emotional outcomes for preschool children with disabilities in inclusive and self-contained settings. In this study, the higher performing children, those with less severe disabilities, had greater social and emotional gains in inclusive classes while the children with more severe disabilities did equally well in both the inclusive and specialized settings. The researchers also examined the impact of length of the daily program, comparing effects of full and half-day programs. Children with higher levels of delay who were in full-day programs had higher rates of progress in social and emotional domains than their peers with lesser delays in half-day classes. This suggests the possibility that time and opportunity to interact with peers may play a role in producing social gains for children with varying levels of severity of disability. While social and emotional skills are not directly correlated with friendships, the previous research suggests the importance of looking at the effects of severity of disability and its interactions with setting and friendship outcomes.

Engagement. Engagement and participation in activities are crucial aspects of making and maintaining friends. Participation in shared activities can be a first step toward establishing common ground and is often cited by preschool children as a reason for liking or being friends with another child (Buysse et al., 1997). In their review of research on inclusion, Odom and colleagues (2004) found that while the overall engagement of children with and without disabilities has been found to be similar, complexity of engagement appears to differ. In a study investigating the effects of inclusive and segregated playgroups on the interactions and engagement of preschool children with and without disabilities, Guralnick and colleagues (1996a) found that children with and without disabilities were more engaged in inclusive playgroups than in segregated groups. The children with disabilities also had higher levels of interactions with peers and participated in more advanced play when in inclusive settings. It appears participation in inclusive programs may play a positive role in facilitating the engagement of children with disabilities.

Summary

Research has shown that friends play a positive and supportive role in the development of typically developing children (Brown, Odom, & Conroy, 2001; Howes, 1996; Johnson, Ironsmith, Snow, & Poteat, 2000; Ladd, 1990). Given that friends may provide the same or similar supportive functions for children with disabilities, research about friendship patterns for children with disabilities is needed (Guralnick & Groom, 1988). Research indicates that children with disabilities have fewer friends than children without disabilities and are more likely to be rejected by their peers (Guralnick 1996b; Odom, 1999; Odom & Diamond, 1998; Odom et al., 2002). However, much of the research on social outcomes for children with disabilities focuses on components of social competence rather than on friendships. Research which provides information on the relationship between program, adult, and child characteristics and friendships for children with disabilities will provide a foundation for improving friendship outcomes for children with disabilities. Information would aid in providing an individualized, optimal match between children and programs. As stated by Bukowski and colleagues (1996), there is a need for research into the “interactive match” between individual characteristics of children and how social contexts “facilitate or inhibit the development and stability of friendships.”

Proposed Study

Additional research is necessary to determine factors associated with friendships of young children with disabilities enrolled in inclusive settings. This study will contribute to the knowledge base by examining associations among types of inclusive settings, teacher characteristics, child characteristics, and numbers of friends. It will provide information about friendship patterns for children related to the nature and magnitude of their disability and will look for relationships between these variables. Additionally, there has been little research into stability of friendships (Bukowski et al., 1996; Howes, 1996). This study will provide information about stability of friendships related to program type and child characteristics. It is necessary to know not only whether children make friends, but also whether they keep them (Asher, Parker, & Walker, 1996).

The proposed study is based on a larger study, the Cost, Quality and Outcomes of Preschool Inclusion (Odom & Buysse, 2005). The original study investigated the relationship between program costs, quality of programs, and outcomes for preschool children with disabilities in four types of inclusive early childhood settings. This study will expand on the information provided by the larger study by investigating friendships of the children with disabilities.

Goals of the study are to describe the number of friends of children with disabilities and the stability of the relationships across child characteristics and program models, and to determine which program, adult (teacher and assistant teacher), and child characteristics associated with higher numbers of friends. Both descriptive and relational questions were proposed to investigate these issues.

Descriptive Questions:

1. How many special friends do children with disabilities have in the fall and spring across disability category?
2. How many special friends do children with disabilities have in the fall and spring across severity of disability?
3. How many special friends do children with disabilities have in the fall and spring across program types?
4. What are the characteristics (age, sex, disability status) of the special friends of the children with disabilities?
5. Do children with disabilities having different types of disability maintain a stable *number* of friends?
6. Do children with disabilities having different levels of severity maintain a stable *number* of friends?
7. Do children with disabilities in different program types maintain a stable *number* of friends?

Relational Questions

8. What is the relationship between general early childhood program quality and the number of friends of children with disabilities?
9. What is the relationship between the quality of inclusion and the number of friends of children with disabilities?

10. What is the relationship between the class ratio of children with and without disabilities and the number of friends of children with disabilities?
11. What is the relationship between program/classroom characteristics (program type, length of program day, teacher-child ratio, and ratio of children with and without disabilities) and the number of friends of children with disabilities?
12. What is the relationship between child characteristics (i.e., type and category of disability, sex, age, communication and motor skills) and number of friends of children with disabilities?
13. What is the relationship between a) engagement in activities, b) peer social engagement, and c) adult social engagement and number of friends of children with disabilities?
14. What is the relationship between adult characteristics and the number of friends of children with disabilities?

CHAPTER 2: METHOD SECTION

Cost, Quality and Outcomes of Preschool Inclusion Study

The current study is based on information from a larger study: Cost, Quality and Outcomes for Preschool Inclusion (CQO), a three year, two-state study funded by the U.S. Department of Education (Odom & Buysse, 2001). The CQO study examined the relationship between the cost of providing special education services in inclusive programs, the quality of the programs, and the outcomes for children and their families. Four organizational models of inclusion were included in the study: Head Start, Public School, Community-Based-Itinerant, and Blended programs. The CQO study included preschool children with a range of disabilities from diverse ethnic and economic backgrounds. The study was conducted in Indiana (IN) and North Carolina (NC).

Results from the original study have been analyzed and reported in a paper, “Preschool Inclusion in the United States: Cost, Quality, and Outcomes,” presented at the International Congress on Special Education in 2005. Data collected through the original study was used as the basis for the current dissertation study. The author of this dissertation was project coordinator for the Cost, Quality, and Outcomes of Preschool Inclusion site in North Carolina and was integrally involved in recruitment of teachers and children, training of data collectors, site visits, and data collection and cleaning for the original study. Measures and subscales of measures which reflect the specific aims and objectives of the dissertation study were selected from the battery of measures used by the CQO study; both the original assessments and the existing data set were used for the current study.

The study expanded on the CQO study by examining information related to friendships of preschool children with disabilities. The study provides information about friendship patterns for children with a range of type and severity of disability across the four organizational models of inclusive early childhood programs. It describes variables related to the number and stability of friends of children with disabilities and characteristics of their friends. Additionally, it investigates the relationship between child characteristics, stability of friendships, models of inclusion, quality of programs, and adult characteristics.

Definition of Terms

Definitions are provided to clarify the meaning of terms used throughout the document. For the purpose of this study, *site* is used in reference to the state, Indiana or North Carolina, where participating programs were located. *Program* refers to the four organizational models of inclusion, Head Start, Public School, Community-Based/Itinerant, and Blended and c*lass* refers to the participating classrooms. *Head Start* programs were programs which provided educational services to preschool children from low income families and to children with disabilities. *Public School* programs were programs operated by the public school system which included both children with and without disabilities. *Community-Based* programs were private child care programs operating in the community. The Community-based programs included in the study had at least one child with a disability enrolled in the participating class who was served by an itinerant public school teacher and/or therapist. *Blended* programs were programs in which public school programs blended resources across programs (e.g., Public School with Title 1, More at Four and Head Start) and included children with and without disabilities.

Inclusion refers to the participation of children with and without disabilities in the same class or setting. For the purpose of this study, the term *inclusive* is used to describe a class enrolling a minimum of one child with a disability up to a maximum of 50% of the children within the class having a disability. All participating classes were inclusive.

The *stability* of the *number* of teacher-reported friendships of preschool children with disabilities across the school year was examined through the current study. S*tability* is defined as a child having the same number of friends at the beginning and end of the year. If a child is reported as having two friends in the fall, the number of friendships would be considered stable if the child was reported as having two friends in the spring, regardless of whether the friendships were with the same two children. A child with no friends in the fall and no friends in the spring is *not* considered to have a stable number of friends.

The term *friend* is used interchangeably with *special friend* in the following chapters. Teachers reported the number of playmates of the children with disabilities, how frequently they played with each playmate, and which playmates, if any, were the child's *special friends*. When the term *friend* is used in reporting results, it refers to teacher-report of special friend.

Sampling Plan

The target sample for the CQO study was 60 children per year (30 from each site) for a total of 180 children over the three years of the study. Three programs were originally included in the study: Public School, Head Start, and Community-Based Itinerant programs. The sampling called for an even distribution of the sample across programs, with a total of 60 children per model of program. A fourth organizational model, the Blended program, was added during the first year of the study. The total target sample remained stable, with a target of 180 children across the four programs.

The method of service delivery used to provide special education services to children with disabilities varied according to the organizational structure of the program. Children with disabilities enrolled in community-based programs received services through an itinerant teaching model. In this model, children with disabilities received services from a special education teacher provided through public schools or a specialist who traveled to the child care center and provided either individualized services and/or consultation. Children enrolled in Head Start, Public School, and Blended programs received services through a lead teacher model or a co-teaching model. In the lead teacher model, services were provided by the lead teacher of the class and/or specialists who either taught with the teacher or provided individualized therapy or consultation. In the co-teaching model the lead teaching role was shared by a special education teacher and an early childhood teacher.
The eligibility criteria for programs were:

- The program was either Head Start, Community-based, Public School or Blended
- The class was inclusive, with a minimum of 1 to a maximum of 50% of the children with identified disabilities
- The lead teacher in the class agreed to participate
- The class enrolled children from three to five years of age

The number of classes recruited within each program varied in relation to the model of the program. Community-based classes often included only one or two children with a disability, so a higher number of these classes were enrolled in the study. Public School, Head Start, and Blended programs had higher percentages of children with disabilities so fewer classes were recruited for these models.

Children

A total of 143 children with disabilities participated in the study. The criteria for eligibility were:

- Children were from three to five years-old
- Children had an identified disability as defined by meeting the eligibility criteria necessary to receive services from their public school systems demonstrated by having an Individualized Instructional Program (IEP)
- Children attended one of the inclusive programs enrolled in the study on a regular basis (e.g., most weekdays for at least half of the day)

Description of Sample

A total of 74 classes and teachers and 143 children participated in the study. The majority of the classes were half day (61%), with one lead teacher and one assistant teacher. The global program quality, as rated by the ECERS, was good, with an average score of 4.92. The mean child-to-adult (teacher and assistant teacher) ratio was 6.33 and the mean ratio of children without IEPs to children with IEPs was 7.90. The participating teachers had an average of 10.83 years of experience and 70% had a Masters degree.

Children

The total sample included 143 children, of these, 93 were male and 50 were female. The mean *chronological* age of the children was 51.57 months with a range from 36-69 months in the fall of their year of participation in the study. The mean *developmental* age of the children was 36.92 months, ranging from 8 to 59 months. The ethnic/racial distribution of children was Caucasian (79%), African-American (15%), Latino/a 3%, biracial (3%), Asian (1%) and Native American (1%).

The children were labeled with a range of disabilities which, for the purpose of comparison, were condensed into four major categories: Developmental Delay (49%), Speech/Language Disorder (24%), Autism/ Pervasive Developmental Delay (PDD) (15%), and Other (19%). The Other category consisted of small numbers of children (from 1-3 per disability type) with physical disabilities, hearing or vision impairments, social and behavioral disorders, mental retardation, health impairment, and multiple disabilities.

The ABILITIES Index (Simeonsson & Bailey, 1998) was used to provide an overall rating of severity of disability for each child. The majority of the children in the study, 49%, were rated as having a mild disability, 27% with a moderate disability and 24% with a severe disability. Additional descriptive information is provided in Tables 2.1 and 2.2.

Table 2.1:Demographics for Total Sample and Across States

Classes Number of Children	Total Sample (N=74) (N=143)	Indiana (n=36) n = 65	**North Carolina** (n=38) n = 78
	# (%)	# (%)	# (%)
Class Characteristics			
Half day	45 (61)	35 (97)	10 (26)
Full day	29 (39)	1 (3)	28 (74)
Program Type			
Blended	18 (24)	0	18 (47)
Community-based	38 (51)	22 (61)	16 (42)
Head Start	7 (10)	6 (17)	1 (3)
Public School	11 (15)	8 (22)	3 (8)
Teacher Education			
Less than bachelor's	1 (2)	0	1 (3)
Bachelor's degree	19 (28)	14 (44%)	5 (14)
Master's degree	47 (70)	18 (56%)	29 (83)
**missing*	*7**	*4**	*3**
Child Race			
Caucasian	113 (79)	61 (93)	52 (67)
African-American	21 (15)	1 (2)	20 (26)
Hispanic-Latino	4 (3)	0	4 (5)

Native American	1 (1)	0	1 (1)
Asian	1 (1)	0	1 (1)
Bi-Racial	3 (2)	3 (5)	0
Sex: Female	50 (35)	23 (35)	27 (35)
Male	93 (65)	42 (65)	51 (65)
Severity of Disability			
Mild	70 (49)	28 (43)	42 (54)
Moderate	39 (27)	19 (29)	20 (26)
Severe	34 (24)	18 (28)	16 (21)
Disability Category			
Dev. Delay	69 (48)	23 (35)	46 (59)
Speech & Lang.	34 (24)	25 (39)	9 (12)
Autism/PDD (n=21)	21 (15)	8 (12)	13 (17)
Other	19 (13)	9 (14)	10 (13)

Table 2:2: Demographics for Total Sample and by States

	Total Sample			Indiana			North Carolina		
	Mean (SD)	Min	Max	Mean (SD)	Min	Max	Mean (SD)	Min	Max
Classroom									
# Children per class	14.62 (4.04)	6	30	15.94 (4.24)	7	30	13.37 (3.44)	6	19
# children with IEP	3.23 (2.63)	1	13	3.25 (2.41)	1	9	3.21 (2.85)	1	13
# of lead teachers	1.14 (.38)	1	3	1.25 (.50)	1	3	1.03 (.16)	1	2
# assistant teachers	1.34 (.67)	0	3	1.22 (.45)	1	3	1.45 (.81)	0	3
Child to Adult Ratio	6.33 (2.26)	2	13	6.66 (1.89)	4	10	6.01 (2.55)	2	13
Child IEP to total Child	7.90	1.25	19.0	7.93 (5.37)	1.56	19	7.88 (6.11)	1.25	19
Teacher Years Experience	10.83 (6.70)	0	24	9.33 (5.36)	4	20	11.79 (7.35)	0	24
ECERS total score	4.92 (.75)	2.80	6.45	4.56 (.62)	2.80	5.85	5.26 (.71)	3.77	6.45
Child chronological Age in Months (fall)	51.57 (7.71)	36	69	50.28 (8.63)	36	67	52.65 (6.71)	37	69
Developmental Age (fall)	36.92 (10.05)	8	59	36.40 (11.22)	8	56	37.35 (9.01)	17	59

The percentage of child participants classified under the eligibility category of Developmental Delay (DD) was greater in North Carolina (59%) than in Indiana (35%). A possible explanation for this discrepancy is the variation in the breadth of the definitions of DD in the two states. The eligibility category of DD was created in response to concerns in the early childhood field related to the labeling of young children with disabilities (Danaher, 2007). Amendments to the Individuals with Disabilities Education Act (IDEA) (P.L. 102-119, 1991) provided states with the option of using DD, a broad, non-specific eligibility category for preschool-age children. Further amendments to IDEA (P.L. 105-17, 1997) required all states using DD to define their criteria for accepting children for services under this category. This resulted in differing criteria and varying numbers of children served through this category across states. As reported by Danaher (2007), Indiana criteria state that preschool children aged 3 through 5 who are 2 standard deviations (SD) below the norm in one area of development or 1.5 SD in two areas are eligible for services. North Carolina criteria includes children aged 3-7 with 2 SD below the norm or 30% delay in one area or 1.5 SD below the norm or 25% delay in two areas. North Carolina's definition also includes children who are exhibiting delayed or atypical behavior that occurs over an extended period of time and in more than one setting. North Carolina's broader criteria may account for the larger percentage of children grouped within this eligibility category (Table 2.1).

Recruitment Process

Recruitment took place in summer and early fall of each of the three years of the study (2001-2004). A purposive sampling method was used to target school systems for participation. Inclusive programs in surrounding areas were selected to represent the socioeconomic, racial and ethic diversity in each state and included a mix of urban and rural settings.

Following approval by the Institutional Review Boards at the University of North Carolina and Indiana University, information about the purpose of the study and the type and level of participation that would be needed was provided to program administrators. School system approval was obtained where necessary. After administrative approval was acquired, recruitment information was provided to teachers during staff meetings, through flyers and letters, and through one-on-one meetings. When signed consents were received from the teachers, parent packets were provided. Teachers distributed consent letters to all parents of children with identified disabilities enrolled in their class. In cases where there were more than 10 children with an identified disability, teachers selected children with disabilities to represent a range of type and severity of disability. Parents who agreed to allow their child to participate returned signed letters of informed consent.

Measures

Two categories of measures were used for the current study: measures of quality and individual child measures. Descriptive information about teachers and children was obtained from written questionnaires and demographic forms.

The measures of program quality include an environmental rating scale, a measure of the quality of inclusion, and an ecobehavioral observation measure. The Early Childhood Environment Rating Scale-Revised (ECERS-R) (Harms, Clifford, & Cryer, 1998) was used to assess global program quality. The quality of inclusion, an individual child measure, was assessed through the use of the Quality of Inclusive Experience Measure (QIEM) (Wolery, Pauca, Brashers, & Grant, 2000). The Code for Active Student Participation and Engagement Revised (CASPER) (Brown, Odom, Holcombe, & Youngquist, 1995) was used to measure child engagement and interactions with adults and peers, elements of a quality program.

Individual child measures included a standardized developmental assessment, a measure of child functioning, and teacher report of playmate preferences and friends. The Battelle Developmental Inventory, (Newburg, Stock, Wnek, Guidibaldi, & Svinicki, 1988) an individualized developmental assessment, was used to document each child's development across five domains. As noted previously, severity of the child's disability was documented through use of the ABILITIES Index (Simeonsson & Bailey, 1991) and the Playmates and Friends Questionnaire (Goldman, Buysse & Carr, 1997) was used to collect information about the child's playmates and friends. Subscales of the QIEM (i.e., Adult-Child Contacts and Relationships) and CASPER (i.e., Activity Area Codes, Child Behavior Codes, and Child Social Behavior Codes) were used to help describe ecological features of the classroom and behaviors of the focal children.

Data was collected through a variety of methods. The quality measures were completed though a combination of observation, teacher interview and document review. The Battelle was administered one-on-one with each participating child, and the ABILITIES Index and the Playmates and Friends Questionnaire were completed through teacher interview.

Description of Measures

Early Childhood Environment Rating Scale-Revised (ECERS-R): The ECERS-R (Harms, Clifford, & Cryer, 1998) is a measure of overall classroom quality. The ECERS-R is an observational measure which covers seven areas of classroom functioning including space and furnishings, personal care, language-reasoning, activities, interactions, program structure, and parents and staff. Each area is rated on a seven point scale ranging from 1 (inadequate) to 7 (excellent). Ratings are based on a one-day observation of 3-5 hours with an additional 10-20 minute teacher interview. The measure can be used to generate a total score or scores for each domain. For the current study, a total score was used to determine overall program quality. The Language and Reasoning domain was used in this study as a part of a combined variable examining adult teaching style (research question 14).

The ECERS-R is a standardized instrument widely used nationally (Bryant, Maxwell, & Burchinal, 1999) for both research and to assess quality of preschool classrooms. The ECERS-R has been found to be reliable at the indicator and item level in addition to the total score (Harms, Clifford, & Cryer, 2005). The internal consistency of the scale has been examined at subscale and total score levels with results providing support for use of these as separate constructs (Harms, et al., 2005).

Quality of Inclusive Experiences Measure (QIEM): The QIEM (Wolery, Pauca, Brashers, & Grant, 2000) was designed to assess the quality of inclusion as experienced by the child with disabilities. The QIEM is an individualized measure that assesses seven areas of the child’s program: Program Goals and Purposes, Staff Supports and Perceptions, Accessibility and Adequacy of the Physical Environment, Individualization, Children's Participation and Engagement, Adult-Child Contacts and relationships, and Child-Child Contacts and Relationships. The total score was used to obtain an overall quality of inclusion score. Additionally, two subscales were used as part of the measure of teacher style: Individualization and Adult-Child Contacts. The QIEM is completed through a combination of observation, teacher interview, and document review. The QIEM was developed over three years of research and observation in inclusive preschool programs through a U. S. Department of Education grant.

The Code for Active Student Participation and Engagement Revised (CASPER): The CASPER II (Brown, Odom, Holcombe, & Youngquist, 1995) is an ecobehavioral observational assessment that provides information about preschool children's engagement and interactions in the classroom. It contains five subscales: Activity Area, Initiator of Activity, Child behavior, Child Social behavior, and Adult Behavior. The CASPER-II uses a momentary time sampling system in which each child is observed for 30 minute sessions on three different days. Observations of a specific "moment" (i.e., a two-second point) are recorded on a hand-held computer every thirty seconds, providing a detailed record of the ecological features of the class, the child's social behavior, and the adult's behavior. The subscales of Child Behavior and Child Social Behavior were used for the current study as measures of child engagement and the Adult Behavior subscale was used as one of the measures of adult characteristics.

ABILITIES Index: The ABILITIES (Simeonsson & Bailey, 1991) provides a profile of the child's functioning across 9 major areas: hearing; behavior and social skills; intellectual functioning; limbs (use of hands, arms, and legs); intentional communication; muscle tone; overall health; vision; and structural status. It was completed in the fall of each year through teacher interview and was used to provide descriptive information about the child's functioning and to determine the level of severity of the child's disability. Severity levels are documented as mild, moderate, and severe.

Previous research has demonstrated the reliability of the ABILITIES Index among raters who differed considerably with respect to discipline, expertise, and relationship to the child (Bailey, Simeonsson, Buysse, & Smith, 1993). Additionally, the cross-cultural applicability of the ABILITIES has been documented (Simeonsson, Chen, & Hu, 1995).

Playmates and Friends Questionnaire: Playmates and Friends (Goldman, Buysse, & Carr, 1997) is a questionnaire used to document the number, and nature of children's friends. This measure was completed through teacher report and was used to collect information about the number of playmates of the child with disabilities, how frequently the child played with the playmates, and number of special friends. Teachers were not provided with a definition of "playmate" or "special friend," but simply used the terms as they understood them. The form had space for up to 10 playmates and up to 7 "special" friends. Additionally, the measure was used to collect demographic information about the special friends. Demographic information included age, gender, and whether the special friend named had a disability. This measure was used to document the number of playmates and friends in the fall and again in the spring and was used to determine the number and stability of the number of friends from fall to spring.

Battelle Developmental Inventory (BDI): The BDI (Newburg, Stock, Wnek, Guidibaldi, & Svinicki, 1988) The BDI is an individualized developmental assessment. It encompasses five general domains, and adaptations are provided for children with disabilities. A total score is obtained describing the child's developmental level. The Battelle has been determined to be reliable at the subdomain, domain and full test composite level. In additional to the total score, two of the subscales, Communication (including Expressive and Receptive Language) and Motor were used in the study to further describe the characteristics of the children with disabilities within these domains. The BDI is a standardized, normed, developmental assessment. It meets or exceeds traditional standards for excellence at the subdomain, domain, and full test composite scores and concurrent and criterion validity were obtained. Concurrent and predictive validity of the Battelle was examined in a study by Guidubaldi (1984) and data supported the BDI for use in research.

Teacher Demographics. The teacher demographics form was used to obtain information including the type of program, the ratio of children to teachers, the number of children with disabilities in the class, and information regarding teacher education and experience. This questionnaire was completed by the classroom teacher.

Class List: The class list was used to collect demographic information about the class. It was used to obtain demographic information about the children in each class (i.e., ratio of children with and without disabilities). It was completed through teacher report.

Data Collection Procedures

Inter-observer Agreement and Reliability

Reliability checks and training took place each year across states. Training on the observational measures was provided to research staff each year prior to winter data collection. The lead observer of the North Carolina site traveled to Indiana for 2 and 3 day training visits. Training was provided on the ECERS-R and the CASPER and practice sessions were conducted for both measures. A minimum of 85% inter-observer agreement between raters was reached on the ECERS-R. North Carolina staff were trained to the same specifications.

Data collectors were trained to a criterion level (.80 kappa coefficient) on the CASPER before beginning observations. The mean Kappa coefficients for the CASPER variables used in the analysis were .95 for the Child Social Behavior, .96 for Adult Behavior and .94 for Child Behavior.

A standardized training protocol was used for training for the administration of the Battelle. Research staff practiced administering the assessment with children not enrolled in the study; inter-rater reliability was achieved prior to data collection each fall. Training and review were conducted annually, prior to data collection.

Twenty percent of the data collected were checked for inter-rater reliability. Email, telephone contact, and consultation across sites aided in uniformity of scoring on all observational measures.

Data Collection

Data were collected in three phases: fall, winter, and spring. Child baseline data was collected in the fall of each year. Developmental information on five domains (adaptive, personal-social, communication, motor, and cognitive) was collected through use of the Battelle Developmental Inventory. The Battelle was administered individually with each focal child. Teachers were interviewed and assisted in completing the ABILITIES Index and the Playmates and Friends Questionnaire. Teachers also completed classroom demographic forms.

During winter data collection, measures of program quality were administered. Research staff completed several observational measures that addressed diverse aspects of program quality. A half-day observation was conducted in each classroom using the ECERS-R and additional information for the ECERS was collected through a short teacher interview. The QIEM was completed for each focal child through observation, document review, and teacher interviews. The CASPER was completed through three 30-minute observations for each focal child.

In spring, post-test child assessments were conducted. The Battelle was re-administered to each focal child to measure developmental progress, and teachers again completed the Playmates and Friends Questionnaire to track changes in numbers of playmates and friends and stability in the number of friends. Data collection occurred over three years.

Analysis Plan

In the original CQO study, data were shipped to the Indiana site for data entry, and all data were double entered by independent data entry personnel using SPSS Data Entry. Discrepancies were checked against hard data and corrected accordingly. Separate databases were kept for each year of the project.

Goals of the Study

The goals of the dissertation research are to describe the number of friends of children with disabilities and the stability of the number of friends across child characteristics and program models, to determine which program, adult (teacher and assistant teacher), and child characteristics best predict number of friendships, and to investigate the relationship between program, child, and adult characteristics and number of friendships. The data analysis proceeds through a series of sequential steps.

The research design includes both descriptive and correlational elements. The initial analyses involve simple descriptive statistics used to describe the focal children and the number of playmates and friends across settings as well as the number of stable friendships. Subsequent analyses examine the relationship between variables.

Analysis

Univariate descriptive analyses were conducted to summarize and examine characteristics of classes, teachers, and children for the total sample, across states (see Tables 2.1 and 2.2) and across program models. Results are presented in Tables 2.3 and 2.4 below.

Table 2.3: Descriptive Statistics by Program Type

Classes (N=74)	Community-Based n=38	Head Start n=7	Public School n=11	Blended n-18
	# (%)	# (%)	# (%)	# (%)
Indiana	22 (61)	6 (17)	8 (22)	0
North Carolina	16 (42)	1 (3)	3 (8)	18 (47)
Program Characteristics				
Half day	32 (84)	5 (71)	8 (73)	0
Full day	6 (16)	2 (29)	3 (27)	18 (100)
For-Profit	4 (11)	0	0	0
Not For-Profit	34 (90)	7 (100)	11 (100)	18 (100)
NAEYC licensure	7 (18)	6 (100)		12 (67)
Teacher Education				
Less than BA	0	1 (14)	0	0
Bachelors degree	12 (35)	3 (43)	1 (11)	3 (18)
Masters degree	22 (65)	3 (43)	8 (89)	14 (82)
# of Children N=143	n=48	n=18	n=25	n=52
Race				34 (65)
Caucasian	43 (90)	16 (89)	20 (80)	14 (27)
African-American	2 (4)	1 (6)	4 (16)	2 (4)
Hispanic-Latino	1 (2)	0	1 (4)	1 (2)
Native American	0	0	0	1 (2)
Asian	0	0	0	0
Multi-Racial	2 (4)	1 (6)	0	

Sex				
Female	19 (40)	6 (33)	12 (48)	13 (25)
Male	29 (60)	12 (67)	13 (52)	39 (75)
Severity of Disability				
Mild	33 (69)	11 (61)	17 (68)	9 (17)
Moderate	5 (10)	6 (33)	5 (20)	23 (44)
Severe	10 (21)	1 (6)	3 (12)	20 (39)
Disability Category				
Developmental Delay	27 (56)	4 (22)	9 (36)	29 (56)
Speech & Language	5 (10)	12 (67)	11 (44)	6 (12)
Autism/PDD	8 (17)	0	2 (8)	11 (21)
Other	8 (17)	2 (11)	3 (12)	6 (12)

Table 2.4: Descriptive Statistics by Program Type

Classes (N=74)	Community-Based n=38			Head Start n=7			Public School n=11			Blended n-18		
	Mean (SD)	Min	Max	Mean (SD)	Min	Max	Mean (SD)	Min	Max	Mean (SD)	Min	Max
# lead teachers	1.2 (.49)	1	3	1.14 (.38)	1	2	1.00 (.00)	1	1	1.00 (.00)	1	1
# assist. Teachers	1.03 (.49)	0	3	1.57 (.79)	1	3	1.18 (.25)	1	1.5	2.00 (.64)	1	3
Children per class	15.13 (4.52)	6	30	18.29 (1.38)	16	20	14.45 (2.81)	10	19	12.22 (2.82)	9	19
Children w/ IEP	1.58 (.86)	1	4	5.14 (2.27)	2	8	5.27 (2.41)	2	9	4.72 (3.18)	1	13
Teacher Experience	13.83 (6.58)	4	20	14.43 (6.16)	4	20	9.45 (4.95)	7	24	4.77 (3.63)	0	13
Child-Adult Ratio	6.96 (2.18)	4	13	7.38 (2.28)	5	10	6.64 (1.13)	5	8	4.39 (1.90)	2	10
Ratio: IEP: Total	11.61 (5.24)	3	19	4.32 (2.11)	2.38	8	3.50 (2.09)	1.25	8	4.16 (3.62)	1.44	14
ECERS total score	4.79 (.84)	2.80	6.45	4.70 (.62)	3.71	5.57	4.77 (.48)	3.95	5.67	5.35 (.62)	4.3	6.3
Age (in months)	54.65 (8.31)	36	69	48.33 (8.69)	38	63	48.84 (7.74)	36	63	51.17 (5.64)	37	62
BDI Raw Score (Fall)	412.77 (77.37)	255	555	392 (78.78)	237	503	353.84 (99.69)	117	493	363.46 (66.37)	209	507

The number of participating children with disabilities within classes was examined to determine the appropriate analytical approach. Over half of the classes contained only one focal child, and 78% of the classes contained only one or two focal children (see Table 2.5). Thus, within-class effects should not be a factor in the analysis and multivariate regression was used for the relational questions. If results of the analysis suggested the use of additional analyses (e.g., path analysis or a structural equation model of analysis), these were conducted as necessary.

Table 2.5: Number of Participating Children with Disabilities per Class

Number of Participating Children with Disabilities Per Class	Number (%) of Classes
1	38 (51%)
2	20 (27%)
3	8 (11%)
4	4 (5%)
5	2 (3%)
6	1 (1%)
7	---
8	---
9	1 (1%)
Total classes	74

Note: Children n=143

Descriptive Questions

First, distribution of special friends was examined by disability category, severity of disability, and program type. Descriptive statistics were also used to describe the special friends of the children with disabilities.

1. How many special friends do children with disabilities have in the fall and spring across disability category?
2. How many special friends do children with disabilities have in the fall and spring across severity of disability?
3. How many special friends do children with disabilities have in the fall and spring across program types?
4. What are the characteristics (age, sex, disability status) of the special friends of the children with disabilities?

Descriptive statistics were used to describe the number of children maintaining a stable number of friends across variables. Frequencies and percents were calculated for each variable and emerging patterns were examined to aid in developing the correlational analyses.

5. Do children with disabilities having different types of disability maintain a stable *number* of friends?
6. Do children with disabilities having different levels of severity maintain a stable *number* of friends?
7. Do children with disabilities in different program types maintain a stable *number* of friends?

Relational Questions

Next, a series of ordinal linear regressions was conducted to examine the relationship between predictor variables (e.g., program quality, class ratio) and the dependent variable (number of friends) for questions 8-10.

8. What is the relationship between general early childhood program quality and number of friends of children with disabilities?
9. What is the relationship between the quality of inclusion and number of friends of children with disabilities?
10. What is the relationship between the class ratio of children with and without disabilities and the number of friends of children with disabilities?

Ordinal linear regressions were conducted to examine the relationship between sets of independent variables and the number of friends. The analyses assessed whether the number of friends varied as a function of time (fall and spring), program characteristics, adult characteristics, or child characteristics. First, each set or group of variables was entered individually, and then each set was entered simultaneously to determine the relative importance of each variable in predicting the criterion variable (number of friends).

11. What is the relationship between program/classroom characteristics (program type, length of program day, teacher-child ratio, and ratio of children with and without disabilities) and the number of friends of children with disabilities?
12. What is the relationship between child characteristics (i.e., type and category of disability, sex, age, communication and motor skills) and number of friends of children with disabilities?

13. What is the relationship between a) engagement in activities, b) peer social engagement, and c) adult social engagement and number of friends of children with disabilities?
14. What is the relationship between adult characteristics and number of friends of children with disabilities?

CHAPTER 3: RESULTS

Descriptive Analysis

Data analysis was conducted using SPSS 15.00 for Windows. Descriptive statistics were calculated to examine the mean number of friends of children with disabilities for the total sample and across variables: disability category, severity of disability, and program type. Frequency counts were obtained to examine the distribution of friends of children with disabilities. Results of the analyses are discussed most frequently in terms of percentages as the sample sizes differ across categories within each variable.

Follow up tests, Paired-Sample t Tests and One-Way Analyses of Variances (ANOVA), were conducted when appropriate. A Bonferroni-corrected alpha was calculated and used for comparison with p values when necessary to decrease the possibility of Type 1 errors. The results are organized and presented around the research questions. Number of friends, the dependent variable, was determined by teacher report in the fall and spring.

Number and Distribution of Friends

The mean number of special friends was calculated for the total sample of children with disabilities. Results demonstrated that, overall, children with disabilities had friends and increased their number of friends from fall to spring. The mean number of friends of children with disabilities increased from (.93) to (1.25).

A Paired-Samples *t* Test was conducted to determine whether the increase in number of friends from fall to spring was significant. It was found that the number of friends in spring was significantly greater than the number in the fall $t(142) = 3.315$, $p = .001$.

Frequency counts were conducted to examine the distribution of friends. The number of friends ranged from 0 to 5. The number of children with disabilities with *no* friends *decreased* from fall (64) to spring (40). In spring, the majority (72%) of the children with disabilities had at least one friend. The mean number of friends and the number and percentage of children with 1 through 5 friends is presented in Table 3.1.

Table 3.1: Total Sample: Number (Percent) of Friends

		Number of Children with Disabilities with Number of Friends					
	Mean (SD)	0	1	2	3	4	5
Fall	.93 (1.124)	64 (45%)	49 (34%)	12 (8%)	13 (9%)	4 (3%)	1 (.7%)
Spring	1.25 (1.141)	40 (28%)	55 (39%)	30 (21%)	9 (6%)	8 (6%)	1 (.7%)

Note: Percentages may not equal 100% due to rounding.

Disability Category

1. How many special friends do children with disabilities have in the fall and spring across disability category?

Number of special friends was calculated across disability categories to provide a comparison of the number of friends of children with different types of disabilities. It was found that children in each of the four disability categories increased in mean number of friends from fall to spring. Children with Developmental Delays were found to have the highest average number of friends in both fall (1.23) and spring (1.48), and children with Autism/PDD were found to have the lowest average number of friends in fall (.57) and spring (.90). The mean for children with Speech and Language Disorders and children in the Other category were similar in fall and spring. Results are presented in Table 3.2.

Table 3.2: Category of Disability: Mean Number of Special Friends

	Fall Mean (SD)	Spring Mean (SD)
Developmental Delay	1.23 (1.19)	1.48 (1.21)
Speech/Lang. Disorders	.68 (1.12)	1.12 (1.25)
Autism/PDD	.57 (.93)	.90 (.89)
Other	.68 (.82)	1.05 (.78)

Individual Paired-Samples *t* Tests were conducted for each category of disability to determine whether the mean increase in number of special friends from fall to spring was significant. The results indicated the increase in friends from fall to spring was not significant for any single disability category (see Table 3.3).When conducting multiple tests using the same data, a Bonferroni Correction is recommended to safeguard against the possibility of Type 1 errors, potentially causing the results of the analysis to falsely appear to be statistically significant. A Bonferroni Correction was calculated (.05/4) with the resulting alpha level of .0125. Comparison of the p values to the stricter alpha level confirmed the results of the *t* tests; the increase in number of friends from fall to spring was not significant.

An ANOVA was then conducted (with the dependent variable consisting of spring friends - fall friends) to determine whether the increase in number of friends differed significantly *between* the disability categories. It was found that the mean increase in friends did not vary significantly between categories $F(1,139) = .224$, $p = .879$.

Table 3.3: Paired-Samples t Test Calculating Significance of Increase in Number of Special Friends across Category of Disability

	Mean (SD)	Std Error Mean	t	df	Sig. (2-tailed
Developmental Delay	.246 (1.18)	.142	1.733	68	.088
Speech/Language Delay	.441 (1.35)	.232	1.902	33	.066
Autism/PDD	.333 (.86)	.187	1.784	20	.090
Other	.368 (1.07)	.244	1.508	18	.149

** Correlation is significant at the .05 level

The percentage of children with 0-5 special friends was calculated to provide information about the distribution of friends or how *many* children within each disability category had friends. In the fall, the majority of children across disability category had either 0 or 1 friend; over half of the children with Speech and Language Delays and Autism/PDD had no special friends. In spring, the percentage of children with friends increased across all disability categories. The majority of children in all categories had at least one friend, with percentages of children with one or more friends ranging from a high of 79% for children with Developmental Delays to a low of 60% for children with Speech and Language Disorders (Table 3.4). Percentages of children with *more* than one friend ranged from a high of 40%

for children in the Developmental Delay category to a low of 15% for children in the Autism/PDD category in the spring.

Table 3.4: Disability Category: Distribution of Special Friends

	Percentage of Children with 0 - 5 Special Friends					
Disability Category	0	1	2	3	4	5
Developmental Delay (n=69)						
Fall	33%	33%	15%	15%	4%	---
Spring	20%	39%	23%	9%	7%	1%
Speech & Language (n=34)						
Fall	59%	29%	3%	6%	---	3%
Spring	41%	27%	21%	3%	9%	---
Autism/PDD (n=21)						
Fall	57%	38%	---	---	5%	---
Spring	33%	52%	5%	10%	---	---
Other (n=19)						
Fall	47%	42%	5%	5%	---	---
Spring	26%	42%	32%	---	---	---

Note: Percentages may not equal 100% due to rounding.

Severity Level

2. How many special friends do children with disabilities have in the fall and spring across severity of disability?

The number of special friends of children with disabilities was calculated across severity of disability to allow for a comparison of number of special friends by the severity of a child's disability. Children with mild, moderate, and severe disabilities all increased in mean number of friends from fall to spring (Table 3.5).

Children with mild disabilities had a slightly higher average number of friends fall (.97) and spring (1.27) than children with moderate or severe disabilities. Children with severe disabilities had the lowest average number of friends both fall (.85) and spring (1.21).

Table 3.5: Severity of Disability: Mean Number of Special Friends

Severity of Disability	Fall Mean (SD)	Spring Mean (SD)
Mild n=70	.97 (1.20)	1.27 (1.18)
Moderate n=39	.92 (1.16)	1.26 (1.04)
Severe n=34	.85 (.93)	1.21 (1.20)

Paired-Samples *t* Tests were conducted individually for each level of severity of disability to calculate whether the increase in number of friends from fall to spring was significant. The increase in number of friends was significant for children with Moderate disabilities, but was not significant for children with Mild or Severe disabilities (see Table 3.6). A Bonferroni Correction was calculated (.05/3) providing an adjusted alpha level of .0167. Comparison of the p values to the adjusted alpha level confirmed the significance of the increase in number of friends for children with moderate disabilities.

An ANOVA was used to examine differences *between* the three levels of severity. It was found that the mean increase from fall to spring did not vary significantly *between* levels of severity of disability, $F(2,140) = .026$, $p = .974$.

Table 3.6: Paired-Samples t Test Calculating Significance of Change in Number of Special Friends across Severity of Disability

	Mean (SD)	Std Error Mean	t	df	Sig. (2-tailed)
Mild	.300 (1.28)	.153	1.964	69	.054
Moderate	.333 (.74)	.118	2.823	38	.008**
Severe	.353 (1.32)	.227	1.555	33	.129

** Correlation is significant at the .05 level

A frequency count was used to obtain information about the distribution of number of special friends by disability level (Table 3.7). In the spring, the majority of children across severity levels had at least one friend: 71% of children with a mild disability, 77% of children with moderate disability, and 68% of children with a severe disability had one or more friends. Children with moderate disabilities had the greatest increase in the number of children with a friend, increasing from 52% in fall to 77% in spring.

Table 3.7: Disability Level: Distribution of Special Friends

	Percentage of Children with 0 - 5 Special Friends					
Level of Disability	0	1	2	3	4	5
Mild n=70						
Fall	44%	34%	9%	7%	4%	1%
Spring	29%	37%	21%	4%	9%	---
Moderate n=39						
Fall	49%	28%	8%	13%	3%	---
Spring	23%	46%	15%	13%	3%	---

Severe n=34						
Fall	41%	41%	9%	9%	---	---
Spring	32%	32%	27%	3%	3%	3%

Note: Percentages may not equal 100% due to rounding.

Program Model

3. How many special friends do children with disabilities have in the fall and spring across program types?

The mean number of special friends was calculated across programs to allow for comparison across models (Table 3.8). Children with disabilities in all four program models increased in average number of friends from fall to spring. Children with disabilities in Blended programs had the highest average number of friends both fall (1.23) and spring (1.63). Children in Head Start programs had the lowest average both fall (.33) and spring (.78).

Table 3.8: Program Model: Mean Number of Special Friends

	Fall Mean (SD)	Spring Mean (SD)
Community-Based n=48	.92 (1.05)	1.19 (.98)
Head Start n=18	.33 (.77)	.78 (88)
Public School n=25	.76 (1.13)	.92 (1.08)
Blended n=52	1.23 (1.22)	1.63 (1.22)

To determine whether the increase in number of friends from fall to spring was significant, Paired-Sample *t* Tests were conducted for each program model. It was found that the increase in the mean number of friends was significant for the

Blended program. Results indicated the increase in mean number was not significant for other program models. However, when a Bonferroni-correction was calculated (.05/4) and the p values were compared to the resulting alpha level of .0125, the increase in number of friends for children in the Blended program was not found to be significant; the increase in number of friends was not significant across program type.

An ANOVA was conducted to determine whether the increase in number of friends differed significantly between types of programs. The rate of increase between program types was not found to be significant *F*(3,139) = .467, *p* = .795.

Table 3.9: Paired-Sample t Tests: Significance of Increase in Number of Special Friends across Program Model

	Mean (SD)	Std Error Mean	t	df	Sig. (2-tailed
Community-Based	.27 (1.16)	.168	1.615	47	.113
Head Start	.44 (.98)	.232	1.917	17	.072
Public School	.16 (1.25)	.250	.641	24	.527
Blended	.40 (1.19)	.165	2.442	51	.018**

** Correlation is significant at the .05 level

A frequency count was conducted to determine how *many* children with disabilities within each program were reported to have special friends. In the fall, over half of the children with disabilities in the Community-based (56%) and Blended (69%) programs had at least one friend. Percentages were lower for Public School (48%) and Head Start (23%). By spring, the majority of children with disabilities across all four programs had at least one friend. In Blended programs, 84% had at least one friend, while 75% in Community-Based Programs, 60% in Public School programs and 50% in Head Start programs had at least one special friend in the spring. While Head Start programs had the smallest percentage of children having at least one friend, the *rate* of growth in number of children having friends was highest in this program going from 22% in the fall to 50% in the spring.

Table 3.10: Program Type: Distribution of Special Friends

Model of Program	Percentage of Children with 0 - 5 Special Friends					
	0	1	2	3	4	5
Community-based (n=48)						
Fall	44%	33%	13%	8%	2%	---
Spring	25%	42%	27%	2%	4%	---
Head Start (n=18)						
Fall	78%	17%	---	6%	---	---
Spring	50%	22%	28%	---	---	---
Public School (n=25)						
Fall	52%	32%	12%	---	---	4%
Spring	40%	44%	4%	8%	4%	---
Blended (n=52)						
Fall	31%	42%	6%	15%	6%	---
Spring	17%	39%	21%	12%	10%	2%

Note: Percentages may not equal 100% due to rounding.

Summary. Overall, children with disabilities were reported by their teachers to have friends: the number of friends varied by disability category, program type and, to a lesser extent, severity level. Severity level showed the least variability; the mean number of friends and the percentage of children with at least one special friend were similar across all levels of severity.

Greater variability was found across disability category; children with developmental delays had the highest average number of friends of the four disability categories and the highest percentage of children with at least one friend. Children with autism/PDD had the lowest average number of friends while children with speech and language delays had the lowest percentage of children who had at least one friend.

The mean number of special friends and the percentages of children with at least one special friend varied considerably across program type. Children with disabilities in Blended programs had more than twice the average number of friends as children in Head Start programs and were more likely to have at least one friend. Overall, children in Blended programs had the highest average number of friends and the highest percentage of children with at least one friend. Children in the Head Start programs had the lowest average number of friends and had the lowest percentage of children with at least one friend, but had the highest rate of growth in friends from fall to spring.

Characteristics of Special Friends

4. What are the characteristics (age, sex, disability status) of the friends of the children with disabilities?

Information about characteristics of the special friends of the children with disabilities was compiled through the use of two-way contingency table analyses. Descriptions of the friends were provided by teacher report in fall and spring.

Contingency tables were calculated separately across variables (i.e., age, sex, and disability status) for friends 1-5 (five was the maximum number of friends reported for any child) and the results were compiled to produce the overall numbers and percentages. The age, sex, and disability status of the friends were calculated separately for fall and spring to allow for examination of changes across the academic year.

Age. The age of the special friends was examined in relation to the age of the focal child. Teachers provided the age of friends most commonly in terms of 4 years old or 3 and a half years old. Accordingly, the age of the children with disabilities was sorted into six-month categories to allow for a more closely matched comparison. Children with disabilities from 36-41 months were coded as 3 years old, children 42-47 months were coded as 3.5, 48-53 months as 4 years, 54-59 months as 4.5, 60-65 months as 5 years, 66-72 months as 5.5, and 73-74 months as 6 years. The age of the focal children ranged from 3 – 5.5 years old in the fall and from 3.5 - 6 years old in the spring. The age of the special friends as reported by teachers ranged from 2.5 - 8 years old in the fall and from 2 - 7 years old in the spring.

Table 3.11 provides the comparison of age of the friends to the age of the children with disabilities. The majority of the children with disabilities had friends within 6 months of their age both fall (93, 77%) and spring (117, 72%). In the fall, the highest number of friends were 4 years old (60, 50%) and in the spring the highest number of friends were 5.0 years old (86, 55%). In the table below, for ease of comparison, the cells where the age of the focal child and friend match are highlighted (e.g., when the focal child is 3 and the friend is 3 years old).

Table 3.11: Age of Special Friends in Relation to Age of Focal Children

Age of focal child	Fall: Number of Special Friends from 2 - 8 Years Old									
	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	8.0	Total
3.0	---	---	1	---	1	---	---	---	---	---	2
3.5	---	---	15	---	8	3	---	---	---	---	26
4.0	---	---	2	1	20	---	4	---	1	1	29
4.5	---	1	6	---	28	1	7	---	---	1	44
5.0	---	---	1	---	2	2	4	1	2	---	12
5.5	---	---	---	---	1	1	5	---	---	---	7
Total		1	25	1	60	8	20	1	3	2	121

Age of focal child	Spring: Number of Special Friends from 2 - 7 Years Old										
	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	7.0	Total
3.0	---	---	---	---	---	---	---	---	---	---	---
3.5	---	---	4	---	2	---	5	---	---	---	11
4.0	1	---	3	1	16	---	5	---	1	---	27
4.5	---	---	3	---	16	---	17	---	---	---	36
5.0	---	---	1	---	5	---	42	---	2	1	51
5.5	---	---	1	---	4	---	12	1	4	---	22
6.0			---	---	1	---	5	---	2	---	8
Total	1	---	12	1	44	---	86	1	9	1	155

Sex. The majority of the special friends of the children with disabilities were of the same sex as the focal children both fall and spring. In the fall, 70% of the friends of the girls were girls and 74% of the friends of the boys were boys. In the spring, 75% of the friends of the girls were girls and 78% of the friends of the boys were boys. Summarized results of the two-way contingency table analysis are presented in Table 3.12.

Table 3.12: Summary: Sex of Special Friends Compared to Sex of Focal Children

	Fall: Sex of Special Friend		Spring: Sex of Special Friend	
Sex of Focal Child	Male # (%)	Female # (%)	Male # (%)	Female # (%)
Female (n=50)	15 (30%)	35 (70%)	17 (25%)	52 (75%)
Male (n=93)	60 (74%)	21 (26%)	87 (78%)	24 (22%)

Note: Percentages may not equal 100% due to rounding.

Disability Status. The disability status of the special friends of the focal children was examined in relation to both the category and severity of disability of the focal children. A two-way contingency table analysis was conducted to determine whether children with a particular type or level of disability had a greater or lesser tendency to have friends with or without a disability.

Severity of Disability. Results of the contingency table analysis have been summarized and are presented in Table 3:13. The majority of the special friends across all levels of severity of disability were found to be typically developing. However, the numbers and percentages shifted slightly across the school year. From fall to spring, the percentage of friends with disabilities *increased* slightly across disability category; the increase was 9% for children with a mild disability, 1% for children with a moderate disability and 23% in the friends of children with severe disabilities. Children with severe disabilities had the greatest increase in number of friends with disabilities.

A follow up analysis was conducted to determine whether the increase in the number of special friends with disabilities was significant. A chi-square was calculated through use of a two-way contingency table analysis to determine whether the increase in percentage of friends with disabilities from fall to spring was significant across severity of disability. The percentage of children with friends in fall and spring was used as the basis of this analysis to obtain the relative change as the total number of friends differed in fall and spring. The increase in number of friends with disabilities was found to be significant: Pearson χ^2 (23 N = 191) = 7.063, p=.029.

Table 3.13: Disability Status of Special Friends across Severity of Disability of Focal Child

	Fall Disability Status of Friends			Spring Disability Status of Friends		
Focal Child Level of Disability	Has a disability	No disability	Don't know	Has a disability	No disability	Don't know
Mild	16 (27%)	38 (64%)	5	28 (36%)	46 (59%)	4
Moderate	14 (40%)	21 (60%)	---	19 (41%)	26 (57%)	1
Severe	3 (12%)	22 (85%)	1	13 (35%)	23 (62%)	1

Note: Percentages may not equal 100% due to rounding

Disability Category. A two-way contingency table analysis was conducted to examine the disability status of the special friends of children with disabilities across type of disability. A summary of the results of the analysis is presented in Table 3.14. In the fall, the majority of friends across the four disability categories were found to be typically-developing. Similar to the results examining the disability status of friends across severity of disability, the numbers and percent of friends with disabilities shifted from fall to spring. In the spring, the number of friends with disabilities remained low overall; however, the percentage of friends with disabilities increased for children with Developmental Delay by 13% and for children with Speech and Language Disorders by 11%. For the children with Autism/PDD, the opposite trend was found: the percentage of friends with a disability *decreased* from fall to spring by 11%. Percentages of friends with disabilities for children in the Other category remained stable (25% in fall and spring). Children with Speech and Language disorders had the lowest percentage of typically developing friends in both fall (59%) and spring (41%). A two-way contingency table analysis was conducted based on the percentage of friends with a disability in fall and spring to investigate the significance of the increase in friends with a disability. The increase in number of friends with disabilities across disability category of the focal child was not found to be significant (p=.148).

Table 3.14: Disability Status of Special Friends across Category of Disability of Focal Child

Disability Status of Special Friends	Had a Disability	No Disability	Don't Know	Total # of Friends
Focal Child Disability Category				
Fall				
Developmental Delay	24%	72%	4	75
Speech & Language	36%	59%	1	22
Autism/PDD	40%	60%	1	10

Other	25%	75%	0	12
Spring				
Developmental Delay	37%	62%	1	94
Speech & Language	47%	41%	4	34
Autism/PDD	29%	65%	1	17
Other	25%	75%	0	16

Note: Percentages may not equal 100% due to rounding.

Summary: Description of Special Friends. In summary, the special friends of the children with disabilities had similar ages and were of the same sex. The majority of the friends were typically developing, with children with severe disabilities and children with speech and language disorders having the highest percentage of friends with a disability. The number of friends with a disability increased slightly from fall to spring.

Stability of Number of Special Friends

Stability of number of friends was calculated to determine how many children maintained a stable number of friends from fall to spring. The number of children who increased or decreased their numbers of friends and the number of children who did not have friends fall through spring was also calculated to provide additional information about friendship patterns across the year. Through use of two-way contingency table analyses, stability of number of friends was calculated separately across three variables: disability category, severity of disability, and program type. If a child maintained the same *number* of friends from fall to spring, regardless of whether it was the *same* friend, this was considered a stable number of friends.

Children with *no* friends in both fall and spring were *not* considered to have a stable number of friends. A Pearson chi-square was calculated to determine whether a significant relationship existed between the numbers of friends in the fall and the number of friends in the spring for the total sample of children with disabilities.

Total Sample. It was found that the majority of children (63%) either maintained a stable number of friends or increased their number of friends from fall to spring. The number of children with disabilities who maintained a stable number of friends (37) comprised 26% of the sample (highlighted portion of Table 3.15). The number of children who *increased* their number of friends was 53 (37%) (section of the table above the highlighted cells). The number of children without a friend decreased by 23% from fall to spring. A very small number of children (8) who had a friend(s) in the fall had no teacher-reported special friend(s) in the spring. A significant relationship was found between number of friends in the fall and number of friends in the spring: Pearson χ^2 (25, N = 143) = 76.69, p=.00.

Table 3.15: Stability of Number of Special Friends for Total Sample

		Spring: Number of Focal Children with Number of Friends						Total
		0	1	2	3	4	5	
	0	32	23	5	2	1	1	64
Fall: Number of Focal Children with Number of Friends	1	7	26	13	1	2	---	49
	2	---	2	7	1	2	---	12
	3	1	2	5	3	2	---	13
	4	---	1	---	2	1	---	4

5	---	1	---	---	---	---	1
Total	40	55	30	9	8	1	143

Across Disability Category

5. Do children with disabilities having different types of disability maintain a stable *number* of friends?

A two-way contingency table analysis was conducted to examine the stability of the number of special friends of children with disabilities across type of disability (Table 3.16). Results of the analysis were then compiled to create a summary table (Table 3:17). It was found that children with Developmental Delay had the highest percentage of children who maintained a stable number of friends from fall to spring (32%). Children with Speech and Language Disorders were the least likely to maintain a stable number of friends (15%) across the academic year. The majority of children across disability category either *maintained* or *increased* their number of friends from fall to spring: Other: 74%, Developmental Delay: 67%, Autism/PDD: 62%, and Speech & Language: 50%.

Children in the Speech and Language category had the highest percentage of children with no friends from fall to spring (38%), twice as high as the percentage of children in the Developmental Delay or Other category. When examining percentages of children with a decrease in number of friends across the academic year, percentages were low across category of disability.

Table 3.16: Contingency Table: Stability of Number of Special Friends across Disability Category

Developmental Delay		Spring: Number of Children with Number of Friends						Total
		0	1	2	3	4	5	
Fall: Number of Focal Children with Number of Friends	0	10	11	---	---	1	1	23
	1	4	12	6	1	---	---	23
	2	---	1	6	1	2	---	10
	3	---	2	4	3	1	---	10
	4	---	1	---	1	1	---	3
	5	---	---	---	---	---	---	---
Total		14	27	16	6	5	1	69
Speech & Language Dis.		Spring: # of Focal Children with # of Friends						Total
		0	1	2	3	4	5	
Fall: Number of Focal Children with Number of Friends	0	13	2	4	1	---	---	20
	1	1	5	2	---	2	---	10
	2	---	1	0	---	---	---	1
	3	---	---	1	---	1	---	2
	4	---	---	---	---	---	---	---
	5	---	1	---	---	---	---	1
Total		14	9	7	1	3	0	34
		Spring: Number of Children with Number of Friends						Total
Autism/PDD		0	1	2	3	4	5	
Fall: Number of Focal Children with Number of Friends	0	6	5	---	1	---	---	12
	1	1	6	1	---	---	---	8
	2	---	---	---	---	---	---	---
	3	---	---	---	---	---	---	---
	4	---	---	---	1	---	---	1
	5	---	---	---	---	---	---	---
Total		7	11	1	2			21
		Spring: Number of Children with Number of Friends						Total
Other		0	1	2	3	4	5	
Fall: Number of Focal Children with Number of Friends	0	3	5	1	---	---	---	9
	1	1	3	4	---	---	---	8
	2	---	---	1	---	---	---	1
	3	1	---	---	---	---	---	1
	4	---	---	---	---	---	---	---
	5	---	---	---	---	---	---	---
Total		5	8	6	---	---	---	19

Highlighted cells indicate stable numbers of friends

Table 3.17: Summary Table: Stability of Number of Special Friends across Disability Category from Fall to Spring

Disability Category	Stable Number of Friends	Increase in Number of Friends	Decrease in Number of Friends	No Friends from Fall to Spring
Developmental Delay n=69	32%	35%	19%	14%
Speech & Language n=34	15%	35%	12%	38%
Autism/PDD n=21	29%	33%	10%	29%
Other n=19	21%	53%	11%	16%

Note: Percentages may not equal 100% due to rounding.

Across Severity of Disability

6. Do children with disabilities having different levels of severity maintain a stable *number* of friends?

The number of children maintaining a stable number of special friends across severity level of disability was examined through use of a Two-Way Contingency Table analysis, presented in Table 3:18. Results were compiled to create a summary table (Table 3.19). The percentage of children with stable numbers of friends varied across severity level of disability: 26% of children with mild disabilities, 33% of children with moderate disabilities, and 18% of children with severe disabilities had a stable number of friends. However, when the percentage of children who either maintained or *increased* their number of friends was calculated, less variability was found; children with moderate disabilities had the highest percentage of children who either maintained or increased their number of friends (69%), followed by children with mild disabilities (62%), and then by children with severe disabilities (59%). A small percentage of children across severity level of disability were found to have fewer friends in spring than in the fall (mild: 16%, moderate: 8%, severe: 18%). The percentage of children with no friends from fall to spring was similar across severity level.

Table 3.18: Contingency Table: Stability of Number of Special Friends across Severity of Disability

		Spring: Number of Focal Children with Number of Friends						Total
Mild		**0**	**1**	**2**	**3**	**4**	**5**	
Focal Children: Number of Friends in Fall	**0**	16	9	4	1	1	---	31
	1	4	12	6	---	2	---	24
	2	---	1	4	---	1	---	6
	3	---	2	1	1	1	---	5
	4	---	1	---	1	1	---	3
	5	---	1	---	---	---	---	1
Total		20	26	15	3	6	---	70
		Spring: Number of Focal Children with Number of Friends						Total
Moderate		**0**	**1**	**2**	**3**	**4**	**5**	
Focal Children: Number of Friends in Fall	**0**	9	9	---	1	---	---	19
	1	---	9	2	---	---	---	11
	2	---	---	2	1	---	---	3
	3	---	---	2	2	1	---	5
	4	---	---	---	1	---	---	1
	5	---	---	---	---	---	---	---
Total		9	18	6	5	1	---	39
		Spring: Number of Focal Children with Number of Friends						Total
Severe		**0**	**1**	**2**	**3**	**4**	**5**	
Focal Children: Number of Friends in Fall	**0**	7	5	1	---	---	1	14
	1	3	5	5	1	---	---	14
	2	---	1	1	---	1	---	3
	3	1	---	2	---	---	---	3
	4	----	---	---	---	---	---	---
	5	---	---	---	---	---	---	---
Total		11	11	9	1	1	1	34

Highlighted cells indicate stable numbers of friends

Table 3.19:
Stability of Number of Special Friends across Severity Level from Fall to Spring

Severity of Disability	Stable Number of Friends	Increase in Number of Friends	Decrease in Number of Friends	No Friends in Fall and Spring
Mild (n=70)	26%	36%	16%	23%
Moderate (n=39)	33%	36%	8%	23%
Severe (n=34)	18%	41%	18%	21%

Note: Percentages may not equal 100% due to rounding.

Across Model of Program

7. Do children with disabilities in different program types maintain a stable *number* of friends?

A two-way contingency table analysis was conducted to examine the stability of numbers of special friends across program types (Table 3.20). Results of the analysis were then combined and a summary of the results is presented in Table 3.21. Three of the four program types: Community-Based, Public School, and Blended, looked very similar when comparing stability of number of friends. Head Start was found to have a different profile, with lower percentages of children who maintained or increased their number of friends. The combined number of children with disabilities who maintained or increased in number of friends demonstrated a promising trend. In Community-based (69%), Public School (56%), and Blended (67%) programs, the majority of children with disabilities either maintained a stable number of friends or increased their number of friends across the school year. In Head Start programs the percentage was lower: only 44% of children with disabilities either maintained or increased their number of friends. Percentages of children who decreased in number of friends was relatively low across program types (Head Start – 6%, Community-based – 13%, Public School – 16%, and Blended – 19%). A much higher percentage of children with disabilities in Head Start programs had no teacher-reported special friends in both fall and spring (50%) than children in the other programs.

Table 3:20: Contingency Table: Stability of Number of Friends across Programs

Community-based		Spring: Number of Focal Children with Number of Friends						Total
		0	**1**	**2**	**3**	**4**	**5**	
Focal Children: Number of Friends in Fall	**0**	9	9	2	---	1	---	21
	1	2	9	5	---	---	---	16
	2	---	---	5	---	1	---	6
	3	1	1	1	1	---	---	4
	4	---	1	---	---	---	---	1
	5	---	---	---	---	---	---	---
Total		12	20	13	1	2	---	48
Head Start		Spring: Number of Focal Children with Number of Friends						Total
		0	**1**	**2**	**3**	**4**	**5**	
Focal Children: Number of Friends in Fall	**0**	9	2	3	---	---	---	14
	1	---	1	2	---	---	---	3
	2	---	---	---	---	---	---	---
	3	---	1	---	---	---	---	1
	4	---	---	---	---	---	---	---
	5	---	---	---	---	---	---	---
Total		9	4	5	---	---	---	18
Public School		Spring: Number of Focal Children with Number of Friends						Total
		0	**1**	**2**	**3**	**4**	**5**	
Focal Children: Number of Friends in Fall	**0**	7	5	---	1	---	---	13
	1	3	5	---	---	---	---	8
	2	---	---	1	1	1	---	3
	3	---	---	---	---	---	---	---
	4	---	---	---	---	---	---	---
	5	---	1	---	---	---	---	1
Total		10	11	1	2	1	---	25
Blended		Spring: Number of Focal Children with Number of Friends						Total
		0	**1**	**2**	**3**	**4**	**5**	
Focal	**0**	7	7	---	1	---	1	16

Children: Number of Friends in Fall	**1**	2	11	6	1	2	---	22
	2	---	2	1	---	---	---	3
	3	---	---	4	2	2	---	8
	4	---	---	---	2	1	---	3
	5	---	---	---	---	---	---	---
Total		9	20	11	6	5	1	52

Highlighted cells indicate stable numbers of friends

Table 3.21: Summary: Stability of Number of Special Friends across Program Types from Fall to Spring

Program Type	Stable Number of Friends	Increase in Number of Friends	Decrease in Number of Friends	No Friends in Fall and Spring
Community-based	15 (31%)	18 (38%)	6 (13%)	9 (19%)
Head Start	1 (6%)	7 (39%)	1 (6%)	9 (50%)
Public School	6 (24%)	8 (32%)	4 (16%)	7 (28%)
Blended	15 (29%)	20 (38%)	10 (19%)	7 (13%)

Note: Percentages may not equal 100% due to rounding.

To summarize, stability of number of friends varied across disability category and program type with less variation found across severity of disability. The majority of children with disabilities across disability category and severity level either maintained a stable number of friends or increased in number of friends from fall to spring. Of the four disability categories, children with Speech and Language disorders were most likely to have no friend from fall to spring (38%); percentages of children with no friends fall through spring were comparable across level of disability. Percentages of children who maintained or increased their number of friends were more variable across program type, ranging from a high of 69% in Community-based programs to a low of 45% in Head Start programs. The percentage of children with no friends from fall through spring varied across program type, from a low of 13% in Blended programs to a high of 50% in Head Start programs.

Summary of Descriptive Statistics

Overall, children were found to have more friends in spring than in the fall, and the number of children without friends decreased across the year. Children, across disability category and severity of disability, tended to have friends of the same age and the same sex. When the disability status of the friends was examined, a slight trend was noted. While the majority of the friends were typically developing in both spring and fall, a slightly higher percentage of the friends in spring were found to have disabilities.

In the analyses of number of friends, variability in number and stability of friends was found for children across disability category and program type. The severity level of children's disability was found to have little impact on the number or stability of friends. When examining number and stability of number across disability category, it was found in the spring, percentages of children with at least one friend were similar for children in the four disability categories: percentages of children with more than one friend ranged from a high of 40% for children in the Developmental Delay category to a low of 15% for children in the Autism/PDD category. Children in the Speech and Language category were found to have the highest percentage of children with no friends from fall through spring.

When examining number and stability of friends across program type, children in the Blended programs and the Community-based programs tended to have the highest number of friends and to be most likely to maintain or increase their number of friends. Overall, children with disabilities in Head Start were found to have the lowest numbers of friends and to be less likely to maintain or increase their number of friends than children in Community-based, Public School, or Blended programs.

Relational Analysis

An ordinal regression was chosen to examine the relationship between the dependent variable, number of friends in the spring, and the independent variables. The independent variables include:

- Global quality of the classes as measured by the ECERS-R
- Quality of inclusion as measured by the QIEM
- Class ratio of children with disabilities to children without disabilities
- Child characteristics (i.e. age, sex, disability category, and severity of disability)
- Child engagement as measured by subscales of the CASPER
- Adult characteristics as measured by the Language and Reasoning subscale of the ECERS-R, the Individualization and Adult-Child Contacts and Relationship subscales of the QIEM and the Adult behavior subscale of the CASPER.

An ordinal regression is considered the regression model of choice when the outcome variable (number of friends for the present study) is categorical and ordered (Norusis, 2006). Logistic regressions provide more flexibility than other models of regression; the independent variables do not have to be “normally distributed, linearly related, or of equal variance within each group” (Tabachnick &

Fidell, 2001, p. 517). Criteria necessary for conducting an ordinal logistic regression include, 1) having little or no missing data and, 2) no extremely small categories within the variables. Two aspects of the analysis that can be potentially problematic when using an ordinal logistic regression are having too few cases relative to the number of the independent variables and sensitivity to multicolinearity.

The present study fits well within the prescribed criteria for the ordinal model of regression. The dependent variable (number of friends) consists of multiple, ranked, categories: 0 for no friends, 1 for 1 friend, and 2+ for 2 or more friends. The numbers within each level of the independent variable are of similar size (no friends=40, 1 friend=55, 2+ friends=48) and no missing values were reported. The sample consists of 143 cases, providing a solid basis for the number of independent variables used. Correlations were conducted for the combined variables to rule out multicolinearity. Correlations for variables included in the combined questions are provided with the research questions.

Wald's chi-square was used to test the significance of individual independent variables and combined variables. Odds ratios provide the increase in odds of an outcome if the predictor goes up by one unit. The odds ratio is also used as a measure of effect size (Garson, 2008). The appropriateness of the model was assessed through the Test of Parallel Lines, and the use of a model chi-square test for goodness-of-fit.

An ordinal logistic regression was conducted individually for each subscale in the combined questions prior to the simultaneous analysis to assure the model of regression was appropriate. The subscales were then entered simultaneously for the combined questions. Results of the regressions for individual subscales and the simultaneous model are provided with each question. The results of the regressions for single variable questions (questions 8, 9, and 10) are displayed in Table 3.22.

Global Program Quality

Research Question 8: What is the relationship between general early childhood program quality and number of friends?

An ordinal logistic regression was conducted to determine the relationship between global program quality and the number of friends in the spring. The total mean score for the ECERS-R was used as the measure of the global quality of the class. The total mean score was obtained by summing all item scores and dividing by the total number of items. Each item was scored on a scale from 1-7 where 1=inadequate, 3=minimal, 5=good, and 7=excellent.

A significant relationship was found between the global quality of the class and number of friends of the children with disabilities ($p = .006$). As the score on the ECERS-R increases by one point, the odds of a child with disabilities having more friends rather than fewer friends increases by 1.836. In other words, as the global quality of the classroom increases by one (on a scale of 1-7), the odds of having more friends rather than fewer friends are essentially doubled.

Quality of the Inclusive Experience

Research Question 9: What is the relationship between the quality of inclusion and number of friends?

A regression was conducted to predict the number of friends of children with disabilities from the quality of the inclusive experience as measured by the QIEM.

The QIEM total score was used as the measure of the quality of inclusion and was obtained through summing the subscale scores.

A significant correlation was found between the quality of inclusion and number of friends of children with disabilities (p = .015). The odds coefficient for the total QIEM score was 1.021. Thus, for each unit of increase on the QIEM, the odds of children with disabilities having more friends rather than less friends increases by 1.02. When interpreting the odds ratio, the scoring system for the measure should be considered. As the average total score on the QIEM was 281 (minimum 232 and maximum 319) with a range of 87 points, an increase could encompass twenty-five or thirty points or more. By multiplying the estimate by the potential increase and then calculating the natural log it is possible to obtain a clearer idea of how a substantial increase on the QIEM could be related to the number of friends. As an example, for a 25 point increase in the total score on the QIEM, the odds ratio would be 1.690 which would mean a child would have about 1.5 times greater odds of having more friends rather than fewer friends. Similarly, if there were a 50 point gain on the QIEM, the odds ratio would be 2.858 which could be interpreted as a child being almost three times as likely to have more rather than fewer friends. As the quality of inclusion increases, the odds of children with disabilities having more rather than fewer friends increase.

Class Ratio of Children with and without Disabilities

Research Question 10: What is the relationship between the class ratio of children with and without disabilities and the number of friends of children with disabilities?

An ordinal logistic regression was conducted to determine the relationship between the ratio of children with and without disabilities to number of friends. The ratio of children with disabilities to children without disabilities was not found to be a significant predictor of number of friends (p = .694). The model was appropriate (X^2=1.208, (1), P>.05) for the question, however, class ratio of children with and without disabilities was not significantly associated with number of friends.

Table 3.22: Results of Ordinal Logistic Regressions for Questions 8 -10

	Independent Variable	Estimate	Odds Coefficient	Wald Statistic	df	P Value
Question 8	ECERS total average score	.608	1.837	7.620	1	.006**
Question 9	QIEM total score	.021	1.021	5.951	1	.015**
Question 10	Class ratio: children with disabilities to children without	.304	1.355	.154	1	.694

** Correlation is significant at the .05 level

Combined Questions

Program Characteristics

Research Question 11: What is the relationship between program/classroom characteristics (program type, length of program day, teacher-child ratio, and ratio of children with and without disabilities) and number of friends of children with disabilities?

An ordinal logistic regression was conducted to examine the relationship between program characteristics and number of friends for children with disabilities. The information for the ratio of children to adults and for the ratio of children with and without disabilities was obtained in the fall of each year. The dependent variable, number of friends, was based on the number of friends a child was reported to have in the spring. First, the variables were examined for multicolinearity; results are presented in Table 3.23. Although the correlation between the Blended program and hours of operation was relatively high, it was within acceptable limits and the analysis proceeded as planned

Table 3.23: Correlations between Program Characteristics

	Blended	Public School	Head Start	Ratio w/w out Dis.	Child - Adult Ratio	Length of Day
Blended	---	-.348**	-.287**	-.432**	-.426**	-.783**
Public School	---	---	-.175*	-.194*	.136	.223**
Head Start	---	---	---	-.164	.044	.155
Ratio w/w out Dis.	--	--	---	---	.390**	.343**
Child - Adult Ratio	---	---	---	---	---	.346**
Length of Day	---	---	---	---	---	---

** Correlation is significant at the 0.01 level (2-tailed).
Note: As Program type is a categorical variable; the four program-types were dummy-coded with the Community-Based program as the reference. Therefore the Community-Based program does not have a value for the correlation.

The regression was first conducted individually for each of the program variables. When entered individually, the length of program day (full-day or half-day) and program type were found to be significantly related to number of friends. The variables were then entered simultaneously to determine whether any of the program characteristics made a significant contribution to number of friends with the other variables held constant. None of the variables were found to make a unique, significant contribution to number of friends when controlling for the effects of the other variables. Results of the individual regressions and the regression for the combined variable are presented in Table 3.24.

Table 3.24: Ordinal Logistic Regression of Having More Friends rather than Fewer Friends on Program Characteristics

	Estimate	Odds Coefficient	Wald Statistic	df	P Value
Program Variables Entered into the Regression *Individually*					
Hours of Operation	-.741	.477	5.554	1	.018**
Child/Adult Ratio	-.021	.979	.079	1	.779
Ratio Child w/w-out disabilities	.002	1.002	.004	1	.947
Community-Based	-.453	.636	1.467	1	.226
Head Start	-1.260	.284	5.889	1	.015**
Public School	-1.209	.298	6.841	1	.009**
Blended	0^a		.	0	.
Program Variables Entered into the Regression *Simultaneously*					
Hours of Operation	-.573	.564	1.226	1	.268
Child/Adult Ratio	.079	1.082	.842	1	.359
Ratio Child w/w-out disabilities	-.015	.985	.107	1	.744
Community-Based	-.022	.978	.001	1	.976
Head Start	-1.023	.360	2.496	1	.114
Public School	-.937	.392	2.283	1	.131
Blended	0^a		.	0	.

** Correlation is significant at the .05 level

Note: When a categorical variable is used in an ordinal logistic regression, one of the categories is considered the constant against which the others are compared; a separate value is not obtained for the constant (in this case, the Blended program).

Child Characteristics

Research Question 12: What is the relationship between child characteristics and number of friends of children with disabilities?

An ordinal logistic regression was conducted to examine the relationship between child characteristics and the number of friends of the children with disabilities. For the age variable, the age of the children with disabilities in the fall was used, the raw score of the Communication subscale of the BDI (the sum of the expressive and receptive language subscales) was used to assess communication skills, and motor skills were assessed through the Motor subscale of the BDI (the sum of the raw scores of the fine and gross motor sections).

First, the variables were examined for multicolinearity; results are presented in Table 3.25. The highest correlation was between the two subscales of the BDI (.684 between the Motor and Communication subscales). Although the correlation was relatively high, it was not high enough to indicate multicolinearity. However, the strong correlation suggested that the characteristics measured by the two subscales were overlapping. A correlation was then calculated examining the relationship between the two subscales and the total raw score of the BDI. Both subscales were highly correlated with the total BDI, so the BDI total raw score was substituted for the two subscales in the analysis.

Table: 3.25:: Correlations among Child Characteristics

Variable	1	2	3	4	5	6	7	8	9	10
1. Sev.	---	-.368**	-.285**	-.029	-.005	-.405**	.024	-.392	.128	.323**
2. Motor	---	---	.684**	-.039	.435**	.849**	.106	.132	-.068	-.250**
3. Com.	---	---	---	.025	.437**	.859**	.019	.032	-.065	.000
4. Sex	---	---	---	---	-.044	-.098	.062	-.004	.056	-.145
5. Age	---	---	---	---	---	.498**	.238**	-.304**	-.050	.082
6. BDI	---	---	---	---	---	---	.068	.107	-.133	-.095
7. DD	---	---	---	---	---	---	---	-.539**	-.401**	-.378**
8. S&L	---	---	---	---	---	---	---	---	-.232**	-.219**
9. A/PD	---	---	---	---	---	---	---	---	---	-.162
10. Oth	---	---	---	---	---	---	---	---	---	---

** Correlation is significant at the 0.01 level (2-tailed).

An ordinal logistic regression was conducted individually for each variable included in the composite analysis. The model was appropriate for all variables except Sex of the focal child. When the five variables were run simultaneously using an ordinal logistic regression, the Test of Parallel Lines (used to determine the appropriateness of the model), was found to be significant, indicating the model of regression was *not* appropriate for analyzing the combined variable.

A binary logistic regression was then considered as a possible model of regression. In a binary regression the outcome variable is dichotomous. The number of friends was recoded to fit the model, where 0 = no friends and 1 = friends. Recoding the variable and using the binary model of logistic regression controlled for the possibility that in relation to some characteristics the 2+ category used in the ordinal model was small, creating difficulties with that model. The binary logistic model of regression was found to be appropriate for the combined variable child characteristics.

The regression was conducted individually for each characteristic and then the variables were entered simultaneously for the combined question. When entered individually, age, sex, and BDI total raw score each had a significant gross effect (Table 3.26). When entered simultaneously, Sex was the only variable to have a unique effect on number of friends when controlling for the other child characteristics (Odds ratio = .360, p = .028). For the variable Sex, female was coded 0 and Male was coded as 1. Accordingly, with an odds ratio of .306, the odds of boys having friends are 30.6 percent those of girls, holding the other variables constant. In other words, the odds of boys having friends is about a third of the odds of girls having friends.

Table 3.26: Binary Logistic Regression of Having Any Friends on Child Characteristics

	B	S.E.	Odds Ratio	Wald Statistic	df	p- value
Regressions: Variables Entered into the Regression *Individually*						
Sex	-1.013	.443	.363	5.224	1	.022**
Severity of Disability	-.056	.228	.946	060	1	.807
Age	.745	.308	2.106	5.856	1	.016**
BDI Total Raw Score	.006	.002	1.006	5.469	1	.019**

Developmental Delay	.339	.601	1.403	.318	1	.573
Speech & Language	-.673	.627	.510	1.153	1	.283
Autism/PDD	-.336	.697	.714	.223	1	.629.
Regressions: Child Characteristics Entered *Simultaneously*						
Sex	-1.021	.465	.306	4.819	1	.028**
Severity	-.037	.320	.964	.013	1	.908
Age	.263	.399	1.300	.432	1	.511
BDI Total Raw Score	.004	.03	1.005	1.823	1	.177
Developmental Delay	.360	.647	1.433	.285	1	.593
Speech & Language	-.707	.803	.493	.776	1	.378
Autism/PDD	-.807	.762	.917	.013	1	.909

** Correlation is significant at the .05 level
Note: Three of the four disability categories are listed. When a categorical variable is used in a binary logistic regression, one of the categories is considered the constant against which the others are compared; a separate value is not obtained for the constant (in this case, the Other category).

Engagement

Research Question 13. What is the relationship between a) engagement in activities, b) peer social engagement, and c) adult social engagement and number of friends?

An ordinal logistic regression was conducted to assess the unique contribution of each of three types of child engagement (engagement in activities, with peers, and engagement with adults) while holding the other types constant. First, the average score from each of the three 30 minute observations was calculated. Then the means of the three observations were averaged to obtain an overall mean for the variable. This score was used for the analysis. Multicolinearity was assessed across engagement subscales. The subscales were not strongly correlated and the analysis proceeded as planned. Correlations are provided in Table 3.27.

Table: 3.27:: Correlations among Subscales of Engagement

Child Engagement Subscales	1	2	3
1. Engagement in Activities	---	.199*	.325**
2. Engagement with Adults		---	.045
3. Engagement with Peers			---

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

The regression was conducted individually for each subscale of engagement and then for the three subscales simultaneously. Results of the analyses are presented in Table 3.28. Two subscales, Engagement with Peers (p = .012) and Engagement with Adults (p = .018), were found to be significantly related to number of friends when the regression was conducted individually for each subscale. Engagement in Activities was not significantly associated to number of friends (p = .805). When the three subscales for Child Engagement were entered simultaneously, both Engagement with Peers (p = .004) and Engagement with Adults (p = .009) were found to make a unique contribution to number of friends when controlling for the effect of the other aspects of engagement (results of the individual and combined regressions are found in Table 3.23). The odds ratios (1.072) were calculated for the purpose of interpretation. It was found that for every unit of increase in the score on engagement with peers, the odds of having more friends rather than fewer friends increased by 1.072. The average score for engagement with peers on the CASPER was 8.1543, so an increase of 1 point would be a reasonable increase. For engagement with adults, the odds of having more friends increased by 1.057 for every unit of increase in the score on the adult engagement measure. The average score for engagement with adults is 11.7418; so again, an increase of 1 or more points is a reasonable increase in score to consider. Thus, as engagement with peers or adults increases, children have greater odds of having more friends.

The odds ratio is used as the effect size for the ordinal logistic regression. Using this method of reporting, the effect size for engagement with peers (1.072) and engagement with adults (1.057) were almost identical, demonstrating that when the other subscales of engagement are controlled for, the unique contributions of the each of the two variables accounted for similar amounts of the dependent variable, number of friends. Engagement in activities was not found to be a significant predictor of friends for children with disabilities as part of the combined model (p = .171).

Table 3.28: Ordinal Logistic Regression of Having More Friends rather than Fewer Friends on Child Engagement

	Estimate	Odds Coefficient	Wald Statistic	df	P Value
Child Engagement Subscales Entered into the Regression *Simultaneously*					
Engagement in Activities	-.017	.983	1.875	1	.171
Peer Social Engagement	.070	1.072	8.165	1	.004**
Adult Social Engagement	.056	1.057	6.746	1	.009**

Child Engagement Subscales Entered into the Regression *Individually*					
Engagement in activities	.003	1.003	.061	1	.805
Peer social engagement	.057	1.059	6.249	1	.012**
Adult social engagement	.049	1.050	5.631	1	.018**

** Correlation is significant at the .05 level

Adult Characteristics

Research Question 14: What is the relationship between adult characteristics and number of friends of children with disabilities?

An ordinal logistic regression was conducted to assess the relationship between adult (i.e. teacher and assistant teacher) characteristics and the number of friends of children with disabilities. Four subscales were chosen to measure different aspects of the adult's (teacher and assistant teacher) interactions with children, their level of individualization of child programming, and their facilitation of learning, communicating and reasoning.

The Language and Reasoning subscale of the ECERS-R includes four items: Books and Pictures (e.g., accessibility of a range of appropriate books, activities to facilitate language development, and reading), Encouraging Children to Communicate, Using Language to Develop Reasoning Skills, and Informal use of Language and is completed through observation and teacher interview. The subscale score, used for the analysis, is obtained by summing the scores of the four items and then calculating the average score for the subscale. The range for the subscale was 4.74 (2.25-7.00) on a scale of 1-7.

The Individualization subscale of the QIEM assesses the planning and implementation of child goals. Subtotal scores are obtained for child Goals, Implementation Planning, and Actual Implementation through review of the documents (e.g., the Individualized Education Plan (IEP)) and teacher interview. A total score for Individualization is obtained by summing the three subtotals. The Individualization total score was used for the analysis. The range for Individualization was 54 (33-88) on a scale of 1-100.

The Adult-Child Contacts and Relationship subscale of the QIEM assess adult involvement and interactions with children including the tone of the interaction and the degree to which the interactions are responsive and supportive. It is completed through observation. The subscale includes three items; the items are summed for a total subscale score which was the score used for the analysis.

The Adult Behavior subscale of the CASPER is used to gather information about the type and frequency of adult interactions. Adult interactions are coded as Adult Support, Adult Approval, Adult Comment, Group Discussions/Directions, or None. As the frequency of adult interactions was quite low (only 66% of the intervals coded contained any type of adult interaction), a variable was created compiling the number of interactions (0=no interaction, 1=interaction) rather than type of interaction. A variable was created compiling the number of adult interactions rather than type of interaction. A score was obtained by calculating the average number of interactions across all observations. Prior to the regression, a correlation was calculated to check for multicolinearity, and all values were found to be within acceptable limits; see Table 3:29.

Table: 3.29: Correlations among Subscales of Adult Characteristics

Variables	1	2	3	4
1. Language and Reasoning	---	-.080	.521**	.060
2. Individualization		---	-.118	.163
3. Adult-Child Contacts and Relationships			---	.041
4. Adult Behavior				---

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

A regression was conducted for the individual subscales and then for the subscales simultaneously for the combined model (Table 3.30). The regressions conducted for each individual subscale indicated that, Language and Reasoning (p = .006), Individualization (p = .028), and Adult-Child Contacts and Interactions (p = .038) each had a gross effect on number of friends. The variables were then entered simultaneously, and two subscales, Language and Reasoning (p = .047) and Individualization (p = .042) were found to make unique contributions to number of friends when controlling for other adult characteristics.

The odds ratio for Language and Reasoning was 1.487. Thus, as the score on Language and Reasoning increases by one unit, the odds of having more friends rather than fewer increases one and half times. When the score increases by 3 units, the odds ratio is 3.29, with a child having around three times greater odds of having more friends rather than fewer friends.

The odds ratio for Individualization was .965; as the score on Individualization increases by one unit, the odds of having more friends rather than fewer changes very little. Because the odds ratio is a decimal for Individualization, as the score increases, the odds of having more rather than few friends decreases. If the score were to increase by 25 points (the subscale has a 1-100 point scale), the odds of having more rather than fewer friends would decrease 60%.

Table 3.30: Ordinal Logistic Regression of Having More Friends rather than Fewer Friends on Adult Characteristics

Independent Variable	Estimate	Odds Coefficient	Wald Statistic	df	P Value
Regression Results: Adult Characteristics Entered *Individually*					
Language and Reasoning	.479	1.614	7.642	1	.006**
Individualization	-.037	.964	4.833	1	.028**
Adult–Child Contacts & Relationships	.166	1.181	4.309	1	.038**
Adult behavior	-.002	.998	.078	1	.779
Regression Results: Adult Characteristics Entered *Simultaneously*					
Language and Reasoning	.397	1.487	3.928	1	.047**
Individualization	-.036	.965	4.122	1	.042**
Adult–Child Contacts & Relationships	.067	1.069	.508	1	.476
Adult Behavior	.000	1.00	.004	1	.952

** Correlation is significant at the .05 level

Summary of Relational Analysis

Several variables were found to be associated with having more rather than fewer friends. It was found that aspects of quality, both global quality and the quality of inclusion, were positively associated with having more friends. One child characteristic, sex of the child with disabilities, was found to have a unique effect on having a friend when controlling for other child characteristics.

Aspects of child engagement were also found to be related to number of friends. The levels of child engagement with peers and with adults were each found to make a unique contribution to the odds of a child having more friends when controlling for other facets of engagement. Aspects of Adult Characteristics were also related to number of friends. Language and Reasoning and Individualization each made a unique, positive contribution to having more friends when other subscales in the model were held constant.

Summary of Results

Descriptive Analysis

The nature of a child's disability was associated with whether the child had friends and the number of friends. While children, across disability category, had more friends in spring than in fall, some variability was found across disability category. The breakdown of friends across disability category found that children in the Developmental Delay category had more friends than children in the other disability categories. Children with Developmental Delay had the highest average number of friends both fall and spring, and the highest percentage of children with at least one friend. Children in the Autism/PDD category had the lowest average number of friends, in part because they tended to have one friend rather than several friends, while children with Speech and Language Delays were found to be most likely to not have a friend.

The severity of a child's disability was not found to greatly impact their number of friends. The majority of children, regardless of the severity of their disability, had at least one friend in the spring. Children with mild disabilities had a slightly higher average number of friends while children with severe disabilities had a slightly lower average number of friends. The average number of friends increased from fall to spring across severity level, with children with moderate disabilities exhibiting the greatest increase in number of friends across the school year.

The number of friends of children with disabilities was found to vary across model of program. Children in Blended programs were found to have more friends than children in other programs; they had the highest average number of friends and the highest percentage of children with at least one friend. Children in the Head Start programs had the lowest average number of friends and were most likely to not have a friend.

Children, across disability category and severity of disability, tended to have special friends of the same age and the same sex. The majority of the friends were typically developing in both fall and spring, with a small increase from fall to spring in the percentage of the special friends who had a disability.

Relational Analysis

Program, adult (teacher and teacher assistant) and child characteristics were significantly associated with children with disabilities having more special friends. A visual summary of the results of the ordinal logistic regressions are presented in Table 3:31.

The global program quality and the quality of inclusion were positively associated with having more friends. The ratio of children with and without disabilities was not found to be significantly related to friends.

When child characteristics of age, sex, developmental level and category and level of disability were controlled for, only sex was found to have a unique effect on having a friend. Girls had greater odds of having special friends than boys.

Two aspects of child engagement were correlated with number of friends. Child engagement with peers and their engagement with adults were found to make a unique contribution to the odds of a child having more friends when controlling for the other aspects of engagement. Engagement with activities was not significantly associated with having more friends.

Adult characteristics were also found to be associated with children with disabilities having more friends. The Language and Reasoning and Individualization subscales made unique, positive contributions to having more friends when other characteristics were held constant. Adult behavior and Adult-Child Contacts and Relationships subscales were not significantly associated with number of friends when controlling for other aspects of adult characteristics.

Table 3.31: Summary of Results of Ordinal Logistic Regressions

Variables	**Significant Effect**	**Non Significant Effect**
Questions 8-10: *Single Variable* Ordinal Logistic Regressions		
Program Model	X	
Global Quality	X	

Quality of Inclusion	X	
Question 11: *Simultaneous* Entry: Ordinal Logistic Regression		
Disability Category		X
Degree of Disability		X
Sex	X	
Age		X
BDI		X
Question 12: *Simultaneous* Entry: Ordinal Logistic Regression		
Engagement with Peers	X	
Engagement with Adults	X	
Engagement in Activities		X
Question 13: *Simultaneous* Entry: Ordinal Logistic Regression		
Language & Reasoning	X	
Individualization	X	
Adult-Child Contacts & Interactions		X
Adult Behavior		X

CHAPTER 4: DISCUSSION

This study examined the number of special friends of children with disabilities in relation to child, adult, and program characteristics. Findings highlight the interrelationship of factors related to numbers of friends for children with disabilities. This section will discuss the results of the study organized around: key characteristics of the child, adult, and program, who the friends were (descriptively), limitations of the study, and implications of the findings.

Child Characteristics

The relationship between child characteristics, including the nature and degree of disability, age, sex, developmental level and engagement, and number of friends was investigated. Several trends were noted. Overall, it was found that children with disabilities in inclusive settings have friends and show a significant increase in number of friends over the course of the school year. The majority of children with disabilities were found to have at least one special friend, which is consistent with past research (Buysse, 1993; Buysse, Goldman, & Skinner, 2002; Odom & Diamond, 1998; Odom et al., 2002).

Number of Friends. A promising trajectory was identified. Children, across category and severity of disability, had more friends in spring than in fall. As children with and without disabilities came to know each other, more friendships were formed. This may indicate increased acceptance of a child's disability over the course of the year. It may also indicate that children with disabilities (and perhaps without) require time to develop relationships with other children. Particularly promising is the finding that as children, with and without disabilities, became more familiar with each other, children with disabilities made *more* friends, an optimal trajectory for an inclusive setting.

Disability Category. While the relationship between disability categories and number of friends was not significant, results from the current study show some trends linking the nature of a child's disability and number of friends. Previous research has found that child characteristics, including the nature of a child's disability, can impact the child's ability to make friends (Buysse, 1993). Characteristics of specific disabilities limit children's ability to interact and engage with their peers, two important aspects of emergent friendships. Children with limited communication skills appear to be at a disadvantage in finding playmates (Howes, 1996) and interacting socially with peers (Guralnick, 1996a; 1996b). They are at risk for social rejection (Odom et al., 2006) and isolation (Harper & McCluskey, 2002). In their study of the social acceptance and rejection of preschool children with disabilities, Odom and colleagues (2006) found that children with autism were not socially accepted by their peers. Related to this is the finding in the current study that children with Autism/PDD had the lowest *average* number of special friends across disability category; communication is often an area of difficulty for children with autism. The finding in the current study that the category of Speech and

Language Disorders had the highest percentage of children *without* teacher-reported special friends, further supports this line of research. The ability to communicate effectively with classmates may be more important for forming friendships during preschool years than is developmental level. Children with communication difficulties may be less able to initiate and maintain interactions and less able to sustain the more sophisticated pretend play, important avenues for establishing friendships.

Severity of Disability. The severity of a child's disability was not found to be significantly associated with whether a child had friends or with the number of friends. The majority of children, regardless of the severity of their disability, had at least one special friend in the spring and the average number of friends increased from fall to spring across severity level. These findings are consistent with those of Buysse, Goldman, and Skinner (2002) who found that severity of disability was not significantly related to having friends. It seemed probable that children with more severe disabilities would experience more difficulty making friends. However, several factors may play a role in negating this effect. As there is a wide range of developmental level typically found among young children, and expectations for achievement are less stringent during the preschool years, it is possible that the magnitude of a preschool child's disability is less apparent. Also, some disabilities, while severe, do not affect a child's ability to interact and engage with peers; a child with blindness, a severe disability, can be as competent, creative, and engaging at the sand table and in housekeeping as peers without disabilities.

Sex. While there is little research on the association of gender with friendships in children with disabilities, research investigating playmate preferences of preschool children has found gender to be a significant predictor of mutual playmate preferences for typically-developing children (Buysse et al., 1997). Typically-developing girls have been found to be more likely to have a *best* friend than boys, although boys and girls were equally likely to have a friend (Sebanc et al., 2007). In the current study, teachers were asked to differentiate between playmates and special friends, a similar distinction, and findings from the current study were consistent with this line of research. The sex of the child with disabilities was significantly correlated with number of special friends; preschool girls with disabilities were found to have greater odds of having more friends than boys with disabilities. This could be attributed to several factors. The majority of young children's friends tend to be of the same sex. Given that girls tend to have more friends than boys, it may be that the typically-developing girls are initiating the friendships with the girls with disabilities. Also plausible is that the girls with and without disabilities were more likely to make friends with each other than the boys with and without disabilities.

Engagement. Children's engagement with their peers and with the adults in their classes (teachers and assistants) was positively related to the number of friends. It may be that children who are engaged with others tend to make more friends, or it may be that having a friend tends to increase engagement. In either situation, this could create a positively reinforcing cycle where children who are engaged make friends and then are more engaged with others, thus increasing their opportunities to form more friendships. As children with disabilities have been found to be engaged with peers and adults less often than typically-developing children (McWilliam & Bailey, 1995), and the complexity of engagement appears to differ between children with and without disabilities (Odom et al., 2004), engagement appears to provide a potential area of intervention for children experiencing difficulty in making friends. A study examining facilitation of engagement of children with developmental delays found that teacher use of developmentally appropriate strategies was effective in increasing engagement (Malmskog & McDonnell, 1999).

Children's engagement in activities, when controlling for the other types of engagement, was not significantly related to number of friends. In the current study, children could be coded as engaged in an activity while engaged with a peer or adult (e.g., talking with a peer while playing with blocks); the categories were not mutually exclusive. It appears that engagement with classmates and teachers, rather than engagement in activities, is a better predictor of friends.

Adult Characteristics

Aspects of the teachers' and teaching assistants' styles were examined in relation to the number of friends for children with disabilities. Several aspects of teaching style, including teacher active support of communication and reasoning skills, use of language, and adult-child interactions were found to be associated with higher numbers of friends for children with disabilities.

Teaching Style. Teachers have the responsibility for the individualization of children's programs and the use of planned, purposeful, teaching strategies: key aspects of Recommended Practices (DEC, 2005) for children with disabilities. Findings from this study affirm the importance of teachers' active support and facilitation of children's learning and development in inclusive settings.

Teacher facilitation of language development, reading, child communication, and use of language and reasoning skills was linked to increased numbers of friends for children with disabilities. Teacher interventions have been found to be effective for increasing social interactions (Odom et al., 1999; Sontag, 1997) and engagement (McWilliam, Scarborough, & Kim, 2003) of children with disabilities. In a similar vein, research by Brown and Bergen (2002) found that participation in learning centers without teacher intervention did not consistently facilitate social interactions for children with disabilities.

While not strictly targeted towards the support of children's social participation or friends, in this study the teachers' active facilitation of children's learning and communication was associated with increased numbers of friends. It may be that teachers who are actively involved in the facilitation of learning and communication also tend to encourage friendships. Alternatively, teacher facilitation of skills related to communication and language may have provided support to enable children to form friendships on their own.

What is important to note is that purposeful teaching and individualization are necessary to fully support children socially as well as developmentally. In a study investigating the successful inclusion of children with significant disabilities, it was found that "ensuring children met their IEP goals and outcomes" and teacher support of "a specific child's ability to learn, develop, and participate in daily routines and activities of the setting" contributed to successful outcomes (Cross, Traub, Hutter-Pishgahi, & Shelton, 2004).

Two aspects of adult behavior were not found to be significantly related to number of friends: Adult-Child Contacts and Relationships and Adult Behavior. Overall, the frequency of adult interactions with individual children in this study was quite small. The low number of interactions may have prevented determination of statistical differences.

Program Characteristics

The relationship between program characteristics and number of friends for children with disabilities was examined. Program characteristics associated with increased numbers of friends included program model, the quality of the early childhood environment and the quality of the inclusive experience.

Program Model. The number of friends of children with disabilities varied significantly by model of program. Children in Blended programs were found to have, on average, the highest number of friends. Children in Head Start programs had, on average, the lowest number of friends. However, generalization of the results to the *model* of program may be limited as the characteristics of the models in this sample may be unique to this study. The models of programs included in the study differed on critical characteristics. All Blended programs were full day programs with the highest average score for global quality and for the quality of inclusion. The majority of the other program models were half day programs with virtually identical average scores for global quality. It is likely these factors or interactions between them (e.g., length of program day, global quality) contributed to the relationship between program model and numbers of friends.

Hours of Operation. The finding that children with disabilities in full day programs had higher numbers of friends than children in half day programs supports previous research on friendship. A necessary prerequisite for friendship formation is the opportunity for consistent and regular contact with a group of peers (Guralnick, 2001), including the opportunity for consistent, interactive play with familiar peers (Howes, 1996), and the opportunity to identify peers with common interests (Bukowski et al., 1996; Buysse et al., 1997; Howe, 1996). In a study examining the aspects of regular and special education classes which promoted social interactions, Odom and Peterson (1990) found that children in both settings experienced the highest proportion of social interactions during play activities. The constrained schedules of half day programs may not allow sufficient time for child-directed freeplay. Full day schedules provide extra time and opportunity for play and for the increased familiarity which comes from eating, sleeping, and simply being together. Having the freedom to play with a playmate and in an activity of their own choosing provides children with a basis for making friends.

In their study of developmental and social gains of preschool children with disabilities in inclusive and self-contained settings, Holahan and Costenbader (2000) also examined the impact of the length of the daily program. They found that children with more severe disabilities who participated in full day programs had higher rates of progress than children with more mild delays in half day programs. The finding that children in the full day Blended programs, despite having more severe disabilities, had more friends indicates a similar relationship between outcomes and length of program day.

Ratio of Children with Disabilities to Children without Disabilities. It was anticipated that the relationship between the ratio of children with and without disabilities and number of friends of children with disabilities would be correlated. However, the relationship was found not to be statistically significant. Previous research examining outcomes for children with disabilities found differences in outcomes related to the ratio of children with and without disabilities (Buysse, Goldman, & Skinner, 2002; Mills, Jenkins, & Dale, 1998). However, much of this body of research compared inclusive settings with segregated and/or reverse mainstreamed settings[1]. A possible explanation for the difference in findings is that in the current study, which enrolled only inclusive settings with a maximum of 50% of the children in the class with a disability, there was less variability in the ratios.

Program Quality.

It is generally accepted that global quality is positively related to outcomes for young children. Less is known about the relationship between the quality of inclusion and child outcomes. The current study found both global quality and the quality of inclusion to have positive effects on the number of friends of children with disabilities, extending the knowledge base in this area.

Global Program Quality. Global quality has been associated with more competent peer relationships (National Research Council, 2000), and social skills (Howes, Phillips, & Matheson, 1992; Peisner-Feinberg et al., 2001) for typically developing children. Consistent with and extending this line of research, global program quality was found to be significantly related to the number of friends of

---

[1] Reverse mainstreamed classes consist of a majority of children with disabilities with a small percentage of typically developing children.

children with disabilities. The measure of global quality used for this study, the ECERS, encompasses multiple aspects of the environment. The ECERS includes ratings on room arrangement, the quality, availability, and accessibility of materials and activities, the schedule (e.g., time for free play), peer interactions, and teacher facilitation of learning. These aspects of program quality provide a critical context within which children are supported in finding playmates and making friends.

Inclusive Quality. Global quality is considered essential but not sufficient for children with disabilities. Assessing the experience of the *individual* child with disabilities is integral to determining the quality of inclusion. In the present study, the measure of the quality of inclusion (e.g., individualization and implementation of goals, child-child contacts and interaction, and the accessibility and adequacy of the environment), was found to be positively related to numbers of friends of children with disabilities.

The quality of inclusion was rated on a child-by-child basis, rather than at the classroom level. The quality of inclusion must allow for the variability of the experience for each child: a child with autism will experience the same program very differently from a child with motor impairments or a child with cognitive delays. A child who is able to access the environment including the centers, materials, and activities, whose goals are incorporated into the daily routine and who is interacting with his or her classmates, has the supports and structures in place to make friends and function as a member of the class.

Consistent with the literature on inclusion, the findings from the current study demonstrate that the quality of inclusion, over and above the quality of the general early childhood environment, plays a role in child outcomes. Enrollment in a quality program does not necessarily equate to a quality experience for a child with disabilities (Buysse et al., 1999; Wolery, Pauca, Brashers, & Grant, 2000). Inclusive quality includes individualized programming, planned, and purposeful teaching as well as a quality environment (Odom, Schwartz et al., 2002; Wolery et al., 2002, Wolery & Wilbers, 1994). In a study on preschool inclusion, Odom and Buysse (2005) found that "individualization, as a measure of inclusion, appears to have a positive effect on child outcomes in the cognitive, communication, and motor domains."

Description of Special Friends

Characteristics of the special friends of the children with disabilities were examined to look for patterns across category and degree of disability. The majority of the friends were of the same sex and age as the child with disabilities and were typically developing. This finding is consistent with the prevailing body of research. Children tend to form friendships with children they perceive as being similar to themselves, including their age and sex (Buysse et al., 1997; Lindsey, 2002; Vaughn et al., 2001). A similar pattern was found in this study. However, with the limited range of ages represented in preschool classes, it is difficult to ascertain whether the choice of same-age peers for friends simply reflected the ages represented in the preschool classes or was a deliberate choice of same-age friends.

The predominance of same-sex friendships is well documented for typically developing children. This study found a similar pattern for children with disabilities. This finding differs from findings in a study by Buysse and colleagues (1997) which found that *playmate* dyads which included a child with a disability were as likely to be cross-sex as same sex. This difference may result from a variation in the relationships examined in the studies. The current study examined special friends rather than playmates, a more selective relationship which may lead to the difference in findings. The predominance of same-sex friendships may have an encouraging relationship to the play of children with disabilities. A study examining friends of children with Downs Syndrome found that same-sex dyads played at higher levels (Freeman & Kasari, 2002). Advanced play supports the acquisition of skills related to social competence, often an area of need for children with disabilities.

Disability Status. Previous research has shown that children with disabilities were more likely to have typically developing friends when enrolled in inclusive settings (Buysse, 1993; Buysse, Goldman, & Skinner, 2002). Results of the current study are consistent with this research; the majority of the friends of the children with disabilities were typically developing. While this finding may be partially attributed to the higher numbers of typically developing children available as playmates and potential friends, in almost all classes there was at least one other child with a disability to serve as a potential friend.

An interesting trend was noted: a slight shift in spring toward a higher percentage of friends having a disability. This trend was found to be significant across the degree of disability. Several hypotheses could potentially explain this phenomenon. Delays or disabilities may become apparent during the year, allowing for the possibility of a slightly higher number of children being labeled with a disability in the spring. Alternatively, as children became more familiar with their classmates, relationships may have changed and children, with and without disabilities, may have developed friendships with children who had more similar interests or attributes. Another possible explanation is that the children with disabilities became more skilled at making friends as the school year progressed and were thus able to more easily sustain friendships with another child with a disability rather than relying on a more socially competent peer. This finding would benefit from additional research to determine whether it indicates a shift in choices of friends or a demographic shift (more children labeled as having a disability).

Limitations of Study

There were limitations to the current study. Limitations include reliance on teacher report for number of friends, differences between programs on key characteristics, and variability within disability categories. Additionally, information on the numbers of friends of the children *without* disabilities would have provided a more complete picture.

The study relied solely on teacher report of number of friends of children with disabilities. While previous research has shown that teachers can be a reliable source of information (Sebanc, 2003), teacher report provides a single perspective and source of information. The inclusion of observational data of interactions with other children, including those reported to be special friends, and child self-report would provide validity to the teacher report of friends and more in-depth information about the friendships of the children.

The lack of ability for generalization of results of the study across program models is a limitation of the study. Because of program characteristics specific to the study, attempts to generalize results across models of programs appear to be less useful than generalizing across key characteristics of programs (e.g., length of program day, quality of program). Key characteristics of the models may be unique to the study and may not represent these models in other areas.

The disability categories included children with a range of abilities and underlying etiologies. In particular, children in the Other category were diagnosed with a range of disparate disabilities (e.g., blindness, cerebral palsy, health impairments). However, because of the small number of children labeled with each specific disability, these children were grouped into a single category. The diversity of these children makes it difficult to draw any conclusions about information from this category.

Information was not collected on the number of friends of the typically-developing children. Information about numbers of friends of typically-developing children would provide a baseline for comparison between children with and without disabilities. It would useful to know if there are similar patterns across program and adult characteristics.

Implications for Practice and Research

Findings from the study suggest several potential avenues for intervention and exploration. Encouraging regular early childhood teachers to individualize children's programs and incorporate targeted instruction into the daily routine of the class appears to be an essential step in helping young children with disabilities form and maintain friendships. The study provides information on program characteristics that can be used to guide enrollment decisions for children with disabilities.

Strategies and structured interventions for facilitating friendships for young children exist, but research has shown that teachers rarely facilitate social interactions (Brown & Bergen, 2002) or tend to use passive rather than active strategies (Brown, Odom, & Conroy, 2000; Buysse, Goldman, & Skinner, 2003). The current study provides additional information that teacher facilitation and individualization of instruction makes a difference for children in the social arena. The information can be used to encourage teachers to employ more active, individualized instruction to facilitate social skills leading to friendship formation. In particular, a focus on increasing play and interactions for boys, who are less likely to have friends than girls, provides an important venue for intervention.

The study also provides information that can inform placement decisions. Traditionally, children with more severe disabilities have tended to be enrolled in specialized settings versus inclusive settings (Buysse & Bailey, 1994). Parents' concerns about the potential rejection of their children by their classmates can play a role in their choice of setting (Bailey & Winton, 1987; Guralnick, 1994). Information from the current study, which suggests that children across all categories and level of disability have similar numbers of friends when enrolled in inclusive settings, can help alleviate some of this concern. The study also affirms the importance of quality early childhood settings for children with disabilities. While quality care is important for all children, the quality of the program, including planned and purposeful teaching, may be even more important to consider when choosing a program for a child with a disability. In conjunction with classroom quality, finding a class that is matches the child's individual needs (e.g., an accessible environment) is essential. An additional factor for consideration is the length of program day; children were found to have greater numbers of friends in full day programs. Some children with disabilities split their time between two programs, attending a regular child care program part time and a specialized program part time. Locating one program where the child can receive the support services needed may lead to more optimal friendship outcomes.

The study raises several avenues for future research. One challenge is to investigate methods for increasing the quality of inclusion over and above global quality. Practices which form the core of inclusion (individualization and instruction) can benefit all children. Encouraging teachers to use evidence-based strategies to facilitate learning and development may have the added benefit of helping children with disabilities develop the skills needed to form friendships.

An additional area for research would be to further investigate the trend found in this study: children with disabilities were found to have a higher percentage of friends with disabilities in the spring than in the fall. Further exploration of this trend could provide useful information about friendship patterns for children with disabilities.

Conclusion

This study provides insights into a variety of influences on children with disabilities and numbers of friends. It highlights the positive relationship between the quality of early childhood programs, the quality of inclusion, and teachers' active support and facilitation of children’s learning and development and the number of special friends for children with disabilities. Supporting children in their efforts to form friendships at an early age provides a foundation for future friendships and sets the stage for a life lived more fully. While having a friend may not sound like an essential component of an early childhood program, to quote C.S. Lewis: "Friendship is unnecessary, like philosophy, like art…it has no survival value; rather it is one of those things that gives value to survival.”

APPENDIX A: ABILITIES Index

The ABILITIES Index

Rune J. Simeonsson
Donald B. Bailey

Child's Name: ____________________
Date of Birth: ____/____/____
Child's Program: ____________________
Today's Date: ____/____/____

INSTRUCTIONS: In each column, place an **X** in the space that best describes the child. Please note that multiple **X**s should be recorded under **A** (Audition), **B** (Behavior), **L** (Limbs), **I** (Intentional Communication), **T** (Tonicity), & **E** (Eyes).

	A		B		I	L						I		T		I	E		S
	Audition (Hearing)		Behavior & Social Skills		Intellectual Functioning	Limbs (Use of hands, arms, & legs)						Intentional Communication		Tonicity (Muscle Tone)		Integrity of Physical Health	Eyes (Vision)		Structural Status
	Left Ear	Right Ear	Social Skills	Inappropriate Behavior	Thinking & Reasoning	Left Hand	Left Arm	Left Leg	Right Hand	Right Arm	Right Leg	Under-standing others	Commu-nicating with others	Degree of tightness	Degree of looseness	Overall Health	Left Eye	Right Eye	Shape, Body Form & Structure
1	Normal		All behaviors typical & appropriate for age		Normal for age	Complete normal use						Normal for age verbal & non-verbal (includes signs, gestures or symbol systems)		Normal		General good health	Normal		Normal
2	Suspected hearing loss		Suspected disability	Suspected inappropriate behaviors	Suspected disability	Suspected difficulty						Suspected disability		Suspected		Suspected health problems	Suspected vision loss		Suspected difference or interference
3	Mild hearing loss		Mild disability	Mildly inappropriate behaviors	Mild disability	Mild difficulty						Mild disability		Mild		Minor ongoing health problems	Mild vision loss		Mild difference or interference
4	Moderate hearing loss		Moderate disability	Moderately inappropriate behaviors	Moderate disability	Moderate difficulty						Moderate disability		Moderate		Ongoing but medically-controlled health problems	Moderate vision loss		Moderate difference or interference
5	Severe hearing loss		Severe disability	Severely inappropriate behaviors	Severe disability	Severe difficulty						Severe disability		Severe		Ongoing poorly-controlled health problems	Severe vision loss		Severe difference or interference
6	Profound hearing loss		Extreme disability	Extremely inappropriate behaviors	Profound disability	Profound difficulty						Profound disability		Totally tight	Totally loose	Extreme health problems, near total restriction of activities	Profound vision loss		Extreme difference or interference

APPENDIX B: Battelle Developmental Inventory (BDI): Score Summary

Battelle

SCORE SUMMARY

Domain	BDI Component	Raw Score	Percentile Rank (Tables N-2 to N-52)	Standard Score (Table N-1) z T DQ NCE (circle one)	Age Equivalent in months (Tables N-56 to N-65)	Profile											
						-5.0 0 25 -55	-4.0 10 40 -34	-3.0 20 55 -13	-2.0 30 70 +8	-1.0 40 85 +29	0.0 50 100 +50	+1.0 60 115 +71	+2.0 70 130 +92	+3.0 80 145 +113	+4.0 90 160 +134	+5.0 100 175 +155	z T DQ NCE
Personal-Social	Adult Interaction																
	Expression of Feelings/Affect																
	Self-Concept																
	Peer Interaction																
	Coping																
	Social Role																
	Personal-Social Total																
Adaptive	Attention																
	Eating																
	Dressing																
	Personal Responsibility																
	Toileting																
	Adaptive Total																
Motor	Muscle Control																
	Body Coordination																
	Locomotion																
	Gross Motor Score																
	Fine Muscle																
	Perceptual Motor																
	Fine Motor Score																
	Motor Total																
Commun	Receptive																
	Expressive																
	Communication Total																
Cognitive	Perceptual Discrimination																
	Memory																
	Reasoning and Academic Skills																
	Conceptual Development																
	Cognitive Total																
	BDI Total																

APPENDIX C: The CASPER

The Code for Active Student Participation and Engagement Revised: Coding Symbols

I. ENVIRONMENTAL AND BEHAVIORAL CODING SYMBOLS

ACTIVITY AREA AND ACTIVITY CODES

T	Transition
M	Manipulative
LM	Large Motor
B	Story-time (Books)
A	Art
P	Pretend Play/Sociodramatic Play
L	Large Blocks
S	Sensory
D	Dance/Music/Recitation
F	Snack/Meals (Food)
H	Self Care (Self Help)
R	Pre-Academic/3 Rs
CP	Computer Activities
G	Circle Time (Group)
?	Can't Tell

INITIATOR OF ACTIVITY CODES

AD	Adult
CH	Focal Child
TP	Typical Peer
DP	Peer with Developmental Delays
?	Can't Tell

ENVIRONMENTAL AND BEHAVIORAL CODING SYMBOLS (continued)

CHILD BEHAVIOR (Hierarchy for the following codes)

B	Books
R	Pre-academics/3 Rs
P	Pretending/Socio-dramatic Play
A	Art
GR	Games with Rules
D	Singing/Reciting/Dancing
H	Self Help or Self Care
CP	Computer
M	Manipulating
LM	Large Motor
C	Clean-up
NE	Not Engaged
?	Can't Tell

CHILD SOCIAL BEHAVIOR (Hierarchy for the following codes)

SA	Social Behavior Directed to Adult
NA	Negative Social Behavior to Adult
SPT	Social Behavior Directed to a Typical Peer
NPT	Negative Social Behavior to a Typical Peer
SPD	Social Behavior Directed to a Peer with Disabilities
NPD	Negative Social Behavior to a Peer with Disabilities
PFT	Social Behavior Directed from a Typical Peer
NFT	Negative Social Behavior from a Typical Peer
PFD	Social Behavior Directed from a Peer with Disabilities
NFD	Negative Social Behavior from a Peer with Disabilities
NO	No Social Behavior
?	Can't Tell

ADULT BEHAVIOR (Hierarchy for the following codes)

AS	Adult Support
AA	Adult Approval
AC	Adult Comment
GD	Group Discussion/Directions
NO	None
?	Can't Tell

APPENDIX D: Environmental Rating Scale (ECERS): Summary Sheet

42. Supervision and evaluation of staff

1 2 3 4 5 6 7 NA

Y N	Y N	Y N NA	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
		5.3 ☐ ☐	7.3 ☐ ☐
		5.4 ☐ ☐ ☐	

43. Opportunities for professional growth

1 2 3 4 5 6 7

Y N	Y N	Y N	Y N NA
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
	3.3 ☐ ☐	5.3 ☐ ☐	7.3 ☐ ☐ ☐
		5.4 ☐ ☐	

A. Subscale (Items 38 - 43) Score ___ ___

B. Number of items scored ___ ___

PARENTS AND STAFF Average Score (A ÷ B) ___.___ ___

Total and Average Score

	Score	# of Items Scored	Average Score
Space and Furnishings			
Personal Care			
Language-Reasoning			
Activities			
Interaction			
Program Structure			
Parents and Staff			
TOTAL			

ECERS-R
Summary Sheet

APPENDIX E: Playmates and Friends Questionnaire

Date ____________

Use a separate questionnaire to describe the playmates & friends of each selected child.

Playmates

1. Who does ______________ play with? List as many or as few playmates as appropriate using first name and last initial. How often does **this child** play with each playmate? Check *occasionally* or *frequently.*

Child's Name

Playmate's Name	Occasionally	Frequently	Playmate's Name	Occasionally	Frequently
______________	☐	☐	______________	☐	☐
______________	☐	☐	______________	☐	☐
______________	☐	☐	______________	☐	☐
______________	☐	☐	______________	☐	☐
______________	☐	☐	______________	☐	☐

Special Friends

2. Who would you say are **this child's** special friends? List as many or as few playmates as appropriate.

Friend's Name	Friend's Age	(circle one) Male/Female	Is this friend a classmate?	How long have these two children been friends?	Does this friend have a disability? (circle one)
______________	_____	male female	yes no	______________	yes no don't know
______________	_____	male female	yes no	______________	yes no don't know
______________	_____	male female	yes no	______________	yes no don't know
______________	_____	male female	yes no	______________	yes no don't know
______________	_____	male female	yes no	______________	yes no don't know
______________	_____	male female	yes no	______________	yes no don't know
______________	_____	male female	yes no	______________	yes no don't know

This child's age __________ male female (circle one) Does this child have a disability? yes no don't know

Playmates & Friends (Goldman & Buysse, 2002)

APPENDIX F: Quality of Inclusive Experience Measure (QIEM) Classroom Profile

QIEM

Classroom Profile

This profile is a summary of the classroom's scores on the seven assessed dimensions. In nearly all sections, items are scored from 1-5. The higher the value the higher the quality. The participation and engagement section does not use this method. To determine the quality for a given section, the item scores are added to provide a total score for each section. Five levels of quality are identified; these are (a) excellent, (b) good, (c) mediocre, (d) poor, and (e) very poor. The following scale was used with all sections except for participation and engagement.

5a. Participation and Engagement:

Excellent	90-100% of the total possible score (the sum of the ratings)
Good	80-89% of the total possible score
Mediocre	60-79% of the total possible score
Poor	40-59% of the total possible score
Very poor	39% or less of the total possible score

LEVELS OF QUALITY

Maintain efforts	Excellent
Continue efforts and improve as needed	Good
Improvement needed	Mediocre
Significant improvement needed	Poor
Significant and immediate improvement required	Very Poor

Below are the specific values and quality assignments for each section of the measure.

	1. Program Goals and Purpose	**3. Accessibility and Adequacy of Physical Envt.**	**5a. Participation and Engagement**	**6. Adult-Child Contacts and Relationships**	
	Total score: _______	Total score: _______	Participation %: _______	Total score: _______	
Excellent	81-90	23-25	100%	14-15	**Excellent**
Good	72-80	20-22	90-99%	12-13	**Good**
Mediocre	54-71	15-19	75-89%	9-11	**Mediocre**
Poor	36-53	10-14	50-74%	6-8	**Poor**
Very Poor	35 or less	9 or less	49% or below	5 or less	**Very Poor**
	2. Staff Supports and Perceptions	**4. Individualization**	**5b. Average engagement rating:**	**7. Child-Child Contacts and Interactions**	
	Total score: _______	Total Score: _______	Total score: _______	Total score: _______	
Excellent	108-120	90-100	4.75-5.0	23-25	**Excellent**
Good	96-107	80-89	4.25-4.74	20-22	**Good**
Mediocre	72-95	70-79	3.25-4.24	15-19	**Mediocre**
Poor	48-71	60-69	2.5-3.24	10-14	**Poor**
Very Poor	47 or below	59 or below	2.49 or below	9 or less	**Very Poor**

REFERENCES

Aboud, F. E. & Mendelson, M. J. (1996) Determinants of friendship selection and quality: Developmental perspectives. In W. M. Bukowski, A. F. Newcomb, & W. W. Hartup (Eds.), *The company they keep: Friendship in childhood and adolescence (*pp. 87-112). New York: Cambridge University Press

Asher, S. R., Parker, J. G., & Walker, D. L. (1996). Distinguishing friendships from acceptance: Implications for intervention and assessment. In W. M. Bukowski, A. F. Newcomb, & W. W. Hartup (Eds.), *The company they keep: Friendship in childhood and adolescence* (pp. 366-405.). New York: Cambridge University Press.

Bailey, D. B., Simeonsson, R. J., Buysse, V., & Smith, T. (1993). Reliability of an index of child characteristics. *Developmental Medical Child Neurology, 35*(9), 806-815.

Bricker, D. (2000). Inclusion: How the scene has changed. *Topics in Early Childhood Special Education, 20*(1), 14-19.

Brown, M. & Bergen, D. (2002). Play and social interaction of children with disabilities at learning/activity centers in an inclusive preschool. *Journal of Research in Childhood Education, 17*(1), 26-36.

Brown, W. H., Odom, S. L., & Conroy, M. A. (2001). An intervention hierarchy for promoting preschool children's peer interactions in natural environments. *Topics in Early Childhood Special Education, 21*, 162-175.

Bryant, D. M., Maxwell, K. L., & Burchinal, M. (1999). Effects of a community Initiative on the quality of child care. *Early Childhood Research Quarterly*, *14*(4), 449-464.

Bukowski, W. M., Newcomb, A. F., & Hartup, W. W. (1996). Friendship and its significance in childhood and adolescence: Introduction and comment. . In W. M. Bukowski, A. F. Newcomb, & W. W. Hartup (Eds.), *The company they keep: Friendship in childhood and adolescence* (pp. 1-18). New York: Cambridge University Press

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

Buysse, V. & Bailey, D. B. (1994). The relationship between child characteristics and placement in specialized versus inclusive early childhood programs. *Topics in Early Childhood Special Education*, *14*(4), 419-435.

Buysse, V., Goldman, B. D., & Skinner, M. (2002). Setting effects on friendship formation among young children with and without disabilities. *Exceptional Children, 68*(4), 503-517.

Buysse, V., Goldman, B. D., & Skinner, M. (2003). Friendship formation in inclusive early childhood classrooms: what is the teacher's role? *Early Childhood Research Quarterly*, *18*, 485-501.

Buysse, V., Goldman, B., West, T., & Hollingsworth, H. (2008). Friendships in early childhood: Implications for early education and intervention. In W. H. Brown, S. L. Odom, & S. R. McConnell (Eds.) *Social Competence of Young Children: Risk, Disability, and Evidence-Based Practices, 2nd Edition* (pp. 77-97). Baltimore, MD: Brookes publishing Company.

Buysse, V., Nabors, L., Skinner, D., & Keyes, L. (1997). Playmate preferences and perceptions of individual differences among typically developing preschoolers. *Early Child Development and Care, 131*, 1-18.

Buysse, V., Wesley, P. W., Bryant, D., & Gardner, D. (1999). Quality of early childhood programs in inclusive and noninclusive settings. *Exceptional Children*, *65*(3), 301-314.

Buysse, V., Wesley, P. W., Bryant, D., & Gardner, D. (1999). Quality of early childhood programs in inclusive and noninclusive settings. *Exceptional Children*, *65*(3), 301-314.

Children's Defense Fund, (2003). Children with disabilities and other special needs: Opportunities to participate in quality programs must be expanded. Retrieved: February, 2007.

Cole, K. N., Mills, P. E., Dale, P. S., & Jenkins, J. R. (1991). Effects of preschool integration for children with disabilities. *Exceptional Children*, 58(1), 36-45.

Cross, A. F., Traub, E. K., Hutter-Pishgahi, L., & Shelton, G. (2004). Elements of successful inclusion for children with significant disabilities. *Topics in Early Childhood Special Education, 24*(3), 169-183.

Danaher, J. (2007). Eligibility policies and practices for young children under Part B of IDEA. NECTAC Notes, The National Early Childhood Technical Assistance Center, Issue No. 24. UNC: FPG Child Development Institute.

Diamond, K. E. (2001). Relationships among young children's ideas, emotional understanding, and social contact with classmates with disabilities. *Topics in Early Childhood Education*, *21*(2), 104-113.

Freeman, S. F. N., & Kasari, C. (2002). Characteristics and qualities of the play dates of children with Down Syndrome: Emerging of true friendships. *American Journal on Mental retardation, 107*(1), 16-31.

Garson, D. (2008). Logistic Regression: Statnotes from North Carolina State University. Retrieved from: http://www2.chass.ncsu.edu/garson/PA765/logistic.htm on January 31, 2008 at 3:32 pm.

Goldman B. D. & Buysse, V. (2007). Friendships in very young children: Early friendships among typically developing toddlers and young children with disabilities. In O. N. Saracho & B. Spodek (Eds.), *Contemporary perspectives in early childhood education, Volume 7, Social learning in early childhood education*. Greenwich, CT: Information Age Publishing.

Guidubaldi, J. (1984). Concurrent and predictive validity of the Battelle Developmental Inventory at the first grade level. *Educational and Psychological Measurement*, *44*(4), 977-985.

Guralnick, M. J. (1999). The nature and meaning of social integration for young children with mild developmental delays in inclusive settings. *Journal of Early Intervention, 22*(1), 70-86.

Guralnick, M. J. (2000). An agenda for change in early childhood inclusion. *Journal of Early Intervention, 23*(4), 213-222.

Guralnick, M. J. (2001). Social competence with peers and early childhood inclusion. Need for alternative approaches. In M. J. Guralnick, (Ed.) *Early childhood inclusion. Focus on change* (pp. 481-502). Baltimore, MD: Paul H. Brookes Publishing Company.

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

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

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

Harbin, G., Rous, B., & McLean M. (2005). Issues in designing state accountability systems. *Journal of Early Intervention*, *27*(3), 137-164.

Harms, T., Clifford, R. M., & Cryer, D. (2005). *Early childhood environment rating scale: Revised edition*, New York, NY: Teachers College Press.

Harper, L.V., McClusky, K.S. (2002). Caregiver and peer responses to children with language and motor disabilities in inclusive preschool programs, *Early Childhood Research Quarterly*, *17,* 148-166.

Hartup, W. W. (1996). Cooperation, close relationships, and cognitive development. In W. M. Bukowski, A. F. Newcomb, & W. W. Hartup (Eds.), *The company they keep: Friendship in childhood and adolescence* (pp. 213-237). New York: Cambridge University Press.

Hay, D. F., Payne, A., & Chadwick, A. (2004). Peer relations in childhood. *Journal of Child Psychology and Psychiatry*, 45(1), 84-108.

Holahan, A. & Costenbacher, V. (2000). A comparison of developmental gains for preschool children with disabilities in inclusive and self-contained classrooms. *Topics in Early Childhood Special Education, 20*(4), 208-224.

Howes, C. (1996). The earliest friendships. In W. M. Bukowski, A. F. Newcomb, & W. W. Hartup (Eds.), *The company they keep: Friendship in childhood and adolescence* (pp. 66-86). New York: Cambridge University Press.

Howes, C., Phillips, D. A., & Whitebrook, M. (1992). Thresholds of quality: Implications for the social development of children in center-based care. *Child Development, 63*, 449-460.

Johnson, C., Ironsmith, M., Snow, C., & Poteat, G. M. (2000). Peer acceptance and social adjustment in preschool and kindergarten. *Early Childhood Education Journa*l, *27*(4), 207-213.

Kontos, S. & Wilcox-Herzog, A. (2001). How do education and experience affect teachers of young children? *Young Children*, *56*(4), 85-91.

La Paro, ,K. M., Sexton, D., & Snyder, P. (1998). Program quality characteristics in segregated and inclusive early childhood settings. *Early Childhood Research Quarterly, 13*, 151-168.

Ladd, G. W. (1990). Having friends, keeping friends, making friends and being liked by peers in the classroom: Predictors of children's early school adjustment? *Child Development*, *61*, 1081-1100.

Ladd, G. W., & Coleman, C. C. (1993). Young children's peer relationships: Forms, features, and functions. In B. Spodek (Eds.), *Handbook on* r*esearch on the education of young children* (pp 57-76). New York: MacMillan

Ladd, G. W., Herald, S. L., & Andrews, R. K. (2006). Young children's peer relations and social competence. In Spodek & Saracho (Eds.), *Handbook on the research of young children*, Mahwah, N.J.: Lawrence Erlbaum Associates Publishers.

Ladd, G. W. & Kochenderfer, B. J. (1996). Linkages between friendship and adjustment during early school transitions. In W. M. Bukowski, A. F. Newcomb, & W. W. Hartup (Eds.), *The company they keep: Friendship in childhood and adolescence*. (pp. 322-345). New York: Cambridge University Press.

Landy, S. (2002). Encouraging social competence, empathy, and caring behavior. In S. Landy, *Pathways to competence: encouraging healthy social and emotional development in young children* (pp. 515-546). Baltimore, MA: Paul H. Brookes Publishing Company.

Lindsey, E. W., (2002). Preschool children's friendships and peer acceptance: Links to social competence. *Child Study Journal*, *32*(3), 145-156.

Malmskog, s. & McDonnell, A. P. (1999). Teacher-mediated facilitation of engagement by children with developmental delays in inclusive preschools. *Topics in Early Childhood Special Education, 19*(4), 203-216.

McElwain, N. L. & Volling, B. I. (2005). Preschool children's interactions with friends and older siblings: Relationship specificity and joint contributions to behavior problems. *Journal of Family Psychology*, *19*(4), 486-496.

McWilliam, R. A. & Bailey, D. B. (1995). Effects of classroom social structure and disability on engagement*. Topics in Early Childhood Education, 15, 123-147.*

McWilliam, R. A., Scarborough, A., & Kim, Ho. (2003). Adult interactions and child engagement. *Early Education and Development, 14*, 7-27.

Mills, P. E., Cole, K. N., Jenkins, J. R., & Dale, P. S. (1998). Effects of differing levels of inclusion on preschoolers with disabilities. *Exceptional Children*, *65*(1), 79-90.

National Institute of Child Health and Human Development (NICHD) Early Childcare Research Network (2000). Characteristics and quality of child care for toddlers and preschooler. *Applied Developmental Science*, *4.*

National Research Council and Institute of Medicine (2000). Making friends and getting along with others. In J. P. Shonkoff & D. A. Phillips (Eds.), *From neurons to neighborhoods: The science of early childhood development* (pp. 163-181). Committee on Integrating the Science of Early Childhood Development. Board on Children, Youth, and Families, Commission on

Behavioral and Social Sciences Education. Washington, DC: National Academy Press.

Newcomb, A. F. & Bagwell, C. L. (1996). The developmental significance of children's friendship relations. In W. M. Bukowski, A. F. Newcomb, & W. W. Hartup (Eds.), *The company they keep: Friendship in childhood and adolescence* (pp. 289-321). New York: Cambridge University Press.

Norusis, M. (2006). Ordinal Regression. In *SPSS 13.0 Advanced Statistical Procedures Companion* (pp. 69-89). Prentice Hall.

Odom, S. L. & Buysse, V. (2005). Preschool inclusion in the United States: Cost, Quality and Outcomes. Paper presented at the International Congress on Special Education, Glasgow, Scotland, August 2, 2005.

Odom, S. L. & Diamond, K. E., (1996). Inclusion of young children with special needs in early childhood education: The research base. *Early Childhood Research Quarterly*, 13(1), 3-25.

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

Odom, S. L. & Peterson, C. (1990). Ecobehavioral analysis of early education/specialized classroom settings and peer social interactions*.* *Education and Treatment of Children, 13*(4), 316-330.

Odom, S. L., Vitztum, J., Wolery, R., Lieber, J., Sandall, S., Hanson, M. J., Beckman, P., Schwartz, I., & Horn, E. (2004). Preschool inclusion in the United States: A review of research from an ecological systems perspective. *Journal of Research in Special Education Needs, 4*(1), 17-49.

Odom, S. L., Zercher, C., Li, S., & Marquart, J. M., Sandall, S., & Brown, W. H. (2006). Social acceptance and rejection of preschool children with disabilities: A mixed-method analysis. *Journal of Educational Psychology*, *98*(4), 807-823.

Odom, S. L., Zercer, C., Marquart, J., Li, S., Samdall, S. R., & Wolfberg, P. (2002). Social relationships of children with disabilities and their peers in inclusive classrooms. In Sam Odom (Ed.), *Widening the circle. Including children with disabilities in preschool programs* (61-80). New York, NY: Teachers College Press.

Office of Head Start, Head Start Program Fact Sheet. Administration for Children and Families, U.S. Department of Health and Human Services. Retrieved 03-12-2007. http://www.acf.hhs.gov/programs/hsb/research/2003.htm

Okagaki, L., Diamond, K. E., Kontos, S. J., & Hestenes, L. L. (1998). Correlates of young children's interactions with classmates with disabilities. *Early Childhood Research Quarterly*, *13*(1), 67-86.

Peisner-Feinberg, E. S., Burchinal, M. R., Clifford, R. M., Culkin, M. L., Howes, C., Kagan, S. L., & Yazejian, N. (2001). The relations of preschool child-care quality to children's cognitive and social development through second grade. *Child Development*, *72*(5), 1534-1553.

Sainato, D. & Carta, J., (1992). Classroom influences on the development of social competence in young children with disabilities. In S. L. Odom, S. R. McConnell, & M. A. McEvoy (Eds.), *Social Competence of Young Children with Disabilities: Issues and Strategies for Intervention* (pp. 93-109). Baltimore: Paul H. Brookes.

Schwartz, I. S. (2000). Standing on the shoulders of giants: Looking ahead to facilitating membership and relationships for children with disabilities. *Topics in Early Childhood Special Education*, *20*(2), 123-128.

Sebanc, A. M. (2003). The friendship features of preschool children: Links with prosocial behavior and aggression. *Social Development, 12*(2), 249-268.

Sebanc, A. M., Kearns, K. T., Hernandez, M. D., & Galvin, K. B. (2007). Predicting having a best friend in young children: Individual characteristics and friendship features. *The Journal of Genetic Psychology, 168(1),* 81-95.

Simeonsson R. & Bailey, D. B. (1998). The ABILITIES Index. Frank Porter Graham Child Development Center: University of North Carolina at Chapel Hill.

Simeonsson, R. J., Chen, J., & Hu, Y. (1995). Functional Assessment of Chinese children with the ABILITIES Index. *Disability and Rehabilitation*, *17*(7), 400-410.

Sontag, J. C. (1997). Contextual factors influencing the sociability of preschool children with disabilities in integrated and segregated classrooms. *Exceptional Children*, *63*(3), 389-4-4.

Tabachnick, B. G. & Fidell, L. S. (2001). Chapter 12 Logistic Regression. In Using Multivariate Statistics (pp. 517-581). Needham Heights, MA: Allyn & Bacon.

U. S. Department of Education, (2005). *Twenty-fifth Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act*.

Washington D.C.: Author. Retrieved January 17, 2007 from http://www.ed.gov/about/reports/annual/osep/2003/25th-vol-1-sec-1.pdf

Vaughn, B. E., Colvin, T. N., Azria, M. R., Caya, L. & Krzysik, L. (2001). Dyadic analyses of friendship in a sample of preschool-age children attending Head Start: Correspondence between measures and implications for social competence. *Child Development, 72*(3), 862-878.

Wolery, M. Pauca, T., Brashers, M. S., Grant, S. (2000). Quality of Inclusive Experiences Measure. Unpublished.

Wolery, M. & Wilbers, J. S. (1995). Introduction to the inclusion of young children with special needs in early childhood programs. In M. Wolery & J. S. Wilbers (Eds.), *Including children with special needs in early childhood programs* (pp.1-23). Washington, D.C.: National Association for the Education of Young Children.