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**Publication Date**

2015

Peer reviewed|Thesis/dissertation

UNIVERSITY OF CALIFORNIA

Los Angeles

Propinquity as a Barrier to Friendship Development for Children with Autism

A dissertation submitted in partial satisfaction of the requirements for the degree of Doctor of  
Philosophy in Education

by

Belinda Lynette Williams

2015



## ABSTRACT OF THE DISSERTATION

Propinquity as a Barrier to Friendship Development for Children with Autism

by

Belinda Lynette Williams

Doctor of Philosophy in Education

University of California Los Angeles, 2015

Professor Connie L. Kasari, Chair

### **Background**

Children with autism spectrum disorders (ASD) often have difficulty establishing and maintaining friendships with peers. For highly verbal children with ASD in mainstream academic settings, these social difficulties may be exacerbated for those who also do not attend their neighborhood school. Propinquity, or proximity to peers, has been explored as a barrier for friendship development for typical children, but has not been extensively researched for children with ASD. This current study explores propinquity as distance from home to school as a potential barrier to friendship development for highly verbal children with ASD in mainstream classrooms.

### **Methods**

This study employs a mixed methods to design to explore the complexities of friendship development for children with ASD within their school environment. Correlations are used to

explore associations between distance from home to school and observed peer engagement and social connections with classmates. Qualitative data is collected via a semi-structured interview to explore parent perceptions of the impact of propinquity on friendship development for their children with ASD.

## **Results**

Quantitatively, associations between distance, peer engagement, social connections, and social rejections were not significant within the sample. Despite no differences in friendships, social nominations were significantly different for children who lived closer to school. Among parents, 5 central themes in regards to barriers for friendship development emerged: propinquity, attempts at social exposure, common social problems within ASD, siblings as a protective factor, and parent networks.

## **Discussion**

This study used mixed methods to better understand the complexities of friendship development in children with ASD in their school environment. While it was hypothesized that one barrier to developing friendships might be attending a non-neighborhood school, this association was not strong in the sample. Findings might have been impacted by the lack of reported friendships overall and because most children in the sample did live close to their school. Both the quantitative and qualitative data suggested there were more significant challenges for children with ASD in developing friendships.

Keywords: autism spectrum disorders, propinquity, peer engagement, social connections, parent networks

The dissertation of Belinda Lynette Williams is approved.

Jeff Wood

Sandra Graham

Sheryl Kataoka

Connie L. Kasari, Committee Chair

University of California Los Angeles

2015

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## List of Tables and Figures

**Table 1 Sample Characteristics N = 32**

Distance from home to school (miles)	
Mean (SD)	1.63 (2.469)
Range	0.02–11.5
Age (years, months)	
Mean (SD)	8.84 (1.780)
Range	5-12

**Table 2 Sample Characteristics N = 10**

Distance from home to school (miles)	
Mean (SD)	2.58 (3.14)
Range	.02–9.0
Age of ASD Diagnosis (years)	
Mean (SD)	4.1 (2.23)
Range	1–9
Number of Intervention Services	
Mean (SD)	2.1 (2.23)
Range	0-8
ADOS Mod 3 Total Score	
Mean (SD)	14.1 (5.11)
Range	8-22
ADOS Mod 3 SA Score	
Mean (SD)	11.1 (4.48)
Range	5-19
ADOS Mod 3 RRB Score	
Mean (SD)	3 (1.25)
Range	1-5



Figure 1

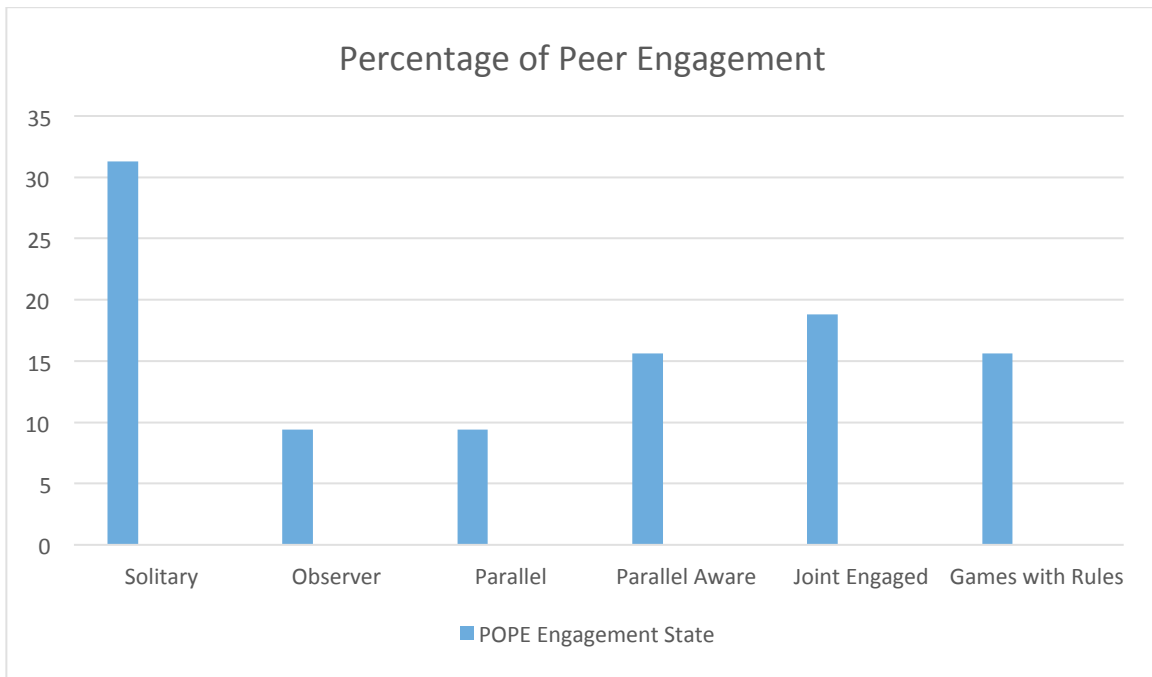


Figure 2

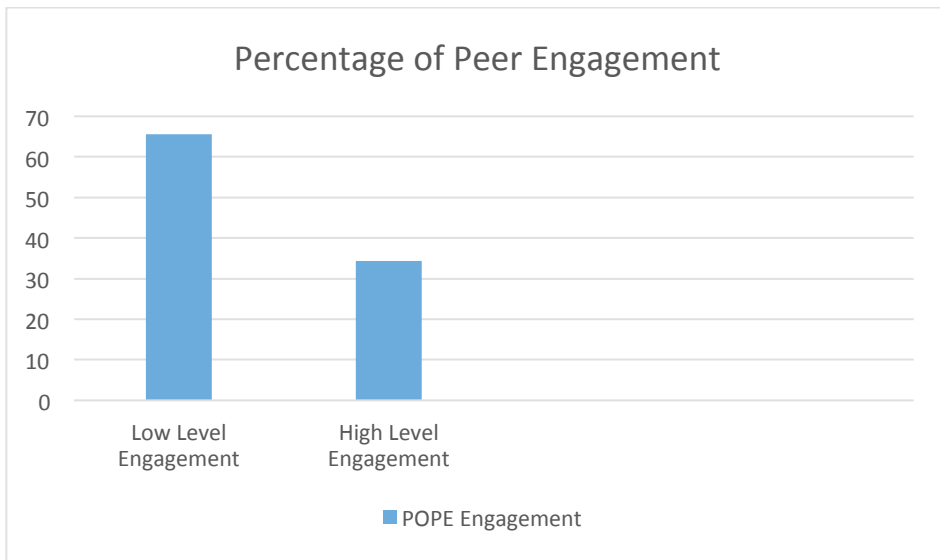


Table 3

<b>Pearson Correlations</b>					
N= 32	Reciprocal friendship nominations	Peer rejections	Out-degrees	In-degrees	Peer Engagement
Distance (in miles from home to school)	-.113	-.117	.785*	.421	.177

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

Vita

# Belinda L. Williams

## EDUCATION

University of California Los Angeles

**Candidate for Ph.D. in Human Development and Psychology**

2015

Advisor: Connie Kasari

Dissertation: Proximity as a Barrier to Friendship Development for Children with Autism

University of California Los Angeles

**M.A. in Education**

2012

Advisor: Connie Kasari

Thesis: Associations Between Early Social Communication and Play Skills and Conversation Quality in Children with ASD

New York University

**M.A. in Speech-Language Pathology and Audiology**

2009

Advisor: Christina Reuterskiold

Spelman College, Atlanta, GA

**B.A. with Honors in English and Spanish**

2006

*Phi Beta Kappa, Spelman College Epsilon of Georgia Chapter*

## TRAININGS AND CERTIFICATIONS

Autism Diagnostic Interview – Revised (ADI-R)

2015

Community-Partnered Participatory Research Training

2014

Autism Diagnostic Observation Schedule (ADOS-2)

2014

*Research reliability training*

Autism Diagnostic Observation Schedule (ADOS-2)

2013

*Clinical certification training*

Vital Stim Therapy Certification

2010

Systematic Analysis of Language Transcripts (SALT)

2008

## WORK EXPERIENCE

Los Angeles Speech and Language Therapy Center, Inc.

**Bilingual (English and Spanish) Speech-Language Pathologist**

2009 – present

Responsibilities: Assessing pediatric speech and language disorders, developed and currently leading a Pre-Social Skills program for children with autism with minimal verbal output, teaching a social skills class for highly verbal children with autism in grades K-3, co-teaching an adolescent social skills group for highly verbal teens with autism, providing speech and language therapy for children with autism and/or speech and language delays ages 18 months - 18 years, conducting comprehensive Independent Educational Evaluations for school districts, supervising and training graduate students in clinical speech-language pathology externships, providing staff training

Kasari Research Lab, UCLA

**Graduate Student Researcher**

2012 – 2015

Responsibilities: Team member on Early Access to Care initiative to explore disparities in early identification and treatment of autism in African-American communities;

Interventionist for “Remaking Recess” (RR) with elementary school children with autism in general education classrooms, interventionist for “Schedules, Tools, and Activities for Transitions in the daily routine” (STAT) program with

elementary school children with autism in special education classrooms, data collection, new school recruitment. Project Title: Autism Intervention Research Network for Behavioral Health (AIR-B II) – Deployment Into Elementary Schools

University of California, Los Angeles Graduate Students Association

**Director of Graduate Events**

2012 – 2013

Responsibilities: Managed a budget of over \$40,000 to develop and execute social and recreational programs for graduate students to network across disciplines and departments. Served as a cabinet member for the 2012-2013 academic year to represent the UCLA graduate student body.

TEACHING EXPERIENCE

University of California, Los Angeles

**Teaching Assistant to Professor Connie Kasari**

Winter 2015

Responsibilities: Instructed a 90-minute weekly discussion section of the course “Autism: Mind, Brain, and Education,” for 29 undergraduate students, met with students upon request, determined final grades, created weekly PowerPoint presentations, generated class discussions, received “excellent” ratings from students reviewing the course

New York University

**Teaching Assistant to Professor Christina Reuterskiold**

Spring 2009

Responsibilities: Instructed the weekly lab component of the course “Language Disorders in Children,” met with 20+ graduate students upon request, graded written assignments.

AWARDS

Diversity Travel Award, <i>International Society of Autism Research</i> (\$1,000)	2015
Prize in Memory of Leigh Burstein, <i>UCLA</i> (\$1,000)	2014
Ursula Mandel Fellowship, <i>UCLA</i> (\$15,000)	2014 – 2015
Professional/Scholarly Conference Travel Award, <i>UCLA</i> (\$300)	2014
Diversity Travel Award, <i>International Society of Autism Research</i> (\$1,000)	2014
Division Fellowship, <i>UCLA</i> (\$5,000)	2013
Professional/Scholarly Conference Travel Award, <i>UCLA</i> (\$400)	2013
Division Fellowship, <i>UCLA</i> (\$20,000)	2012 – 2013
Graduate Summer Research Mentorship, <i>UCLA</i> (\$6,000)	2012
Professional/Scholarly Conference Travel Award, <i>UCLA</i> (\$300)	2012
Division Fellowship, <i>UCLA</i> (\$20,000)	2011 – 2012

MEMBERSHIPS

American Speech-Language Hearing Association (ASHA)  
International Society for Autism Research (INSAR)  
National Black Association for Speech-Language and Hearing (NBASLH)

VOLUNTEER WORK

National Alumnae Association for Spelman College, Los Angeles Chapter  
Chapter Vice-President

2009-present

*Duties:* fundraising for college scholarships for African-American women from the Los Angeles area via an annual scholarship event that raises an average of \$20,000; coordinating college fair representatives for the college throughout the Los Angeles area

## Introduction

### **Friendship and ASD**

Friendship development is critical to foster social connectedness to one's environment. Intimate friendships during childhood provide emotional support, information, and advice (Sullivan, 1953). Researchers have defined friendship as an emotionally intimate, reciprocal, and long-term relationship, while asserting that companionship, social engagement and a child's involvement with peers plays a central role in early development (Parker et al., 1995; Laursen, Bukowski, Aunola, & Nurmi, 2007). Pragmatic and social skills deficits that adversely impact friendships and social relationships are a core deficit of autism spectrum disorder (ASD). These deficits are further exacerbated in socially demanding environments such as school. As such, children with ASD have difficulties in establishing and maintaining friendships due to social skills deficits that impede their ability to relate to others. These children often miss the loyalty, intimacy and personal preference associated with friendships (DiSalvo & Oswald, 2002; Garfinkle & Schwartz, 2002). Despite their difficulties developing and maintaining friendships, children with ASD can have good comprehension of ideal friendship qualities and an understanding of loneliness (Bauminger, Shulman, & Agam, 2003); in fact, they report more loneliness than their neurotypical peers (Bauminger & Kasari, 2000). Findings support the argument that children with ASD want to have friends, in spite of their difficulties sustaining social interactions. Evidence suggests that these social difficulties can persist well into adulthood with findings that increased quality and quantity of friendships are associated with decreased feelings of loneliness, depression, and anxiety in addition to increased feelings of life satisfaction and self-esteem among adults with ASD (Mazurek, 2014). Given the significance of friendship

throughout the lifespan, research on the difficulties establishing and sustaining peer relationships early in life are warranted.

### **Difficulties in the classroom**

The Individuals with Disabilities Education Act (IDEA) establishes the rights of children with disabilities to an education in the “least restrictive environment,” essentially mandating inclusion whenever possible. Since the implementation of this law, schools have seen an increase in the number of children with ASD being assigned to general education classrooms alongside their typically developing peers. Such placements allow children with autism to receive the same educational opportunities as typical children, while the classroom environment also provides the opportunity for interaction with typical peer social models. However, since being in proximity to typical peers does not readily eradicate atypical pragmatic skills, schools are often unprepared to address the existing social skills deficits that result in children with autism having fewer friends in their classrooms. The majority of children with high-functioning autism (HFA) in inclusionary classroom settings have difficulty engaging in successful peer relationships (Kasari, Locke, Gulsrud, & Rotheram-Fuller, 2011). Constructs such as poor social reciprocity and interpersonal awareness, in addition to decreased companionship, acceptance, and social network connections have all been implicated as barriers to friendship development for children with autism (Chamberlain, Kasari, & Rotheram-Fuller, 2007; Rotheram-Fuller, Kasari, Chamberlain, and Locke, 2010; Bauminger et al., 2008). Findings suggest that children with HFA, in spite of language and cognitive strengths, continue to demonstrate social interaction failures that prevent them from being socially integrated into their classroom environment. In comparison to typical peers, children with ASD demonstrate significant differences in the quality and quantity of their

friendships (Bauminger, Solomon, & Rogers, 2010). Similar to typical populations, close friendships have been shown to be negatively associated with loneliness in children with ASD, while positively associated with confidence which is identified as a protective factor against bullying (Bauminger, Shulman, & Agam, 2004; Hebron & Humphrey, 2014). As evidenced by their own reports of being “lonely,” children with HFA in inclusionary classroom settings are at an increased risk for social isolation in comparison to their typical peers. Understanding barriers to developing friendships for children with ASD may shed light on children’s reports of loneliness and isolation at school.

## **Barriers to Friendship Development**

### ***Disability Barriers***

There are several known barriers to friendship development including disability barriers, homophily barriers, and propinquity barriers. Prior studies have examined the friendship development between typical students and their peers with learning disabilities. Madden and Slavin (1983) found that cooperative learning strategies employed in the classroom can reduce the number of social rejections by typical peers, but do not increase the number of nominations or friendships between typical students and their peers with learning disabilities. While reducing rejections is a critical improvement, the reasons for the lack of positive peer relationships are not clear. One reason may be that homophily matters. It appears that exposure to children with disabilities may make typical peers more tolerant, but does not necessarily serve to create genuine relationships.

Similar results are found in studies examining social relationships of children with ASD. When children with ASD report a good friend, they report poorer friendship quality compared to their typical classmates (Bauminger & Kasari, 2000; Locke, Ishijima, Kasari, & London, 2010;

Calder, Hill, & Pellicano, 2012). Reasons are not completely clear why this is the case, but it may be that friendships between typically developing children and children with disabilities is heavily directed by parents encouraging the interaction and friendships require ongoing parent support to sustain over time (Turnbull, Pereira, & Blue-Banning, 1999; Bauminger & Shulman, 2003). In attempting to develop relationships, the barrier of having a disability adversely impacts the success of children with autism in forming friendships with typical peers.

### ***Homophily barriers***

The literature on homophily, or the idea of sameness, asserts that mixed ASD and typical friendships are more challenging because, more often than not, children tend to seek out friends who are similar to themselves on a number of characteristics, including gender, ethnicity, and shared interests and experiences (Aboud & Mendelson, 1996; Clark & Ayers, 1992; Ennett & Bauman, 1996; Kupersmidt, DeRosier, & Patterson, 1995; Matheson, Olsen, & Weisner, 2007; Lee, Howes, & Chamberlain, 2007). Schools are identified as the ideal environment to develop diverse friendships because classrooms maximize the opportunity for children from various backgrounds to interact and form positive social connections (Hallinan & Teixeira, 1987) based on shared experiences in class and school. However, in spite of these opportunities in school, social networks tend to be homogeneous in respect to socioeconomic, racial, and personal characteristics and our friendship circles tend to be localized in limited geographic spaces that are often defined by similar sociodemographic characteristics (McPherson, Smith-Lovin, & Cook, 2001). Such physical closeness increases the likelihood of more shared experiences via increased frequency of social interaction. In fact, in less racially diverse school environments, minority students are more likely to seek out same-race friendship networks (Quillian &



Campbell, 2003). In such cases, students are further motivated to seek out sameness in a desire to find friends who are “like them.” Homophily findings among typical school-age children suggest that children with disabilities may have an additional barrier to establishing friendships with typically developing children because children with disabilities have another layer of difference that may cause them to be less sought out by their peers.

### ***Propinquity barriers***

Geographic propinquity is the idea that our closest friends tend to be geographically close to us. Evidence shows that proximity impacts not only who we meet, but also how often we see them, which contributes to friendship intimacy due to frequency of social interaction opportunities. Distance barriers have been explored in regards to the transition period between elementary school to middle school and middle school to high school, in addition to high school to college. Friendships can change radically during these periods because former friends may begin to move further away to attend different schools and form new social networks during the transition. Social networks of parents and children are more likely to be stronger the more local the school (Weller, 2007). Families who live locally to their school may have increased opportunities for social interaction outside of school, which contributes to stronger relationships based on shared experiences across a variety of settings and contexts. However, while propinquity has been explored among typically developing children, it has not been explored as a potential barrier for children with autism and their families.

### **Gap in the Literature**

Barriers to friendship development among typical children have been explored with respect to homophily and propinquity. Barriers to friendship development for children with ASD have mostly been investigated as a result of poor social interaction skills inherent in the disorder (Krasny, Williams, Provencal, & Ozonoff, 2003; Kerbel & Grunwell, 1998; Shaked & Yirmiya, 2003; Tager-Flusberg, 2003; Hale and Tager-Flusberg, 2005; Capps, Kehres, & Sigman, 1998; Paul, Orlovski, Marcinko, & Volkmar, 2009). Areas less researched for children with ASD have been barriers of homophily and propinquity. Knowledge of barriers to successful peer friendships for children with ASD is an area of critical importance because of the known connection between companionship and a positive experience within the school environment as social connections can serve as a protective factor against social isolation, bullying, and victimization (Rowley et al., 2012). A common challenge for children with ASD in inclusion settings is that they may not be educated in their neighborhood school. This issue of propinquity as a barrier to friendship development for children with autism has not been addressed in the existing research literature. The current study explores propinquity as an additional barrier to friendship development for children with autism using a mixed methods approach. Specifically, this study seeks to explore whether living further away from school presents an additional challenge to developing close friendships with classroom peers.

## **Methods**

### **Participants**

#### ***Quantitative Study***

The current study includes both secondary data analysis from a larger multisite, randomized control trial study aimed at improving peer engagement in under-resourced schools

in urban communities (Kasari, in progress) as well as new data collection on this population. The original study inclusion criteria were attendance at a Title I elementary school, placement in a general education classroom for at least 80% time, a diagnosis of autism as confirmed using the Autism Diagnostic Observation Schedule (ADOS; Lord, Rutter, DiLavore, & Risi, 1999) Module 3 for children with fluent speech, and an IQ of >65 determined by the Differential Ability Scales (DAS; Elliott, 1990) to rule out significant cognitive impairment. The purpose of the larger study was to improve peer engagement and social network centrality of children with ASD in inclusionary classroom settings by teaching playground staff a manualized, evidenced-based social skills intervention during lunch and recess.

For the quantitative data analysis for this current study, 37 children with ASD were included who were recruited at the UCLA site to participate in the original intervention study (19 students from Year 1 of the study and 18 students from Year 2 of the study). Of those children, a total of 5 were excluded from the secondary data analysis due to missing data (4 from Year 1 and 1 from Year 2), yielding a total of 32 participants included in the current study (15 students from Year 1 and 17 students from Year 2). Subjects were from 32 different general education classrooms in 12 different elementary schools within the Los Angeles Unified School District (LAUSD). The sample was racially diverse and nearly equally split between racial groups. Almost all students were male, which is consistent with the gender disparity in autism. Students ranged from 5 to 12 years of age with the average age being 8 years old. Students' distance from home to school ranged from 0.02 miles to 11.5 miles. Average distance from home to school was 1.63 miles with a standard deviation of 2.469 and just over 60% of students attending their home school (see table 1).

## **Participants**

### ***Qualitative Study***

Participants were recruited for follow up interviews by contacting parents who had participated in the larger quantitative study during the 2013-2014 school year and who indicated on their consent form to be contacted for future research studies. For the qualitative data analysis, of an available 17 participants, a final total of 10 parents consented to participate. Two participants could not be reached due to inaccurate contact information (e.g., disconnected phone numbers), one parent declined to participate, and four parents could not be reached, despite repeated attempts over the course of 4 months. Of the final 10 interviews conducted, 7 were completed in person and 3 via phone per parent request due to scheduling and availability issues. All in person interviews were conducted at a location and time selected by parents. Locations included parent homes, places of employment, and child school sites. Each interview utilized a discussion guide that contained broad, open-ended questions followed by more specific, probing questions to clarify and expand upon participant responses. Participants were asked about their perceptions of their child's friendship development.

Most parents were 30-49 years of age and were high school graduates or had obtained a GED. Two mothers reported that the child's father was deceased and data was not available. Nine of ten parents reported having other children at home in addition to their child with ASD. Number of children in the household ranged from 1-5 including the child with ASD with most parents reporting 2 children at home. The participants were racially diverse and nearly equally split among racial groups (4 African-American, 2 Asian, 2 White, 2 Hispanic). One interview was conducted in Spanish per parent request. All other interviews were conducted in English. All interviews were conducted with mothers with the exception of 1 father. Interviews ranged from

12 to 29 minutes with the average interview being 20 minutes. Half of the parent participants stated that their child's school of attendance was not their school of residence.

The children of the parents interviewed ranged from age of diagnosis from age 1 to age 9. The average age of diagnosis was 4 years old. The children received an average of 2 autism intervention services including services such as speech therapy, social skills, Floortime, and Applied Behavioral Analysis (ABA). Although all children qualified for a diagnosis of autism spectrum disorder using the ADOS-2 Module 3, their total ADOS-2 scores ranged from 8 to 22, indicating a variety differences in autism spectrum related symptom severity and expression (see table 2).

## **Measures**

### ***Quantitative Study***

#### *Friendship Survey*

Children completed a social network and friendship survey (Cairns and Cairns, 1994; Farmer and Farmer, 1996) that generated quantitative data on friendship groups and clusters in their school classrooms. The survey presented questions such as "Who do you like to hang out with in your class?" and "Who do you not like to hang out with in your class?" The social network survey yielded information on self and other reported friendships by analyzing the number of "out-degrees," nominated classroom peers identified as "friends" by children with ASD, and "in-degrees," nominations of the child with ASD identified as a "friend" by typical peers. The social network survey also produced information on the number of social connections or reciprocated friendship nominations. The survey was administered to the target child with ASD and to the consented classmates in his general education classroom.

This measure revealed discrepancies between desired friends (nominated and received), while assessing the number of social connections between the children with ASD and their classroom peers. Child surveys were coded for the number of “out-degrees” or nominated classmates as friends, “in-degrees” or classmates identifying them as friends, and reciprocated nominations. For example, if John nominates 4 friends in his class and 2 of those friends also nominate John as a friend, John is credited with 4 out-degrees and 2 social connections (reciprocated nominations). The survey revealed the active social networks in the classroom, exposing students who were strongly socially connected and students who were on the periphery, in addition to students who are frequently rejected by peers as non-preferred play partners by directly asking children who they do not like to play with at recess.

### *Playground Observation*

Direct observation was collected by a reliable coder using the Playground Observation of Peer Engagement (POPE; Kasari et al., 2005) to assess peer engagement during lunch and recess by a blind rater. The POPE is a timed interval observation on the playground that yields data on a child’s engagement in 6 different categories: solitary, onlooker, parallel play, parallel aware, joint engagement, and games with rules. Joint engagement and games with rules are considered high-level peer engagement states. POPE engagement states are shown in *Appendix 1*. Over the 15-minute observation, the POPE is used to determine the engagement state that the observed child is in for the majority of the time. For the current study, all data were analyzed from entry level measures at baseline and do not reflect treatment effects.

### *Distance*

Distance was calculated by exact miles from home to school as measured by *Google Maps*.

## **Measures**

### ***Qualitative Study***

#### ***Parent Perceptions Survey and Coding***

The *Parent Perceptions Survey* is a semi-structured interview designed for the purpose of this study aimed to generate discussion about friendships and obtain information directly from parents of children with autism about barriers to facilitating social opportunities and friendship development. Interviews were intended to take place for 20-30 minutes and were audio-recorded. Following the interview, the audio recordings were transcribed. Transcripts were then edited for accuracy to live notes taken during the interview. Two individuals, the author and one transcriber with no affiliation to the current study, read the transcripts to identify significant statements and coded the transcripts independently before comparing codes for consensus and developing themes. Inter-rater reliability was high (100%) with raters agreeing on all codes.

## **Data Analysis**

The current study employs a mixed methods design. The quantitative portion of the study is a secondary analysis of existing data from a larger study and dataset. Quantitative analyses were conducted first, and then qualitative analyses were collected to provide depth and a more complete picture of the phenomena of barriers to friendship development for children with autism. For quantitative analyses, Pearson correlations were calculated between distance from home to school and the number of out-degrees and in-degrees on the friendship survey, in

addition to mutual connections. Similarly, Pearson correlations were conducted between distance and high-level (e.g., joint engagement or games with rules) and low-level (e.g., solitary, observer, parallel, parallel aware) peer engagement on the playground using the POPE.

The qualitative portion of the study is from new data collection. Qualitative methods provide a systematic way of gathering in-depth information and allow the commonalities and discrepancies in individual perspectives to emerge. The purpose of the qualitative analysis was to understand the parents' views about the nature of the difficulties with providing social opportunities for their children with ASD. The method employed in the current study aligns with phenomenological research because it emphasizes the parents' subjective experiences and seeks to understand their experiences from their unique point of view. Interview questions were formed to quickly establish rapport, followed by a series of open-ended questions intended to ascertain parent experiences, opinions, feelings, and knowledge. The interview: (a) began with general and open-ended questions, (b) followed by developing codes, categories, and themes post data collection in order to form a reverse engineered hypothesis. The first stage of analysis involved line by line coding to reveal recurring themes and ideas within the parent interviews. From the recurring themes, categories were identified and supporting quotations were extracted to support each category and reinforce the validity of the theme. Two independent coders used grounded theory methodology by allowing ideas and patterns to emerge from the transcript data, rather than first hypothesizing findings (Charmaz, 2006; Dey, 1999). Upon discussing consensus for codes developed from the transcripts, the reliability of the qualitative themes were at 100% with no disagreements between the independent raters.

## **Results**



## ***Quantitative Data***

### *Playground Engagement*

Engagement states as measured by the POPE ranged from solitary to games with rules. Only 34.4% of the time were children actively engaged with their peers (joint engaged or games with rules). Solitary was the most frequent engagement state (31.3%), in addition to all low-level peer engagement states (more than 60%), which is consistent with known social skills deficits and peer engagement challenges for children with autism. Data was analyzed to run Pearson correlations to explore associations between peer engagement and distance. Analyses revealed no significant associations between the variables distance and low and high level peer engagement level as rated by an observer using the POPE ( $r = -.067$ ,  $r = -.181$ ) (see figure 1, 2).

### *Friendship Connections*

On the friendship survey, most children did nominate at least one friend in their class with only about 10% not nominating any peers. Only less than a quarter of the children were not nominated by any classroom peers as a friend (received no in-degrees). Most children had 0 reciprocated friendship connections, which was also expected given the known social skills and engagement deficits in autism. An equal amount of children had at least 1 mutual social connection. Most children (just over 70%) were rejected by at least 1 peer in their classroom. Data was analyzed to run Pearson correlations to explore associations between number of reciprocated friendships and number of nominations (in degree and out degree) and distance. Analyses revealed no significant associations between the variables of distance and number of mutual social connections ( $r = -.113$ ) or rejections ( $r = -.117$ ) as reported by peers using the Friendship Survey. However, a significant correlation was found between distance and the

number of out-degrees listed by children with autism ( $r = .785$ ). Children who lived closer to their school were nominating more friends, despite not having more social connections or peer engagement (see table 3).

### ***Qualitative Data***

Within the qualitative data sample, distance, age of diagnosis, and number of services had a strong positive relationship ( $r=.727$ ,  $r= .692$ ), although they were not statistically significant. Additionally, although not statistically significant, distance and more peer engagement demonstrated a strong positive relationship ( $r=.625$ ). Children who lived closer to school spent less time in a solitary engagement state than children who lived further from school.

### ***Resulting themes***

In comparing parent interviews to child responses on the ADOS 2, most parents (78%) were accurate in identifying whether or not their child had friends. Within the parent interviews, there were 20 identified codes that were categorized into five primary themes from analyzing the parent interviews: 1) propinquity; 2) varied attempts at social exposure; 3) common social problems in ASD; 4) siblings as a protective factor; and 5) parent involvement. Codes were consistent regardless of whether the child was attending a home school or a school outside of their school of residence.

### ***Propinquity***

Challenges of distance were an underlying theme repeatedly echoed by parent informants with all 10 participants communicating this theme. Comments were both positive and negative. Some parents who attended schools outside of their school of residence remarked that the distance from home was less important in comparison to attending a school with good teachers and resources for children with autism, indicating that quality of the school was often more important than distance. Negative comments related to the difficulty of maintaining connections with families who lived further away. Positive comments related to the benefits of participating in local programs with other families who lived nearby. One mom expressed difficulty maintaining parent to parent relationships after the family had to move out of their neighborhood. She said, “They [the kids] used to have sleepovers. And I’m in contact with X’s mom, but not as much as we used to.” Another mother expressed a similar sentiment regarding the difficulty of maintaining ongoing relationships in the midst of changes. When describing how the activities with the other parents changed since the families changed schools, she described, “We can’t do it as often . . . because everyone is on different schedules and everything, but I still talk to them.” She further explained,

We’re still friends to this day even though . . . we kinda split our kids up and went to different schools, but we’re still friends. We still talk. We still try to get together. Not as often, but we still try to keep them together, keep the kids together, whenever we can.

Another mom made a similar statement. She said, “I guess they [the kids] became friends. He still talks about it, but we haven’t seen him ever since the last day of school.” The mom explained by saying, “that area was out of my area.” When asked about how

her son socializes with his friends outside of school, she explained, “he hasn’t had really any playdates even though he talks about some friends all the time. It looks like everyone is from different areas.” When asked again about her son getting together with a classmate he identifies as a friend, the mom said, “He asks for it, but we don’t have the opportunity.” Another mother talked about one of the benefits of attending neighborhood programs is that most of the families will live nearby. She described a program as having “a lot of local students” so that her son was able to maintain a relationship he built in a summer program with another boy “especially since he lives close by.”

#### *Varied attempts at social exposure*

Similar to propinquity, all 10 parents reported some manner of actively attempting to facilitate peer interaction by keeping their children engaged in various organized social activities. Parents reported attempting both structured and unstructured activities. Examples included organized social skills programs, after school programs, going to park to play, karate, Boy Scouts, and Jujitsu class. One parent explained why she put her son into an after school program and said,

That’s what I want him to do. To start staying after school more so he can, you know, learn how to play with other kids more and try to get along with them.

Another mother explained almost the same sentiment when asked about after school programs she selected for her son. She said,

I want him to try to interact more, learn how to kind of fit in, how to stay on the subject of what everyone is talking about and what they’re doing.

In addition to providing social opportunities, some parents remarked how after school programs also helped with providing solutions for working parents. A mother mentioned an after school program that would watch her son until 6pm and offered him the opportunity to continue spending time with 2 peers from his class, who were also in the program. Parents reported seeking out activities that were both for teaching skills and potentially gaining friends. For example, one mother reported exploring activities that his peers do on weekends and after school to help increase social opportunities such as joining their swimming class. One parent said that she offers to walk kids who live in her neighborhood to school in the morning to give her son a change to talk to peers who go to his school and also live nearby. Another parent described arranging for her son to walk to school with a girl who lived next door and went to the same school. Despite walking together, she commented, “he won’t talk to her while they walk and they don’t hang out.”

### *Common social problems in ASD*

Nearly all parents (9 out of 10) reported on challenges that were related to social interaction deficits common in children with ASD. Primary challenges as expressed by parents included: initiating and maintaining friendships via conversation and play, taking on others’ perspectives, turn taking, following social norms, selecting age-appropriate activities and play partners, and the children demonstrating a preference for social isolation. One mother of a 4<sup>th</sup> grader reported that her son “walks away from kids. He’s not interested [and] wants to be by himself.” Another mother described her son as “an introvert [who] has to be pushed into doing things” socially. When asked about their child’s friends, several parents answered succinctly, “He doesn’t have any friends.” Many

commented that their sons engaged in age-appropriate activities such as computer, iPad, and video games, but they do not engage with peers. One mother said that her son has “no friends that visit” and he “prefers to play XBox alone.” Likewise, another mother said about her son, “he’s a little awkward . . . generally he likes to play by himself.” One mother described her son by saying, “he doesn’t maybe make effort to make friends, but he expresses the interest.” As one parent summarized,

the other kids think he’s weird. That’s the problem. There are a lot of kids that think that he’s weird. . . His strengths are that he’s friendly. He tries, but sometimes he takes the wrong steps . . . He sometimes does not fit in.

#### *Siblings as a protective factor*

Most families (9 out of 10) interviewed had at least 1 other child living in the home. Of those 9 families, 7 reported on the theme of siblings as a protective factor. Within this theme, age of the siblings appeared to be a contributing factor as to the nature of the relationship. Older siblings appeared to serve a shielding role as an extended parent. In contrast, siblings close in age appeared to serve as play partners. One mother described, “my oldest daughter. . . she’ll take charge. She’s playing my role.” Another mother said that her son’s older sister “became like a parent because my job changed so she would take care of him.”

She playfully described their relationship as “like Tom and Jerry.” Another parent said that her son’s older brother is a frequent play partner and the older brother’s friends will also interact with him. As such, typical siblings also appeared to serve as a gateway to increasing social interaction opportunities with other typically developing peers. The mom offered the following comment on her older son and her child with ASD:

The 11 year old, that's my other boy, they share a room and they play together all the time. They play video games against one another, challenging, and they also go to the same school. . . I've noticed that my 11 year old, his friends they know X [son with ASD] and they come up to him at school. I just love that. It makes me melt. They're like 'Hey X! What's up?!' I just love that. It's so cool.

As she described, her son's sibling was both a play partner and a protector. She further explained their relationship by saying,

I always tell him [the older brother] that like 'You are your brother's keeper. You see him [son with ASD], you make sure you acknowledge that it's your brother. . . I tell him that 'Never be ashamed of your brother. You are a unit.

In one case, the parent reported having another child with autism and comparing the two brothers. The parent expressed little concerns regarding friendship development because his son appeared happy and often talked about his classmates, despite no reported playdates or social interaction outside of school with his "friends" from his class. When asked about his son's challenges with making friends, the parent responded,

He's actually pretty good at that. It's his brother cause his brother got the *autism* autism, so his brother is the one that hangs out with nobody or anything.

### *The importance of parent involvement*

Half of all parents remarked on the importance of creating or joining networks of support for both themselves and their children to address social challenges. Within the theme of parent involvement, parents commented on both the presence and absence of an available network, as well as the difficulty with sustaining such networks. Parent comments were both positive and

negative in regards to networks, which served to reflect how they perceive the importance of parent involvement. As stated by one mother, her child “did so well because of the tight knit network” at the school. Another parent commented,

We had a little support group that we started with me and four or five other moms and their kids. . . It was like the moms and the kids on Wednesdays. We would hook up and go to the park or pizza parlor. We would go to the movies or the museum. . . . Most of them [kids] had special needs except for one. . . It just kinda gave them a friendship circle. It made it to where it’s like at school and they could really look for that person, you know what I mean? If they wanted to talk or wanted to play or if they had to have partners or something, then they can be like, ‘Oh, I can be with *that* person.’

Parents commented on the challenges of maintaining parent support networks. The same mother reflected,

It was funny because it seemed like it just started trickling down. . . It’s like this thing where each week someone else is like dropping out. They don’t want to do it anymore, so now, generally, after school we just go home.

One mother commented on her conscious efforts to extend herself to other parents. She reflected,

Because I really wanted him to have friends. Like I really wanted him to have long lasting friends, so I figured if I became friends with particular moms and we were compatible and it worked out, then I figured that our kids would still be friends.

Other parents talked about parent networks in terms of the absence of a salient network. One mother related that her son had made some connections with some age-matched peers in a



YMCA basketball class, but the parents “didn’t exchange any numbers or anything,” so the children did not see each other after the program ended. Another mother reported, “I try to go to school . . . before I go to work, but I don’t see anybody else. . . not so much parents are involved in that classroom.” In regards to connecting with parents, one mother of a 1<sup>st</sup> grader said,

I don’t see them [other parents] in after school events. They may be active in the class, but they’re not an active family. . . I’ve never seen them at assemblies. If they have extracurriculars, I’ve never seen them waiting with the kids. We invited a couple of them to a birthday party. No response. Like you know, whatever. Maybe it’s just a cultural difference. Maybe they work. I don’t know. I have no idea. So I’ve kinda given up on that.

## **Discussion**

This study used mixed methods to better understand the complexities of friendship development in children with ASD in their school environment. While it was hypothesized that one barrier to developing friendships might be attending a non-neighborhood school, this association was not strong in the sample. However, results suggested that, while children who lived closer to school were not developing more friendships, they were identifying more classmates as friends. This finding may be related to children having more direct and indirect contact with those peers from school who also live in their neighborhood. Though not statistically significant, there was a strong positive association between distance from school and being less solitary on the playground. Overall, both the quantitative and qualitative data suggested there were more significant challenges than attending a non-neighborhood school for children with ASD in developing friendships.

First, most children listed at least one friend and just under a quarter of children had no mutual social connections. Children were observed to be isolated on the playground more than a quarter of the time, with the majority of the time (more than 60%) in passive roles of engagement (solitary, parallel, parallel aware, and onlooking). Only 34.4% of the time were children actively engaged with their peers. Similarly, parents reported that their children often actively disengaged or avoided their peers, walking away from them rather than engaging with them in play. Additionally, many parents reported that their children had difficulty following social rules such as following the rules of a game or maintaining a topic of conversation, which may have also contributed to their difficulty maintaining high-level peer engagement, despite reports of having a friend at school.

Consistent with findings providing evidence of difficulty with social interaction, most parents mentioned their children's social challenges by referencing social skills deficits commonly found in ASD. Specific pragmatic language impairments common in ASD include: difficulty establishing and maintaining eye contact, difficulty turn-taking in conversation, failure to take the listener's perspective (e.g., theory of mind), poor speech prosody, difficulty expressing and understanding emotions, and difficulty interpreting figurative language (Krasny, Williams, Provencal, & Ozonoff, 2003; Kerbel & Grunwell, 1998; Shaked & Yirmiya, 2003; Tager-Flusberg, 2003). More common deficits include: the use of non-contingent utterances, ability to respond to questions and comments appropriately or properly extend conversations by offering relevant personal narratives, demonstration of topic management, intonation, reciprocity in conversation, and eye gaze (Hale and Tager-Flusberg, 2005; Capps, Kehres, & Sigman, 1998; Paul, Orlovski, Marcinko, & Volkmar, 2009). Several parents commented on these areas when describing their children. They described their children as "stubborn," "rigid," "self-centered,"

and “weird,” while also mentioning that their children had difficulty “initiating” and “maintaining” conversation, “approaching” peers, “following the rules” in games, and “staying on the subject.” Additionally, parents either explicitly or implicitly stated that the topic of socialization is an emotional topic for them because they recognized that their child did not have friends. Given that all the children were in inclusive academic settings without intellectual impairments and demonstrated verbally fluent speech, these statements of socialization being a sensitive issue for parents supports research that social skills is often a persisting area of deficit for children with autism even after optimal outcomes. Although research shows that children with ASD do want friends and report being more lonely than their typical peers (Bauminger & Kasari, 2000), some parents interpreted their children’s poor social skills as lack of interest in friendships. Other parents related that their child appeared to desire friends, but lacked the social aptitude to be successful.

As a result, parents tried many strategies for helping their children make friends. All parents reported trying a variety of programs to directly or indirectly address social interaction. Results were varied, but parents overall reported significant persistence and grit, despite frequent reports of less than optimal outcomes in response to different types of programs. In addition to attempts to facilitate social opportunities in organized group activities like sports and within daily routines like walking to school with peers, many parents also reported participating in structured programs intended to directly target socialization for children with autism such as social skills groups, recreational therapy, and ABA. The variety of programs reported by parents, both structured and unstructured, illustrates that parents are indeed aware of their children’s deficits and are actively

pursuing methods to provide opportunities for their children to socialize with their peers in an effort to improve their ability to make friends.

In addition to exploring a variety of social opportunities for their children, family structure emerged as another identified theme. Nine of the ten families had at least one other child living at home in addition to the child with ASD. More than 75% of those families reported on issues surrounding siblings. Several families reported that their child did not have friends from school or outside activities; instead, their play partners were restricted almost exclusively to family members like brothers or cousins who were close in age. Siblings appeared to serve as a protective factor for a number of reasons. Older siblings seemed to serve an additional parental role, while siblings close in age, and the siblings' friends, served as frequent play partners. Additionally, in comparing siblings where both had a diagnosis of autism, a child might appear much less impacted by comparison to a sibling with more severe symptomology.

Propinquity did come up in interviews with parents. Propinquity was a theme commented on by all parents, indicating the important role that distance plays in preserving social relationships. Parents remarked about the challenges of maintaining relationships and networks after moving or changing schools, in addition to commuting or out of area issues in their children's ability to make friends. For example, they commented on the added hassle of attending schools far from their homes such as putting their child on the bus very early to get to school. Parents who expressed challenges with propinquity mostly expressed attending a school other than their school of residence due to wanting particular autism specific programs, smaller class sizes, or better school environments. While such parents mentioned difficulties regarding distance barriers, they also appeared to prioritize the quality of the school and its benefits against the hassle of

extended commute times. In contrast, parents who attended their home schools commented on the ease of short commutes. Parents with other children discussed the need to have siblings placed at the same or nearby schools in order to coordinate schedules.

Lastly, interviews revealed that parents had much to say about social networks among parents as a means to connect their children to other children. Several parents mentioned the presence or absence of a feeling of class and school community and its impact on their ability to facilitate unstructured social opportunities for their children with peers outside of school or involvement in organized activities. Prior research on parent networks in schools relates predominantly to issues of class and socioeconomics as it is associated with the relationship between schools and parents (McGhee-Hassrick & Schneider, 2009; Horvat, Weininger, & Lareau, 2003). According to prior research, parent networks were strengthened by active involvement of both children and parents in school culture, suggesting that perhaps the school administration could help parents make connections by facilitating ways for families to become more integrated in the school environment. Additionally, results from the current study revealed how being friends with other parents helped their children to maintain friendships, while also assisted with sharing responsibilities such as commuting to and from school. Strong parent connections appeared to serve a dual purpose of both fostering child interactions and facilitating parent support. Within the theme of building a network, parents commented on an underlying barrier to helping their children develop friendships; the parents themselves had to develop friendships with other parents. For elementary school students to develop friendships with classmates outside of school, parent facilitation is key. Without the parent connection, children were unable to remain in contact with peers they had developed relationships with. As illustrated

by the qualitative analyses, child relationships cannot be maintained without established relationships between parents. Without a connection between caregivers, social opportunities with peers outside of established settings like schools and organized activities will not be available. Mothers mentioned the difficulty regarding a lack of an available network or feeling of community in regards to its impact on being able to facilitate play dates.

One limitation to the current study is the small sample size (N = 32 for the quantitative analysis; N = 10 for the qualitative analysis), which restricts the ability to generalize findings to the larger population. There was not a statistically significant relationship between distance and high-level peer engagement or social connections with peers in the classroom. This finding could have been impacted by the limited variability of peer engagement among the group as a whole since most children demonstrated low-level peer engagement. It may have also been impacted by the number of social rejections with most children being rejected by at least one peer, likely due to the known deficits in social interaction skills for children with autism. Additionally, findings might have been impacted by the lack of reported friendships overall and because most children in the sample did live close to their school.

Parents echoed similar sentiments in their interviews regarding their challenges in providing social opportunities for their children with ASD. While all of the children were enrolled in Title I LAUSD schools, specific socioeconomic data about each family was not collected. Additionally, information was not collected about individual family support networks, which may serve as a protective factor for families in regards to propinquity barriers.

Despite these notable limitations, analyses offer interesting insights into potential intervention directions. Collective findings indicate that propinquity is a factor for parents as several parents referenced distance barriers in regards to challenges facilitating social

opportunities and friendship development for their children. Parents of children with ASD often find themselves having to engage in more active strategies to help their children develop social skills and friendships than parents of other children. Findings from this study suggest that parents of children with ASD are facing significant challenges in their efforts to meet their children's social deficits, despite ongoing persistence. Certainly, there were many noted acts of resilience and creativity on the part of parents when it came to addressing issues of friendship development for children with autism. Results support that families would benefit from opportunities for social skills training within their daily routines as many parents reported challenging commutes to obtain necessary services for their children. Given parent reports, it appears that after school services that offer extended social opportunities on site would be welcomed solutions.

Additionally, the theme of the importance of parent networks aligns with research suggesting the need to re-conceptualize the manner of parent involvement and communication at school. Well connected parent networks may serve to provide children with increased social opportunities due to increased parent relationships. While research often targets direct and indirect intervention for children with autism, there is less research directed at fostering parent and family connections in an effort to increase peer engagement and social engagement opportunities for children with ASD. This less explored area could be an interesting direction for future research and would directly respond to challenges voiced by families of children with ASD.

## Appendix 1

<b>Engagement States as coded on the <i>Playground Observation of Peer Engagement (POPE)</i></b>	
<b>State of Peer Engagement</b>	<b>Description</b>
Solitary	Child is alone and not involved with peers
Onlooker	Child is observing peers, but not engaged
Parallel	Child is engaged in a similar activity with a nearby peer, but there is no overt social behavior
Parallel Aware	Child and peer are engaged in a similar activity and mutually aware of each other
★ <i>Joint Engagement</i>	Child and a peer are demonstrating overt social behavior via conversation and/or turn taking in an activity
★ <i>Games with Rules</i>	Child is engaged with peers in a structured, organized game with clear rules and expectations of behavior
★ <i>Indicates a high-level peer engagement state</i>	



## Appendix 2

### *Parent Phone Interview*

My name is Belinda Williams and I am a graduate student from UCLA conducting research to find out information from parents of children with autism about challenges their children face with developing and maintaining friendships with peers. Your participation in this research is voluntary. If you agree to participate, I will ask you a few questions about how your child makes friends and socializes outside of school. It shouldn't take longer than 20-30 minutes. I will be taking notes and recording this interview to help me remember your responses after this conversation, but I want to stress that all of your responses will be confidential and that your answers will not be shared with any of your personal identifying information. ***Would you like to participate?*** Great. Thank you for agreeing to speak with me to share your experiences. Let's get started. Again, I am a graduate student at UCLA and I am conducting phone interviews with parents of children with autism who participated in a prior research study at school. I'm interested in finding out more about parent perceptions of friendships between their children and their peers.

#### *Background Questions:*

Does your child have siblings?

Do these siblings go to the same school as your child?

What do you think were the most important factors in determining where your child went to school?

What does your child enjoy doing on his free time when he's not in school?

Who does your child play with most when he's not in school?

How does your child know these playmates?

What do you think is your child's greatest strength when it comes to making friends?

What do you think is your child's greatest weakness when it comes to making friends?

What things do you do to help your child make friends?

What do you think are the challenges to your child making friends?

*Knowledge Questions:*

What services are available to help your child make friends?

Who is eligible for these services?

What are the characteristics of children who participate in these services?

*Distance Questions:*

Do you feel your child's school is far from your home?

Do you think traffic and/or distance prevents you from participating more in after school activities?

Thank you so much for taking time to answer these questions. ***Is there anything I missed or anything you would like to share? Do you have any questions for me?*** Thank you again and have a good day.

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