EFFECT OF COLLABORATIVE PLANNING FOR AN ACTIVITY-BASED APPROACH TO EARLY INTERVENTION FOR CHILDREN WITH AUTISM SPECTRUM DISORDERS ACROSS SCHOOL AND HOME ENVIRONMENTS

by

MARISA J. SALAZAR
B.S. University of California, San Diego, 2006
M.Ed. Florida Atlantic University, 2007

A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
in the College of Education
at the University of Central Florida
Orlando, Florida

Summer Term
2011

Major Professor: Lee Cross

ABSTRACT

As the prevalence of autism spectrum disorders (ASD) continues to rise, families and educators are challenged with providing intensive, evidence-based practices in the least restrictive environment. Evidence exists for a variety of effective intervention approaches. Selection of appropriate interventions requires consideration of the individual needs of the child and family. An activity-based approach to early intervention combines strategies from a variety of evidence-based practices and allows for intensity of instruction through distributed opportunities for practice. Brief teaching interactions are elicited within the context of typical routines and activities throughout the day. Thus, intervention can be provided in inclusive classroom settings as well as at home, without disrupting the ongoing activities and routines. The purpose of the study was to determine the effects of collaborative planning for an activity-based approach to early intervention for children with ASD across school and home settings. Dependent measures included the combined rate of learning opportunities delivered by the teacher and parent across settings as well as the combined rate of the child's correct demonstrations for an Individualized Education Plan (IEP) goal. Teacher and parent perceptions of the value and effectiveness of collaborative planning for an activity-based approach to early intervention were also assessed using pre- and post-survey responses as well as information from a final interview.

Participants were a preschool-aged boy with ASD, his mother, and his preschool teacher. A single subject, multiple-probe design was selected to analyze the effect of collaborative planning for an activity-based approach to intervention for a young child with ASD across school and home settings. The teacher and parent selected three matched routines that typically occur both at school and at home as the context for embedding activity-based learning opportunities to

address a selected IEP goal. Results indicated that following collaborative planning meetings for each of the routines, there was both an increase in the collective learning opportunities delivered at school and at home, as well as a simultaneous increase in child outcomes for the targeted IEP objective in both settings. Responses from the teacher and parent pre- and post-surveys and final interviews provided social validation for the ease and practicality of collaborative planning for activity-based intervention. Both the teacher and parent felt confident in supporting the child's IEP goal within the context of typical daily routines. The teacher also expressed that the collaborative planning helped her to really focus on the child's individualized goal. Furthermore, both the teacher and the parent affirmed the intervention's potential for generalization.

Collaborative planning to embed children's goals within the context of typical routines both at school and at home allowed for a collective increase in learning opportunities and related child performance on an individualized goal that may not have otherwise been possible. By including the parent as an active an equal decision maker in the educational planning process, intervention at school was enhanced and carried over into the home. The use of collaborative planning for activity-based intervention with both the teacher and the parent strengthened the power of instruction for an IEP goal by providing multiple and varied learning opportunities throughout the day and across settings, ultimately increasing child outcomes.

To Luis and Amaya

For your unconditional love and infinite encouragement.

ACKNOWLEDGMENTS

This research project would not have possible without the dedicated involvement from the family and teacher who participated. Their commitment both to the study and to the child's development was invaluable. I appreciate their willingness to open their lives to me and share their family and classroom routines.

To Lee Cross, my research chair, thank you for your unending guidance and support. You were always ready to help with whatever questions and challenges that came up along the way. Your mentorship has meant so much to me, both within the dissertation process and beyond. To my committee members: Wilfred Wienke, Cynthia Pearl, and Teresa Daly, thank you so much for the time you have dedicated and for all of your guidance in helping me to realize my goals. You have always advocated for my success. I view you each as friends, colleagues, and lifelong mentors.

To Project LEAD, thank you for believing in me in my pursuit of a doctoral degree in exceptional student education. To my cohort, who has been their every step of the way, I can't express how much your friendships mean to me.

To my loving husband and family, thank you for always believing in me and inspiring me to be a lifelong learner. Your devotion, encouragement, and support continue to help me in achieving my personal and professional dreams.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER I: INTRODUCTION

Federal legislation relating to early intervention for young children with autism spectrum disorders (ASD) has evolved significantly and continues to change as a reflection of the concerns and priorities of society. Two historical pieces of legislation that most significantly impacted early intervention are the Education for All Handicapped Children Act (EHA), reauthorized in 1986 (PL 99-457), and the Individuals with Disabilities Education Act of 1990 (PL 101-476). The reauthorization of EHA in 1986 introduced the need for early intervention for infants and toddlers and established the Individualized Family Support Plans (IFSP): a legal document identifying family-centered learning objectives as well as the supports and services to be provided. The development of the IFSP emphasized the critical role of the family in the intervention process. Four years later, EHA was renamed the Individuals with Disabilities Education Act (IDEA). With this reauthorization, autism was introduced as a separate category for special education eligibility. Explicit legal acknowledgment of autism as its own unique special education category, combined with the growing prevalence rates of autism, facilitated an increase in awareness and support for young children with autism spectrum disorders and their families.

Autism spectrum disorders (ASD) are characterized by pervasive impairments across three core domains of development: (1) communication, (2) social skills, and (3) restricted, stereotyped patterns of behavior (4th ed., text rev.; DSM–IV–TR; American Psychiatric Association, 2000). Developmental deficits are often apparent and reliably diagnosable as early as 24 months of age (Stone et al., 1999; Woods & Wetherby, 2003; Zwaigenbaum et al., 2009). ASD is a lifelong disorder with no identified etiology or cure. This pervasive disorder affects quality of life by impairing one's ability to communicate ideas and feelings, interact with other

people, and understand what others think and feel (National Research Council, 2001). Researchers agree that early intervention is essential for children with autism because the most substantial gains are seen with intensive early treatment (Lovaas, 1987; McGee, Daly, & Jacobs, 1994; National Research Council, 2001, Strain & Cordisco, 1994; Woods & Wetherby, 2003). Autism is termed a spectrum disorder because it is characterized by a wide range of functioning. Children with ASD are heterogeneous in their behavior, unique preferences, interests, and learning styles. As a result, no single intervention approach has been proven effective for all young children with ASD (Iovannone, Dunlap, Huber, & Kincaid, 2003; Prizant & Rubin, 1999). Instead, evidence exists for a multitude of intervention approaches (Prizant & Rubin, 1999; Rogers, 1999; Simpson, 2005). Selection of intervention approaches and subsequent implementation should reflect existing evidence-based recommendations for practice.

The Council for Exceptional Children's (CEC), Division of Early Childhood (DEC) recommends intervention practices for all young children with exceptionalities be child-focused, family-based, and transdisciplinary (Sandall, Hemmeter, Smith, & McLean, 2005). Looking more specifically at young children with ASD, Iovannone and colleagues (2003) identified a variety of effective practices. Six essential recommendations for practice were identified as critical for effective educational programming for young children with ASD: (1) individualized supports and services for students and families, (2) systematic instruction, (3) comprehensible and/or structured environments, (4) specialized curriculum content, (5) a functional approach to problems behaviors, and (6) family involvement. Other areas that were considered important included earliest possible intervention, intensity of engagement, developmentally appropriate practices, and intervention in natural settings (Iovannone et al., 2003). For preschool aged children, natural settings include daily routines and activities with family members and typically

developing peers in the home, school, and community. Within the identified guidelines for practice, evidence exists for numerous intervention approaches and effective strategies.

An activity-based approach to early intervention applies and embeds strategies from various evidence-based interventions within the context of typical routines and activities. Naturalistic approaches that embed instructional opportunities and intervention strategies within existing routines are effective in promoting child motivation to learn as well as generalization, maintenance, and spontaneous use of acquired skills (Koegel, Camarata, Koegel, Ben-Tall, & Smith, 1998; Koegel, Koegel, & Surratt, 1992; McGee, Krantz, & McClanahan, 1985; Pretti-Frontczak & Bricker, 2004). An activity-based approach to early intervention uses the principles of applied behavior analysis to support child interactions and participation in meaningful daily activities with the specific goal of assisting the child in acquiring, generalizing, and strengthening functional goals and objectives (Pretti-Frontczak & Bricker, 2004). Components of the various evidence-based intervention practices for children with ASD can be embedded within the context of child-directed routines or planned activities to provide children with multiple and varied learning opportunities to address functional and generative goals. This embedded intervention process addresses children's target goals within natural contexts in a manner that expands, modifies, or is integral to the activity or event in an authentic way. Furthermore, children's responses and interactions are followed with immediate, natural, and contingent feedback or consequences. Planning for activity-based intervention is structured within an activity matrix, which explicitly breaks the intervention down into the context of specific daily routines. Rather than providing instruction in isolated units, intervention is delivered through brief teaching episodes that provide distributed practice throughout the day within meaningful contexts.

Both caregivers and early childhood educators can effectively deliver activity-based early intervention to support the individual and developmental needs of children with ASD. However, designing and embedding meaningful learning opportunities throughout the day requires support for explicit planning. Models for planning embedded learning opportunities or routines-based intervention focus on the development of activity matrices, which break down strategies to address each goal across daily activities and routines (Filler & Xu, 2006-2007; Grisham-Brown, Hemmeter, & Pretti-Frontczak, 2005; Sandall & Schwartz, 2008). When developing an activity matrix to organize and plan for activity-based interventions, educators and caregivers are guided in identifying learning opportunities and selecting effective strategies that can be embedded across a variety of child-initiated, routine, and planned activities to address the child's functional and generative goals (Pretti-Frontczak & Bricker, 2004).

Intervention is likely to be more effective when parents and teachers work collaboratively to support the child across settings (Bailey et al., 2006; Sandall et al., 2005; Turnbull et al., 2007; Pretti-Frontczak & Bricker, 2004). Educators and caregivers can work together to identify meaningful learning opportunities embedded within the context of both school and home routines. Existing research has supported both teacher-implemented and parent-implemented activity-based interventions. However, little is known about the combined impact of collaborative planning for activity-based intervention.

It is expected that by bridging the child's instruction across the teacher and parent in the school and home, a consistent and cohesive approach to support child skill acquisition, generalization, and maintenance is optimized. Parents "can best help their children succeed in school when they know how to foster and connect the learning in the home environment with the learning in the school" (Vopat, 1994, p.8). Thus, the purpose of the study is to examine the

combined effect of collaborative planning for an activity-based approach to early intervention for children with ASD on adult delivery of learning opportunities and subsequent impact on children's individualized educational objectives when an activity matrix is used to plan across school and home settings.

Significance of the Study

More and more young children with ASD are being served in inclusive early childhood settings. A recognized challenge of serving young children with disabilities in inclusive classrooms is the difficulty in identifying the contexts, settings, and environments that support optimal access to a variety of meaningful learning opportunities (Cross, Salazar, Dopson-Campuzano, & Batchelder, 2009). McBride and Schwartz (2003) found that when preschool educators were successful in delivering an increased rate of learning opportunities, there was a subsequent increase in child demonstration of targeted learning objectives. Similarly, Kashinath, Woods, and Goldstein (2006) found that as parents successfully implemented activity-based learning strategies within the home setting, children demonstrated improvement in targeted skills. Thus, the potential for increased learning opportunities and subsequent increase in child performance is expanded as intervention is provided across both the school and home settings. The current study proposes an intervention approach that offers young children with autism spectrum disorders a child-focused and family-centered intervention model that supports a collaborative planning process among parents and teachers to provide an activity-based approach to early intervention within the natural context of typical routines and activities in both the home and school settings.

Although there is general consensus on the positive impact of developing collaborative partnerships between the home and school, current practices and beliefs in collaboration remain

varied (Bailey et al., 2006; Blue-Banning, Summers, Frankland, Lord Nelson, Beegle, 2004; Dinnebeil, Hale, & Rule; 1996; Turnbull et al., 2007). Hirsto (2010) categorized early childhood educator practices in collaboration into three domains: (1) strategies representing parents as the recipients of information, (2) strategies representing two-way communication, and (3) strategies representing parents as decision makers and resources in the elaboration of learning. Responses from a survey of 365 early childhood educators indicated that the strategies most often used to foster collaboration represented parents as recipients of information followed by strategies representing two-way communication, while the most rarely used collaborative practices included parents as decision makers and resources in the elaboration of learning. The proposed model for collaborative planning for an activity-based approach to early intervention supports early childhood educators in family-centered practices that represent parents as equal decision makers and active participants in supporting their child's learning. With collaborative planning, activity-based intervention (ABI) allows both educators and parents to provide young children with ASD with opportunities to increase the intensity of instruction within the context of typical routines and activities in their respective settings.

Research Questions

This study will address the following research questions:

1. Is there an increase in the rate of collective ABI learning opportunities provided by the teacher and parent for the identified IEP objective following collaborative planning meetings for activity-based intervention in the school and home?
2. Is there an increase in the child's demonstration of the targeted IEP objective in the classroom and home settings following collaborative planning meetings for activity-based intervention?

3. How do parents and teachers perceive the value and effectiveness of the collaborative planning meetings for activity-based intervention in the school and home?

Methodology

A single subject research design was used to address the proposed research questions (Kazdin, 1982; Tawney & Gast, 1984). A teacher-parent-child triad was selected for participation in the study.

The study consisted of the following phases: (a) recruitment of participants, (b) pre-intervention (goal selection and identification of typical routines), (c) baseline, (d) intervention for routine 1, (e) intervention for routine 2, (f) intervention for routine 3, and (g) post intervention interviews. If observed behaviors had not been responsive to the intervention in any of the phases d-f, an alternate phase that provided the parent or teacher with direct coaching and immediate feedback would have been introduced. Pre-intervention, collaborative planning meetings for interventions for each routine, and post intervention interviews were conducted in the preschool setting. However, data were collected in both the classroom and home settings. Data were collected in the context of three typical classroom and home routines or activities.

Three collaborative planning meetings using an activity matrix designed to plan opportunities for embedding instruction for an IEP goal within the context of daily routines and activities in the school and home settings served as the independent variable. Dependent measures included observational data of the rate of delivery of ABI learning opportunities provided by the teacher and parent as well as child demonstration of the selected IEP goal. Learning opportunities were defined as a three-component process: (1) ABI instructional strategy, (2) target behavior, (3) and consequence. Web-conferencing was used to facilitate and

record observations within the context of each routine. For a summary of research procedures, see Appendices D and E.

A multiple-probe design across matched routines was used to evaluate the effects of collaborative planning for activity-based intervention (Horner & Baer, 1978; Kazdin, 1982; Tawney & Gast, 1984). Support through collaborative planning meetings addressing the IEP goal across each of the three selected routines was introduced over time in a staggered fashion. Visual analysis of outcome data as well as the percentage of nonoverlapping data were used to determine the effects of collaborative planning for an activity-based approach to early intervention for young children with ASD across classroom and home environments (Kazdin, 1978; Scruggs & Mastropieri, 1998). In addition to the observational data, pre and post interviews on teacher and parent perceptions were analyzed to measure social validity.

Limitations

The following section describes anticipated limitations of the proposed study. A single subject research design was purposefully selected to examine the effects of the intervention at the individualized level (Horner et al., 2005). However, the small sample size of one teacher-parent-child triad may limit the representativeness of the wide range of learning styles that are characteristic of young children with ASD, reducing the ability to generalize results to larger groups of children with ASD.

All research activities were conducted at a single charter inclusive preschool school in central Florida. The staff and administrators' willingness to partner with the university and inclusion of students with and without disabilities made this location an ideal site for participation. However, the majority of classrooms at each of this agency's individual sites serve a higher percentage of students with disabilities. The unique ratio of students limits the ability to

generalize findings to other inclusive preschool settings serving differing ratios, where the majority of students are typically developing.

An additional limitation for future practical implementation relates to the selection of a single IEP goal targeted for intervention. Young children with ASD who are eligible for individualized educational planning typically have several goals that are expected to be targeted simultaneously. Because this study only targets a single goal, it is unknown how well the collaborative planning intervention package would generalize to simultaneous targeting of multiple goals. Furthermore, observations of interactions relating to the IEP goal were limited to the three routines that were planned for. Although additional learning opportunities and correct demonstrations of the IEP goal may have occurred outside of the three routines selected for planning intervention, time constraints placed on conducting research in applied settings often prevent the researcher from observing every relevant activity (Hemmeter, 2000).

The data collection method may have posed further limitations. Observational data was collected via recorded web-conferencing sessions. The variability in parent and teacher comfort level and familiarity with technology may have influenced effective data collection. The time and effort needed to set up and connect to each web-conferencing session may disrupt the typical routine. It is also possible that parents and teachers may have become nervous while being observed and recorded while interacting with the child. Similarly, the child's performance within each routine may have also been influenced by the presence of the web-camera. A multiple probe design was in part selected to reduce the possible disruptions to the typical classroom and home routines that may result from the frequency of recorded observations.

Definition of Terms

Activity-Based Intervention (ABI): Activity (and/or routine) -based intervention is a child-directed, transactional approach that embeds intervention on children's individual goals and objectives in routine, planned, or child-initiated activities. The intervention uses logically occurring antecedents and consequences to develop functional and generative skills. Instruction is structured into brief teaching episodes and authentic interactions that expand upon existing activities in a meaningful way (Pretti-Frontczak & Bricker, 2004).

ABI Learning Opportunity: A behavioral cycle including three parts: ABI instructional strategy, behavior or child response, and consequence.

ABI Instructional Strategy: Adult engagement in naturalistic ABI strategies to elicit engagement in the target behavior. ABI strategies include: (a) contextual support or following the child's lead, (b) responsive interactions, (c) environmental arrangements, (d) time delay, (e) modeling and requesting imitation, (f) prompting and fading, and (g) interspersing maintenance and acquisition tasks (See table 2 for basic definitions). Although ABI strategies can be combined, a minimum of one ABI strategy must be present to be considered a complete ABI learning opportunity.

Behavior: Within the ABI learning cycle, the child's behavior may include no response, an incorrect response, or correct demonstration of the target behavior as defined within the selected IEP objective.

Consequence: Immediately following the child's engagement in the desired behavior, the adult will provide a consequence that is natural and directly related to the behavior. A consequence is immediate when delivered within three seconds following the child's response.

Activity Matrix: Planning tool designed to target goals within the context of typical routines. The matrix typically lists goals along one axis, routines along the other axis, and strategies or learning opportunities provided within the cross-sections (Filler & Xu, 2006-2007; Pretti-Frontczak & Bricker, 2004; Sandall & Schwartz, 2008).

Autism Spectrum Disorders (ASD): Term used to describe 5 related neurological disorders: Autistic Disorder, Asperger syndrome, Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS), Rett Syndrome, and Childhood Disintegrative Disorder. ASD is a pervasive developmental disorder defined by marked impairments in communication and social interaction as well as restricted, repetitive, and stereotyped patterns of behavior, interests, and activities (4th ed., text rev.; DSM–IV–TR; American Psychiatric Association, 2000).

Collaborative Planning Process for ABI: Researcher supported interactions between a teacher and parent to plan for instructional learning opportunities that can be embedded within the context of typical routines or activities in the school and home settings. The purpose of planning meetings is to develop an activity matrix and generate specific examples for embedding learning strategies to address an IEP objective within selected routines.

Naturalistic Interventions: Collection of practices, strategies, and intervention techniques based on the principles of applied behavior analysis that are provided in typical routines and activities or settings that are typical for the child's same age peers without disabilities.

Routines: Regularly occurring activities or interactions that can provide the context for meaningful learning opportunities. Examples of classroom routines include circle-time, direct teaching centers, outdoor play, and lunch. Examples of home routines include getting dressed, playing with siblings, story time, mealtimes, and bath time.

CHAPTER II: LITERATURE REVIEW

Legal Foundations

Federal legislation since the 1970's reflects society's growing concern and priority for effective services to support the development of young children. Current practices in early intervention for young children with autism and related disabilities are founded on the combination of legislation and research. In 2001, the passage of No Child Left Behind (NCLB; PL 107-110) promoted explicit emphasis on the use of evidence-based practices across the field of education (Odom et al., 2005; Feuer, Towne, & Shavelson, 2002). Although NCLB was not directed specifically for early intervention, it was instrumental in the shift toward scientifically validated practices in education. Research has led to the development of evidence-based recommendations for practice in early childhood special education. Currently, the most prominent recommendations governing the preparation and subsequent practices of service providers in early childhood include individualized supports and services, family-centered care, transdisciplinary teaming, and natural and inclusive environments (Bruder, 2010).

Policy not only stimulates research, but also works to impose the recommendations generated by research through accountability. In 1968, the passing of the Handicapped Children's Early Education Assistance Act (PL 90-538) stimulated investigations to identify effective procedures and models for supporting the needs of young children and their families (Gallagher, 2000). The law established several projects that are now referred to as the Early Education Programs for Children with Disabilities, which took the first step toward developing and disseminating evidence-based practices for serving families with infants and young children with disabilities (Noonan & McCormick, 2006).

Although general support for early intervention had been established three years earlier with Head Start programs, funded under the Elementary and Secondary Education Act (ESEA, 1965; PL 89-10), initial programs focused on early educational supports and stimulation for young children affected by poverty. As acceptance grew for the positive effects of early intervention on children's social, emotional, and cognitive development, early intervention efforts were expanded to include young children with disabilities. In 1972, Head Start legislation was amended, requiring at least 10% of Head Start enrollment to be reserved for young children with disabilities (PL 92-424).

The Handicapped Children's Early Education Assistance Act along with the amended Head Start legislation opened the door for legal support for early intervention for young children with disabilities. Subsequent policies continued to shape educational practices and set expectations for services for families and young children with disabilities. The "passage of the Education for All Handicapped Children Act of 1975 (PL 94-142) marked the beginning of an unprecedented alliance of professionals and parents" (Noonan & McCormick, 2006, pg. 9). The law afforded all children with disabilities aged 3-21 a free and appropriate public education (FAPE) (Gallagher, 2000). Furthermore, educational services were mandated to be provided in the least restrictive environment (LRE) with the development of individualized education programs (IEPs).

Although the law provided important safeguards, some ambiguity remained in terms of required services for children aged 3-5 (Gallagher, 2000). The 1986 Amendments to the Education for All Handicapped Children Act (EHA; PL 99-457) addressed this ambiguity by adding a new section to Part B (Section 619) guaranteeing all eligible preschool children with disabilities the same rights and protections offered to school-age children. The amendments also

created a new program (Part H, now referred to as Part C) to provide services for infants and toddlers with special needs and their families. This optional program provided states with funding incentives for the planning, development, and implementation of services for children from birth to age three with or at risk for developmental delays and created the individualized family service plan (IFSP). The IFSP involves a multidisciplinary assessment and coordination of services to address the family's concerns, priorities, and resources. By treating the family as a unit rather than focusing services directly on the child, EHA (1986) set a precedent for future policies regarding family-centered practices (Wehman, 1998). The law encouraged parental involvement across assessment, planning, decision-making, as well as implementation, coordination, and evaluation of services.

Four years later, EHA was both reauthorized and renamed as the Individuals with Disabilities Education Act (IDEA 1990, PL 101-476). This key legislative act not only continued the movement toward family-centered early intervention practices, but also introduced autism as a special education category (Smith, 2007). Previously, children with autism spectrum disorders had been served under the category, "other health impaired." Acknowledgment of autism as its own unique disorder facilitated increased awareness of and support for students with autism spectrum disorders. IDEA (1990, PL 101-476) also emphasized the importance of a team-based approach to intervention. The role of service providers is not only to work collaboratively with the child's family, but to also consult with other service providers to support the child's development across all domains (Bruder, 2010). This provision was particularly important for children with ASD, due to the pervasive nature of impairments across developmental domains associated with the disorder.

According to the National Association of State Directors of Special Education in Washington, D.C. (1991) the addition of a separate category for autism was intended to increase knowledge of the disability and improve services for individuals with ASD. Because autism became a distinct category, states are now required to report data on services for this population. As this new pool of data became available, special studies could be designed to improve (a) criteria and procedures for evaluating and serving children, (b) planning and development of early intervention and special education services, (c) integration with typically developing peers, (d) and parent involvement.

In 1997, IDEA was reauthorized again (PL 105-17). This revision reaffirmed the strong preference for full inclusion of children with disabilities in general education early childhood classrooms (Noonan & McCormick, 2006). Not only were inclusive settings established as the preferred placement, but also schools were now accountable for providing services in the general education setting to support effective inclusion. Additionally, the 1997 reauthorization of IDEA mandated that early intervention services be provided to the maximum extent appropriate in natural environments, including the home and community settings. Special attention was also provided for the importance of effective service coordination. The 1997 reauthorization of IDEA (PL 105-17) mandated (a) identification of an individual responsible for service coordination, (b) a document to guide service coordination (IFSP), and (c) interagency policies and the development of a comprehensive system of service coordination (Harbin et al., 2004).

With so much legislative ground-work laid early for supporting the needs of families and young children with disabilities, little change was needed in the most recent reauthorization of IDEA (2004; PL-108-446). The primary addition focused on improved support for the transition from early intervention services (Part C) to early childhood special education services (Part B).

For young children with disabilities and their families, this reauthorization facilitated early transition by including the family's early intervention service coordinator in the initial IEP meeting. Existing legislation recognizes the importance of services for children with ASD as well as the critical role of early intervention services that are family-focused (See table 1 for a summary of the major legislation).

Table 1

Major Legislation Impacting Early Childhood Special Education and Services for Young Children with Autism Spectrum Disorders

Law (Year)	Impact on Practice
PL 90-538 (1968)	Handicapped Children's Early Education Assistance Act: Developed projects disseminating Early Intervention research on effective practice
PL 92-424 (1972)	Economic Opportunity Act amended to include children with disabilities in Head Start services
PL 94-142 (1975)	Education for All Handicapped Children Act (EHA): Free and appropriate public education (FAPE) for children with disabilities ages 3-21 years provided in the least restrictive environment (LRE).
PL 99-457 (1986)	EHA amended: Created section 619, ensuring FAPE for children ages 3-5 years; develop Part H serving infants, toddlers & families (birth to 3 years)
PL101-476 (1990)	EHA renamed Individuals with Disabilities Education Act (IDEA): Introduced autism as a special education category
PL 105-17 (1997)	Reauthorized IDEA: Part H became Part C; emphasis on inclusive settings and effective service coordination
PL 108-446 (2004)	Reauthorized IDEA: Improved transition support (Part C-B); support for family involvement through quarterly reports to parents

Overview of Autism Spectrum Disorders

Autism Spectrum Disorders (ASD) are pervasive developmental disorders defined by marked impairments in communication and social interaction as well as restricted, repetitive, and stereotyped patterns of behavior, interests, and activities (4th ed., text rev.; DSM–IV–TR; American Psychiatric Association, 2000). Although this unique pattern of developmental deficits is reliably diagnosable as early as the age of two, the mean age at which it is typically detected or diagnosed is not until 4 years (Woods & Wetherby, 2003; Zwaigenbaum et al., 2009).

Delays in language development are often the caregivers' first source of concern. In the past, approximately half of all children with autism did not develop spoken language (Frankel, Leary, & Kilman, 1987), and one third of children with autism failed to develop functional communication in any form (Schreibman, Loos, & Stahmer, 1999). Despite the high incidence of communication problems, no physical basis for the language impairments has been identified (Schreibman, Heyser, & Stahmer, 1999). With the increased focus on early intervention for young children with ASD, early treatments have demonstrated positive effects on language development for a majority of children with ASD (Tager-Flusburg et al., 2009). Still, most children with autism who develop spoken language do so before the age of five or six years (Williams, 1990; Woods & Wetherby, 2003).

Social impairments for children with autism may include limited use of eye contact, facial expressions, and gestures. Individuals with autism often have difficulty forming relationships with peers, due to a lack of sharing enjoyment, interests, or achievements with other people, and deficits in social reciprocity (4th ed., text rev.; DSM–IV–TR; American Psychiatric Association, 2000; Boyd, Odom, Humphreys, & Sam, 2010; Woods & Whetherby,

2003). Challenges in the intricate structure of social interactions make maintaining long chains of back and forth interactions with others difficult. Because children with autism lack conventional means of communicating and interacting with others, they may display inappropriate behaviors such as self-injurious behavior, aggression, or tantrums (Mancil, Conroy, Nakao, & Alter, 2006; Sundberg & Partington, 1998). Children with autism often exhibit challenges with flexibility and develop nonfunctional routines or rituals.

Early Identification and Intervention

Typical early development of young children is characterized by a range of variability. Because developmental milestones are used as general guides rather than strict deadlines for maturity, caregivers are often urged to "wait and see" when slight delays become evident in their child's growth (Boyd et al., 2010). Most families express initial concerns to their pediatrician by the time their child is 18 months of age. Despite this early recognition, the evaluation process typically does not begin until the child is at least two and a half years old, delaying the average age at diagnosis to about four and a half years (Siegel, Pliner, Eschler, & Elliot, 1988; Zwaigenbaum et al., 2009). Nonetheless, current research indicates that experienced clinicians can make a reliable diagnosis of ASD at 24 months of age (Woods & Wetherby, 2003; Zwaigenbaum et al., 2009). Whether diagnosis occurs this early often depends on the resources, education, and persistence of families (Schwartz & Sandal, 2010). Caregivers that are aware of "red flags" and act as advocates for their child's development are more likely to seek professional support and access early intervention services.

Researchers have placed critical emphasis on early intervention for young children with autism because the most substantial gains are seen with intensive early treatment that establishes high levels of active engagement time, meaningful and active family involvement, and early

inclusion with typical peers in the natural environment (Boyd et al., 2010; McGee, Daly, & Jacobs, 1994; McGee, Morrier, & Daly, 1999; Strain & Cordisco, 1994; Woods & Wetherby, 2003). Furthermore, early intervention that begins before age 3 has a significantly greater impact on child development than intervention beginning after age 5 (Harris & Handleman, 2000). Nonetheless, intervention that begins early, continues throughout development, and is supported across a variety of contexts has the most lasting impact on learning (Pretti-Frontczak & Bricker, 2004).

Evidence-Based Recommendations for Practice

Autism is described as a spectrum disorder because it is characterized by a wide range of functioning. Children with ASD present with heterogeneous levels of functioning and patterns of impairment (Boyd et al., 2010; Woods & Whetherby, 2003). The range of challenging behaviors, unique preferences, interests, and learning styles is unique to each child. As a result, no single educational approach is effective for all children with ASD (Iovannone et al., 2003; Prizant & Rubin, 1999; Rogers & Vismara, 2008; Simpson, 2005). Instead, evidence exists for several effective intervention practices for young children with ASD (Prizant & Rubin, 1999; Rogers, 1999; Simpson, 2005). No matter the overall intervention or individual strategies being applied, each child and family's plan of care should reflect evidence-based recommendations for practice. The Council for Exceptional Children's (CEC), Division of Early Childhood (DEC) recommends intervention practices for young children (across disabilities) to be child-focused, family-based, and transdisciplinary (Sandall, Hemmeter, Smith, & McLean, 2005).

Child-focused practices involve designing environments to promote active engagement, participation, and equal membership in learning experiences, as well as providing physical and emotional safety for all children (Sandall et al., 2005; Sandall & Swartz, 2008). Ongoing data is

used to individualize and adapt practices, monitor progress, and inform educational decisions to meet each child's changing needs. Child-focused practices also require systematic procedures throughout a variety of routines and activities to promote children's learning and participation (Sandall et al., 2005).

Family-centered practices "provide or mediate the provision of resources and supports necessary for families to have the time, energy, knowledge, and skills to provide their children learning opportunities and experiences that promote child competence and development" (Sandall et al., 2005, p 107). Effective collaboration with families requires educator practices that include shared responsibility, strengthened family functioning, individual and flexible practices, and strengths and assests-based practices (Sandall et al., 2005).

Transdisciplinary team practices work to enhance team members' individual strengths through a more holistic and collaborative approach (Sandall et al., 2005; Woodruff & Shelton, 2006). Unlike the segmentation resulting from more traditional medical models, transdisciplinary models encourage collective responsibility across equal team members (Sandall et al., 2005). Transdisciplinary services are also designed to provide caregivers with practical support that is compatible with family resources, desires and routines.

When providing services for young children with ASD, overall recommendations for young children as well as specific recommendations for children with ASD must be considered. In an effort to integrate the variety of effective practices for children with ASD, Iovannone and colleagues (2003) identified six essential components as critical for effective educational programming for young children with ASD: (1) individualized supports and services for students and families, (2) systematic instruction, (3) comprehensible and/or structured environments, (4)

specialized curriculum content, (5) functional approaches to problems behaviors, and (6) family involvement.

Providing individualized supports and services includes consideration for family concerns, priorities, and preferences when selecting goals and designing intervention procedures (Dunlap, 1999). Individualization should also reflect the incorporation of the child's strengths and unique interests (Hurth, Shaw, Izeman, Whaley, & Rogers, 1999). Educational supports, services, and decisions are based the child's individual level of functioning to determine the most appropriate intensity and level of instruction (National Research Council, 2001). Individualized supports and services ought to maximize the student's motivation while promoting increased levels of engagement (Dunlap, 1999; Hurth et al., 1999).

Systematic instruction involves explicit planning through identifying functional goals, outlining instructional procedures for teaching, implementing the instructional procedures, evaluating the effectiveness of the teaching procedures, and adjusting planning and future instruction based on data (Hurth et al., 1999). Thus, instruction is comprehensive, systematic, and data driven. Planning should also include systematic consideration for maximizing engagement as well as promoting generalization and maintenance of learned skills. Systematic, well-planned instruction for students with ASD requires targeting meaningful skills for instruction, planning when and how to provide individualized instruction, determining data collection methods for effective progress monitoring, and using data in educational decision-making.

Educational programming is considered structured when the curriculum, which includes the daily activities, typical schedule, and classroom environment, is clear and logical to both the students and the educators (Panerai et al., 2009). The classroom structure, including physical

arrangement and organization of activities, supports students in predicting both what is currently going on in the learning process and what will happen next. Structured learning environments also support children in anticipating the requirements of specific settings, and effectively learning and generalizing new skills.

Specialized curriculum content should be specific and individualized in order to address the core deficits associated with ASD: communication and social interaction (National Research Council, 2001). Instructional content should target appropriate social reciprocity, recreational and leisure skills, and language comprehension and effective communication. Targeted skills should be prioritized based on the student's individual needs, the family's concerns, and functionality of the skills within the curriculum. Skills are functionally relevant when they are (a) most likely to be useful in the student's life to control his or her environment, (b) will increase the student's independence and quality of life, and (c) will increase the student's competent performance (Dunlap & Robbins, 1991).

A functional approach to problem behaviors involves functional assessment and analyses to understand why a behavior occurs, the purpose or communicative intent, and identification of socially valid behaviors that could serve the same purpose (Carr et al., 2002). When developing intervention plans to reduce challenging behaviors, it is critical to consider replacement behaviors that are positive and proactive. As challenging behaviors are being targeted for elimination, instruction must also be provided to promote the development of alternative, positive behaviors that result in the same or similar consequences. Data are collected to identify variables that reliably predict and maintain challenging behaviors. Positive behavior support uses functional assessment to develop individualized support plans to first, enhance the

individual's quality of life by expanding the individual's current behaviors and learning environment, and second, make the problem behavior ineffective, inefficient, and irrelevant.

Another critical component of curricular planning for young children with ASD is family involvement (Boyd et al., 2002; Iovannone et al., 2003, Dunlap, 1999). Family members are the most consistent, influential, and valuable caregivers in a child's environment (Bruder, 2010; Dunlap, 1999; Volpat, 1994). As such, family members should be included as active and equal partners in the development of their child's education plan (Bruder, 2000; Pruitt, Wandry, & Hollums, 1998). Not only should the parents' concerns and priorities be reflected in the selection of functional educational goals, but parents should also be supported in implementing interventions in the home and community settings. For children with ASD to effectively learn and incorporate new skills, they must be provided with meaningful learning opportunities across a variety of contexts and people. Thus, families are essential partners in both the educational planning and delivery of individualized supports and services (Bruder, 2010; Dunst & Dempsey, 2007; Iovannone et al., 2003).

Evidence-Based Intervention Programs and Effective Strategies for Children with ASD

Within the recommendations for practice, empirical support exists for a variety of comprehensive intervention programs for students with ASD. The efficacy of an intervention is based on the quality and strength of existing evidence to support the approach. The National Professional Development Center on Autism Spectrum Disorders (NPDC; Odom, Collet-Klingenberg, Rogers, & Hatton, 2010) defines evidence-based practices for individuals with ASD as intervention approaches that have been supported through peer-reviewed, scientific research using:

- Randomized or quasi-experimental design studies. Two high quality experimental or quasi-experimental group design studies,
- Single-subject design studies. Three different investigators or research groups must have conducted five high quality single subject design studies, or
- Combination of evidence. One high quality randomized or quasi-experimental group design study and three high quality single subject design studies conducted by at least three different investigators or research groups (across the group and single subject design studies).

The majority of effective intervention practices for children with ASD are based on the principles of Applied Behavior Analysis. Applied Behavior Analysis (ABA) is not an intervention itself, but rather it is a theoretical framework of scientific principles governing behavior that is applied toward teaching (Baer, Wolf, & Risely, 1968; Skinner, 1974). Baer and colleagues (1968) defined ABA as the process of applying theories or principles of behavior to the improvement of specific behaviors while simultaneously evaluating whether changes in behavior can be attributed to the process of application (i.e. intervention). Thus, ABA approaches intervention as a discovery-oriented research procedure for studying behavior that involves a continuous process of self-examination and self-evaluation. The scientific study of behavior began with Watson's (1913) objective conceptualization of behavior as being governed by external environmental factors. Operant behavior identified the key environmental factors as (1) antecedents, events or internal conditions (i.e. motivational states such as hunger) that occur immediately before the behavior, and (2) consequences, events that occur immediately following the behavior that increase or decrease the likelihood of the behavior occurring in the future (Skinner, 1963; Skinner, 1974). Once the environmental factors that maintain a particular

behavior are understood, systematic manipulations of either the antecedents or consequences can be applied to effect change or to teach new behaviors. Baer and colleagues (1968) also emphasized consideration for social validity and generalization of targeted behaviors as key components of ABA.

Verbal Behavior (VB) is an extension of Applied Behavior Analysis that relates specifically to the function of communicative behaviors. Skinner (1957) wrote Verbal Behavior to analyze human behavior and examine how Operant Conditioning affects language. He identified the functional units of language and provided a framework for teaching communication. Later research expanded on the applied foundation of teaching Verbal Behavior (Sundberg & Partington, 1998; Sweeney-Kerwin, Carbone, O'Brien, Zecchin, & Janecky, 2007). Verbal Behavior is an analysis of the functional role of communication. Each unit of language is defined by the contingencies that maintain it. Language is controlled by both the antecedent or establishing operation (EO) and the consequence that immediately follows (Skinner, 1957). The primary verbal operants are the echoic, mand, tact, and intraverbal. The echoic is simply a direct vocal imitation. The mand is used to request wants and needs. The tact is for labeling or describing objects. The intraverbal is conversationally responding to the verbal behavior of others. The verbal operants provide a functional analysis of language, examining motivation and reinforcement for each form of communication (Skinner, 1957; Sundberg & Partington, 1998; Sweeney-Kerwin et al., 2007). The functional units of language are further organized by their progression of acquisition. As each operant is established, a deeper level of functioning is acquired in communication.

Lovaas (1977) introduced some of the earliest research on effective intervention for children with autism. He most known for his work in applying discrete trial teaching (DTT) to

teach children with intellectual disabilities. DTT systematically breaks down complex skills into isolated components, and frequently uses repeated or massed trials until the skill is mastered. Clinicians or educators are trained to set up a specific work area that promotes face-to-face interactions while presenting discrete tasks in mass trials to facilitate acquisition. While this approach is effective in increasing child IQ and promoting specific skill acquisition (Lovaas, 1987), major limitations have also been identified. The highly structured nature of the approach often creates issues of acceptability by the child as well as the parents (Schreibman, 2005). Additional limitations of DTT include robotic responding, prompt dependency, and lack of generalization and independent or spontaneous use of acquired skills (Koegel, 1995; Schreibman, 2005).

Alternative intervention approaches have been introduced to both address the limitations of DTT and reflect the movement toward more naturalistic instructional methods (National Research Council, 2001). Rather than employing adult-led, massed trial teaching, naturalistic behavioral interventions that typically provide distributed learning trials are more child and family centered (Pretti-Frontczack & Bricker, 2004; Schreibman & Koegel, 2005). Naturalistic behavioral interventions facilitate the acquisition of new skills and maximize motivation for learning by embedding instruction within the context of typical daily learning opportunities. Embedding is a process of integrating brief instructional interactions within and across typical routines and activities to provide distributed opportunities for practice (Pretti-Frontczack & Bricker, 2004). Under naturalistic intervention conditions, training for both acquisition and generalization of new skills occurs simultaneously (Pretti-Frontczack & Bricker, 2004; Schreibman, 2005).

Pivotal Response Training (PRT) applies the principles of ABA in natural contexts to target four pivotal behaviors, or behaviors that are central to functioning with widespread affects. The identified pivotal areas are motivation, responding to multiple cues, self-initiations, and self-management. The model specifically employs principles of ABA that are positive, self-reinforcing, and family-centered (Koegel, Koegel, Harrower, & Carter, 1999). Like DTT, PRT provides systematic teaching trials. However, PRT maximizes child motivation through shared control, providing choices, reinforcing attempts, interspersing maintenance or previously mastered skills with new acquisition tasks, and providing reinforcers that are directly related to the child's behavior (Koegel et al., 1999). PRT also uses a variety of behavioral strategies such as prompting and fading procedures, shaping, environmental arrangements, time delay, following the child's lead, and natural consequences. Unlike the rigid structure of DTT, PRT can be provided within natural contexts throughout the child's day. Because the intervention specifically targets behaviors that are considered pivotal, effective instruction only requires a fraction of the learning trials needed for DTT (Koegel et al., 1999; Schreibman, 2005).

Similarly, Incidental Teaching provides systematic teaching trials embedded within natural contexts and capitalizes on child motivation by following the child's lead (Charlop-Christy & Carpenter, 2000). By structuring and identifying learning objectives within ongoing daily routines and activities, child motivation and opportunities for generalization are maximized (McGee et al., 1994). Incidental Teaching involves arranging the environment to motivate the child to initiate a request or interaction. As the child initiates, the adult uses this learning opportunity to expand and develop skills. The intervention requires (a) planning for specific learning objectives, (b) consideration for the child's strengths and interests, (c) encouragement

and support for child initiations, (d) expansion or elaboration of the child's initiations, and (e) scaffolding to promote the child's success (McGee et al., 1999).

Enhanced Milieu Teaching (EMT) evolved from incidental teaching procedures and is another evidence-based naturalistic behavioral intervention that has been expanded to support the developmental needs of young children with ASD (Hancock & Kaiser, 2002; Kaiser, 1993; Mancil, Conroy, & Haydon, 2009; Yoder & Warren, 2002). Evidence supports the use of EMT procedures to target the development of social-communication skills in children with ASD. The primary components of EMT include: (a) environmental arrangements to promote engagement during interactive activities and communication with partners, (b) responsive interaction techniques (i.e. following the child's lead and expanding upon child's interests) to build back and forth communication and to model new language, and (c) use of prompts, models, and contingent reinforcement to support new language forms in their functional contexts (Hancock & Kaiser, 2002). Milieu therapy also incorporates time delay and incidental teaching strategies.

Another evidence-based naturalistic behavioral intervention for children with ASD is the Picture Exchange Communication System (PECS; Charlop-Christy, Carpenter, Le, LeBlanc, & Kellet, 2002; Flippin, Reszka, & Watson, 2010). The Picture Exchange Communication System was developed at the Delaware Autistic Program (Bondy & Frost, 1994). It is an augmentative communication system based on ABA principles. PECS incorporates basic behavior techniques such as shaping, differential reinforcement, transfer of stimulus control via delay to teach functional communication through the exchange of pictures (Charlop-Christy et al., 2002). In addition to teaching children to initiate communicative interactions using pictures, PECS is also designed to facilitate the development of spoken language. PECS is unique from other picture-based communication systems; its highly systematic instructional approach consists of six

training phases, designed to promote spontaneous use of communication as well as generalization across settings and communicative partners (Bondy & Frost, 1994).

Functional communication training (FCT) is an intervention approach that has been used to address both the communication and aberrant behavioral needs of children with ASD (Carr & Durand, 1985; Durand & Merges, 2001; Wacker et al., 1990). This approach uses functional analysis to determine the communicative functions behind a child's challenging behaviors, such as tantrums, screaming, and aggressive behaviors. Functions of aberrant behaviors can include a desire to gain attention, access to a desired item or activity, escape from an undesired situation, or need for sensory adjustments. As the function of the behavior is determined, one can teach appropriate replacement communicative behaviors that serve the same function (Carr & Kemp, 1989; Durand & Carr, 1987; Mancil et al., 2006). FCT has been used to support young children with ASD in developing skills to effectively communicate with others in a variety of situations and settings (Schindler & Horner, 2005).

The treatment and education of autistic and related communication handicapped children (TEACCH) is a structured teaching system developed in 1972 by Eric Schopler (Mesibov, Schopler, & Hearsey, 1994; Mesibov & Shea, 2010). TEACCH, specifically developed to address the unique characteristics of children with ASD, provides continuous and structured teaching, environmental adaptations, and alternative-augmentative communication (Panerai et al., 2009). Structured teaching involves applying systematic modifications to the environment to meet the needs of individuals with ASD. Structured teaching is provided under four domains: (1) physical structure, (2) sequence of events or schedules, (3) individual tasks, and (4) work systems (Mesibov & Shea, 2010; Panerai et al., 2009). Establishing physical structure involves systematic placement of furniture and visual cues to reduce environmental sources of distraction.

Structuring the sequence of events through visual or tactile schedules supports transitions among activities throughout the day. Within each task or activity, visual supports are used to help the student understand the sequence and expectations for successfully completing the individual activity. And finally, work systems provide structure in linking individual tasks the daily sequence of activities. Other important guiding-concepts of the TEACCH system include improving adaptations, collaborating with caregivers, assessing for individualized treatments, and training for generalization (Panerai et al., 2009).

Effective Strategies for the Natural Environment.

Although a variety of intervention approaches exist, several strategies or components are common across interventions. Effective strategies for the natural environment are developmentally appropriate for young children and can easily be embedded within the context of typical interactions, routines, and activities. Key instructional strategies, common to many evidence-based interventions include: (a) contextual support or following the child's lead, (b) responsive interactions, (c) environmental arrangements, (d) time delay, (e) modeling and requesting imitation, (f) prompting and fading, (g) interspersing maintenance and acquisition tasks, and (h) natural and directly related consequences (See table 2 for basic definitions).

Table 2

Providing Supports in the Natural Environment: An Explanation of ABI Instructional Strategies

Strategy	Brief Description
Contextual Support	Gain child's attention and intervention follows the child's interests. Materials are developmentally appropriate.
Responsive Interactions	Expand upon child's interests and promote reciprocal interactions by asking questions, providing examples, and encouraging balanced turn taking.
Environmental Arrangements	Change physical surroundings to increase learning opportunities: place items out of reach; give small amounts; adjust stimuli.
Time Delay	Provide additional time for processing and opportunity to initiate. Adult or peer waits quietly with an expectant look.
Modeling and Requesting Imitation	Demonstrate a behavior to the child then help the child to perform the same behavior.
Prompting and Fading	Offer support initially and systematically reduce the amount of assistance provided.
Interspersing Maintenance and Acquisition Tasks	Vary the difficulty across tasks to increase motivation and frequency of success.
Natural and Direct Consequences	Provide a consequence that strengthens a behavior. The consequence is natural, contingent, and directly related to the behavior.

Contextual Support involves planning ahead to support the child's attention, motivation, and engagement (Charlop-Christy & Carpenter, 2000; Hancock & Kaiser, 2002; Hwang & Hughes, 2000; Ingersoll, Dvortcsak, Whalen, & Sikora, 2005; Koegel et al., 1999). Before beginning a routine or activity, the adult gains the child's attention by getting close and face-to-face. A common obstacle to contextual support is the adult sitting next to the child or with the child in their lap. Contextual support involves repositioning the child across from the adult or interactive partner, emphasizing the importance of establishing face-to-face interactions. Once attention is established, the adult follows the child's lead by offering choices and responding to child initiations in order to maximize motivation and enhance engagement (Pretti-Frontczack & Bricker, 2004). This is done by identifying materials, actions, and objects that are of interest to the child and are at the child's developmental level. Incorporating choices of high interest to the child, such as a favorite toy train or bubbles, helps to keep the child motivated and focused on the activity.

Responsive interaction strategies promote social and communicative reciprocity to create the natural balance or back and forth nature of typical interactions (Hancock & Kaiser, 2002; Hwang & Hughes, 2000; Ingersoll et al, 2005; Kaiser et al, 1996). The focus is on balanced turn taking, sustained periods of engagement, and spontaneous interactions. The adult not only follows the child's lead, but also talks about what the child is doing to maintain and expand upon a joint activity. The adult may ask questions or model additional exchanges to encourage continued interaction. Turns can be elicited by briefly interrupting an activity or limiting the number or length of time that desired materials are available. For example, a child may express interest in a car by pushing it along the floor as if it were driving. The adult follows the child's lead by focusing their interaction on the car. The adult might say, "let's drive, beep, beep." The

adult might also interrupt the driving motion by signaling a red light. This creates an opportunity for the child to request green light in order for the interaction or activity to continue. The adult might also describe his or her own actions, such as saying, "I'm driving a big truck." This can be followed by asking the child what he or she is driving, and ideally, the child may begin to initiate without being asked directly.

Environmental Arrangements involve planning ahead and making physical changes to the environment that increase the frequency and type of opportunities for the child to communicate, interact socially, and respond to directions with success (Charlop-Christy & Carpenter, 2000; Hancock & Kaiser, 2002; Hwang & Hughes, 2000; Koegel et al., 1999; Panerai et al., 2009; Pretti-Frontczack & Bricker, 2004; Woods & Kashinath, 2007). Limiting access to preferred items by giving only a small amount of a desired item, or placing desired items out of reach can encourage social interactions and communication. Adults can also make changes to the environment by rotating toys. Motivation is increased when old toys are rotated to appear new to the child (McGee, Daly, Izeman, Mann, & Risely, 1991). Other strategies are to adjust the amount of visual, auditory, or sensory stimuli to enable the child to function without becoming over-stimulated. For example, rather than asking a child to choose a book out of the numerous books housed on a bookshelf, an adult can select two or three books for the child to choose from. Environmental arrangements involve simple changes within routines that can increase learning opportunities. For example, the next time chips are offered during snack time, rather than give the child a whole bowl of chips, the adult can offer as few as one or two and encourage the child to ask for more. This is not to reduce the child's caloric intake, but to create a need to interact or communicate before the child is satiated from the first serving. Similarly, if toys are organized

within simple reach of the child rather than on high shelves or closed bins, there is no need for the child to interact with the caregiver in order to gain access to the toys.

Time Delay is used to promote independent responding (Alpert & Kaiser, 1992; Boyd et al., 2010; Charlop, Schreibman, & Thibodeau, 1985; Woods & Kashinath, 2007). After making an initiation or a request, adults use time delay by staying quiet and waiting for a response. This strategy may involve an expectant look, high levels of affect, exaggerated facial expressions, or symbolic gestures such as putting arms up to indicate confusion. Time delay allows additional time for processing information and gives the child an opportunity to respond spontaneously. Adults are often eager to help their child reach a desired response. Many will use a multitude of prompts or repeat themselves in an effort to encourage the child to respond. For example, if a father wants his son to say, "Chips please," he may try to help the child by saying, "What do you want? Use your words. Tell Daddy what you want. Say chips please." Although these are each useful prompts, when combined, they can be overwhelming. The time delay strategy is designed to encourage adults to simplify their requests, wait quietly, and allow the child a chance to respond independently.

Modeling and requesting imitation involve demonstrating words, phrases, or gestures about objects and activities the child is interested in and specifically requesting the child to imitate (Hancock & Kaiser, 2002; Koegel et al., 1999; McGee et al., 1999; Woods & Kashinath, 2007). Rather than allowing the child to guess or make frequent mistakes, a direct model of the correct response prevents the child from learning incorrect patterns (Schreibman, 2005). Thus, if a child is whining in an effort to be picked up, the caregiver can interrupt the incorrect pattern of whining and model the request, "up please." By providing this direct model instead of using indirect cues, such as, "use your words," or, "ask nicely," the child can immediately respond

correctly and receive a positive consequence. Models can also be used to support complex tasks or promote appropriate behaviors. For example, when playing dollhouse, the caregiver can begin by modeling, "It is night time, we all have to go to bed," and then laying the doll down in a bed. The caregiver then provides the child with support by motioning to her doll or even guiding her hand to imitate the action and lay her own doll down in a bed.

The prompting and fading procedure is a way for caregivers to provide assistance when needed, and reducing the level of assistance to promote independence (Bondy & Frost, 1994; Boyd et al., 2010; Hancock & Kaiser, 2002; Koegel et al., 1999). If the child does not respond following time delay, the adult can help the child interact or communicate by using extra cues and supports and gradually reducing the level of support to allow the child to be more independent in routines and social interactions. The support can be a verbal model or question, visual representation, physical assistance, or gestural cue. It is important to systematically reduce the level of support provided to limit dependence. When using prompting and fading strategies, it is important to develop a plan for both introducing additional supports and for systematically reducing the amount of support provided. Ultimately, the goal is always for the child to be able to perform tasks independently. For example, a teacher may plan several steps to support a child's transition to eating independently during snack time and lunchtime at school. It may make sense to begin with hand over hand physical support with the adult holding the child's hand and bringing the utensil to the child's mouth. Following adequate practice, the adult may just help the child to scoop the food and then guide the utensil to the child's mouth by supporting the child at the elbow. Next, the adult can guide the child's hand without actually touching the child as a final step in the child's independent use of eating utensils.

Interspersing maintenance and acquisition tasks involves varying difficulty levels so that previously mastered activities are infused within new and more challenging tasks (Koegel et al., 1999; Schreibman & Koegel, 2005). Motivation is maintained as easy tasks or responses are embedded within more difficult or challenging activities. Easier tasks create more opportunities to receive positive consequences. Varying the degree of difficulty allows a child to experience success while also being challenged. Interspersing difficult or new tasks with relatively easy components limits frustration, creates more opportunities to receive reinforcement, and promotes successful interactions. For example, in a physical play activity such as tickles, a mother may tickle her son whenever he says, "Mommy, tickle me," uses the single word "tickles," or even uses the sign for more. This allows the game to continue with relative speed and ease, without the child becoming overly challenged.

Natural and directly related consequences allow the child to understand when he or she has responded correctly as well as to understand the related function of that correct response (Boyd et al., 2010; Hancock & Kaiser, 2002; Hwang & Hughes, 2000; Pretti-Frontczack & Bricker, 2004; Schreibman & Koegel, 2005). Adults can identify correct responses by offering praise, such as a high-five or a smile. However, this should not replace use of natural contingencies. For example, if the child says the word cookie as a request, the natural consequence would be to give the child a cookie, not a chip or tickles. Similarly, if a child learns to greet peers upon arriving to school, the natural consequence would be the smiles and greetings the child receives in return from his or her peers. This natural consequence is more effective in promoting long-term change in the child's behavior than artificial consequences, such as stickers or candies. Natural and directly related consequences are offered contingent upon a positive attempt or correct response from the child (Schreibman, 2005). In other words, if a child is

whining because he wants to watch his favorite program on the television, the child should not be allowed to watch the program until he has requested appropriately, or at least made a positive attempt to request. The form of the request will depend on the child's developmental level. It may be appropriate for one child to say, "Watch Mickey Mouse Clubhouse please," whereas another child may just make the sign for television or hand the adult a picture of the television to request. As long as the child is making an appropriate attempt at the response, the adult should provide the child with the desired item or activity to reinforce the request. Because the child is gaining access to what is desired, he or she will be more likely to continue to make appropriate attempts in the future.

Activity-Based Approach to Early Intervention

In light of current legislative policies and evidence-based recommendations for practice, young children with ASD should be receiving individualized supports and services that are family-centered and provided in natural and inclusive settings. However, many of the traditional intensive intervention approaches require a high degree of structure that may not be practical in typical early childhood inclusive classroom settings. Furthermore, when intensive direct instruction is provided, skill acquisition and individualized goal attainment are limited by the challenges students with ASD experience relating to generalization and maintenance of new skills (Koegel, 1995). Due to this limited carry over, combined with the inability to provide intensive, one-on-one instruction in inclusive settings, educators often feel ineffective when serving young children with ASD in large group, naturalistic settings. For children with ASD to get the intensity of intervention needed, it is essential that learning be facilitated throughout the day with distributed opportunities for practice, not just during therapy and direct teaching sessions (Vismara, Colombi, & Rogers, 2009). Effective skill acquisition, generalization, and

maintenance are maximized when young children are provided with repeated learning opportunities that are embedded within meaningful routines, across a variety of contexts (Filler & Xu 2006-2007; Horn, Lieber, Li, Sandall, & Schwartz, 2000; Kashinath et al., 2006; Losardo & Bricker, 1994; McBride & Schwartz, 2003; Pretti-Frontczak & Bricker, 2004; Sandall & Schwartz, 2008; Woods & Kashinath, 2007). An activity-based approach to early intervention for young children with ASD combines critical components of evidence-based, comprehensive intervention programs and embeds effective strategies to provide meaningful learning opportunities within natural contexts. Collaborative planning for an activity-based approach to early intervention across home and school settings can promote family-centered, transdisciplinary teaming to meet the unique needs of young children with ASD in inclusive preschool settings.

Empirical support for embedding learning opportunities within daily routines and activities has existed for over 20 years. Bricker and Sheehan (1981) published the first study addressing the effects of implementing an activity-based approach to early intervention. The study evaluated an integrated preschool program at the Center on Human Development, at the University of Oregon, where students of normal, at risk, mild, moderate, and severely impaired development were taught using activity-based instructional procedures. The program also encouraged active parental involvement; however, the form of parental involvement varied and was not included in the analysis. Data from 63 children, ranging in age from 6-months to 5 years, were included in the study. Child progress data, based on pre- and post-test comparison of two standardized and criterion referenced tests, were collected and analyzed over a two-year period. The results indicated that children's performances were significantly improved at posttest; furthermore, most improvements were educationally significant, exceeding 1 standard

deviation.

The following year, Bricker, Bruder, and Bailey (1982) confirmed similar results in a replication study. However, both the initial and subsequent study were lacking measures of treatment fidelity as well as a control group. Additionally, no measurements were provided on the level or effect of parental involvement, despite this being a program priority. Bailey and Bricker (1985) expanded on their previous work by including children attending the center-based program as well as children receiving services in the home setting. Regardless of location, both the center-based and home-based services employed an activity-based approach to address functional and generative goals by embedding learning opportunities into a variety of meaningful activities. The study used similar methods, and analysis of pretest and posttest comparisons upheld previous results indicating significant gains for all children. Although parental involvement continued to be a priority in both settings, the nature of parental participation remained variable.

Since these foundational evaluations, numerous studies have continued to provide evidence for embedding instruction in an activity-based approach to early intervention (Daugherty, Grisham-Brown, & Hemmeter, 2001; Fox & Hanline, 1993; Grisham-Brown, Schuster, Hemmeter, & Collins, 2000; Horn et al., 2000; Kohler, Anthony, Steighner, & Hoyson, 2001; McBride, & Schwartz, 2003). The limitations presented in previous studies such as lacking measures of treatment fidelity or use of control groups have been addressed. The majority of recent studies have employed single-subject research designs to replace the need for a control group. Several studies have also confirmed teacher effectiveness in the implementation of activity-based intervention (Horn et al., 2000; Kohler et al., 2001; Wolery, Anthony, Caldwell, Snyder, & Morgante, 2002). Furthermore, there is evidence for teachers effectively delivering

embedded instruction across classroom activities and routines, resulting in improved child outcomes that successfully generalized across adults and materials (Horn et al., 2000; Wolery et al., 2002). Evidence supports the positive impact of activity-based intervention to target a wide range of student outcomes including language development (Losardo & Bricker, 1994; Schwartz, Carta, & Grant, 1996), social skills (Brigman, Lane, Switzer, Lane, & Lawrence, 1999; Kohler, et al., 2001), imitation (Venn, Wolery, Werts, Morris, DeCesare, & Cuffs, 1993), self-help skills (Sewell, Collins, Hemmeter, & Schuster, 1998), group instruction and transition skills (Wolery et al., 2002), play and academic engagement (Fox & Hanline, 1993; Malmskog & McDonnell, 1999), attending, listening, and behavior ratings (Brigman et al., 1999), and independence during unstructured classroom time (Venn et al., 1993).

An activity-based approach to early intervention has not only been proven effective across a range of skills, but also across populations. Several studies have included young children with ASD as participants when investigating the impact of activity-based interventions. Kohler, Strain, Hoyson, and Jaimeson (1997) examined the effects of naturalistic teaching strategies, paired with peer mediated interventions, embedded within the context of typical classroom routines and activities. Participants were 10 young children with ASD being served in one of three inclusive preschool classrooms. The three teachers were effective in providing educational support to address IEP objectives of young children with ASD in inclusive preschool settings when minimal training and practice was provided in the context of daily routines and activities.

Four years later, Kohler and colleagues (2001) investigated the effect of teacher-implemented activity-based intervention on the acquisition of social skills with four children with ASD being served in an inclusive preschool setting. Four teachers were supported in

providing a variety of naturalistic teaching strategies within the context of typical classroom activities. Teacher support was provided through daily feedback and technical assistance provided by the researchers. The teachers effectively implemented the activity-based intervention strategies, and all four children demonstrated an increase in positive social exchanges with peers.

McBride and Schwartz (2003) investigated the effects of a teacher-training package on activity-based intervention on the rate of instructional opportunities presented to young children with disabilities. Participants were three teachers working in inclusive settings and three children between the ages of 3 and 6 years. Two of the children were diagnosed as being on the autism spectrum. A multiple-probe experimental design was used to evaluate teacher use of activity-based instruction to embed delivery of discrete-trials. Two IEP objectives were selected for intervention for each child. The intervention package included a planning meeting with each teacher as well as development of a classroom activity matrix identifying children's target IEP objectives and how each objective could be addressed within the context of typical classroom routines. The dependent measure was rate of instructional trials presented by the teacher. Instructional trials were defined as delivery of an instructional cue, a child response, and a teacher consequence. Following intervention, teacher rate of instruction increased for all participants. Furthermore, the increase in instructional trials was also associated with an increase in child performance on targeted objectives.

Despite the promising evidence for an activity-based approach to early intervention provided in inclusive preschool classrooms, limited information exists on the role of parental involvement and the connection between school and home environments. Kashinath and colleagues (2006) took at much closer look at parental involvement, focusing primarily on

embedding instructional opportunities within home and family routines. This study examined whether a routine-based parent training was effective in enhancing parent use of teaching strategies within daily routines at home and whether parents were able to generalize use of teaching strategies to non-targeted family routines and activities. The study also analyzed the effect of the parent-implemented activity-based intervention on targeted communication outcomes for young children with ASD. Two routines were identified for intervention, and parents were taught specific strategies to use within each routine. The routines selected were categorized into one of six routine classes: play routines, outdoor or recreation, caregiving routines, household chores, community activities, and other disability related routines. Strategies were taught two at a time in a staggered fashion. Parent training strategies included naturalistic behavioral techniques such as arranging the environment, using natural consequences, time delay, contingent imitation, modeling, and gestural or visual cuing. Parent use of strategies was defined as independent implementation at least three times in each routine. Results indicated that parents increased frequency of strategy use after the first training session and continued strategy use as new strategies were introduced. Furthermore, parents were able to generalize the use of strategies to untrained routines in all routine classes. Parent use of strategies was further validated by child outcomes: four of the five children increased their frequency of communication following parent training. Therefore, when provided with support, caregivers can have an active role in implementing activity-based intervention.

Kashinath and colleagues (2006) provided specific training and coaching within the context of individual routines to demonstrate parent efficacy. Dunst and colleages (2001) also demonstrated parent efficacy in the implementation of activity-based intervention. However, rather than providing coaching during family routines, support was focused on the planning for

activity-based learning opportunities. Sixty-three children with disabilities and their parents participated in the research study. Following an interview to identify typical family routines and activities, the researchers developed activity schedules and planning matrices to help caregivers focus attention on desired behaviors within the context of typical activities. The researchers explained and demonstrated incidental teaching strategies based on the planning matrix and then had the parents themselves implement the instructional strategies within the context of typical activities. Parents were successful in providing frequent and various opportunities for their children to participate in typical family routines and activities. The development-enhancing characteristics of the everyday learning opportunities provided by parents enhanced children's interests, engagement, exploration, and mastery of new skills. Furthermore, parents found the intervention and planning matrix useful, easy to implement, and easy to incorporate into daily life.

Empirical evidence has been provided to support the use of an activity-based approach to early intervention in both school and home settings with educators and caregivers being the primary intervention providers (Dunst et al., 2001; Horn et al., 2000; Kohler et al., 1997). Although practical guidelines exist for supporting caregivers and implementing activity-based intervention that spans across both the school and home environments (Filler & Xu, 2006-2007; Sandall & Swartz, 2008; Woods & Kashinath, 2007; Xu & Filler, 2008), additional research is needed to examine the effectiveness of this collaborative approach. The current study will explore the impact of collaborative planning for an activity-based approach to early intervention on the combined number of learning opportunities delivered by both teachers and parents across the school and home environments during typical routines. The collaborative planning model engages parents as equal decision makers and active participants in supporting their child's

learning beyond the classroom. In addition to the rate of ABI learning opportunities provided within typical routines to address an IEP objective, child demonstration of the targeted behavior described in selected individualized educational outcomes for young children with ASD will also be analyzed.

CHAPTER III: METHOD

The purpose of this section is to describe the methods that were used in this study to address the following research questions:

1. Is there an increase in the rate of collective ABI learning opportunities provided by the teacher and parent for the identified IEP objective following collaborative planning meetings for activity-based intervention in the school and home?
2. Is there an increase in the child's demonstration of the targeted IEP objective in the classroom and home settings following collaborative planning meetings for activity-based intervention?
3. How do parents and teachers perceive the value and effectiveness of the collaborative planning meetings for activity-based intervention in the school and home?

The sections in this chapter describe the criteria for selecting participants and the settings in which the study took place. This section will also review the independent and dependent variables, as well as the experimental procedures, study design, and data collection methods. Chapter III summarizes strategies to ensure procedural fidelity, social validation, and interobserver reliability.

Participants

A convenient sample of a parent-teacher-child triad was selected for participation in the study. The researcher partnered with the University of Central Florida Center for Autism and Related Disabilities (UCF-CARD) in order to recruit interested families of young children with ASD between the ages of 3-5 years. UCF-CARD is one of seven regional organizations funded by the Florida Department of Education to provide individuals and families affected by ASD with direct assistance, educational training, support services, and access to community resources.

In order to access CARD services, individuals and families register and provide documentation of a diagnosis of an autism spectrum disorder or related disability. Recruitment consisted of sending a letter (Appendix A) via email to families who: (a) were registered UCF-CARD constituents, (b) with a child between the ages of 3-5 years, and (c) had provided documentation of diagnosis of an Autism Spectrum Disorder (Autistic Disorder, Asperger Syndrome, or Pervasive Developmental Disorder-Not Otherwise Specified) obtained independently from a physician, licensed psychologist, or diagnostic center. A first round of recruitment emails were sent to families residing in the same city as the researcher and whose records, based on the UCF-CARD database, indicated that the child was currently enrolled in an inclusive preschool setting. Based on these criteria, approximately 5-6 families were contacted. Within less than a week, one interested parent responded who had a child receiving individualized education services (public school IEP through Part B under IDEA) under the autism eligibility category in an inclusive preschool setting. With the parent's permission, the researcher reviewed documented diagnostic materials on file with CARD, confirmed the child's diagnosis of ASD and later administered the Gilliam Autism Rating Scale-Second Edition (GARS-2) for further verification of a consistent diagnosis. Finally, the researcher contacted the child's school administrator to share information about the study, obtained permission for participation, and verified that the child was receiving services in an inclusive preschool setting. Had the parent or teacher not been interested in participating in the study, a second round of recruitment emails would have been sent out to all families meeting the above criteria that also resided in the same county as the researcher.

Prior to participating in the study, the Institutional Review Board (IRB) approval was obtained from the University of Central Florida (See Appendix B). The parent and the child's (certified) teacher provided voluntary and informed consent to participate in the study.

Child.

Guillermo, a Hispanic male, was 4 years and 5 months old at the onset of the study. He lived at home with his mother, father, and three siblings. At the onset of the study, Guillermo's older brother was 6 years old, his younger sister was 2 years old, and his baby brother was 2 months old. Guillermo was diagnosed with an Autism Spectrum Disorder, Pervasive Developmental Disorder- Not Otherwise Specified (PDD-NOS), by a Developmental and Behavioral Pediatrician at the age of 2 years 5 months. Guillermo's parents sought support when he turned two years old and was still not speaking clearly. At two years and one month, Guillermo was enrolled in the Florida Early Intervention program (Part C). In addition to receiving early intervention services in the natural environment, Guillermo also received Speech therapy. Upon turning 3 years old, Guillermo transitioned from the early intervention program (Part C) to special education services provided through the public school system (Part B). The following year, Guillermo was enrolled in a preschool charter school in Central Florida that specializes in serving children with disabilities in an inclusive environment.

Guillermo's initial diagnosis was based on results from the autistic diagnostic observation schedule- generic (ADOS-G), administered by his developmental and behavioral pediatrician. The ADOS-G, module one, is a semi-structured observation instrument that includes a series of semi-structured tasks of high interest to assess social and communication behaviors. On the communication domain, Guillermo received a score of 4 (autistic cut-off = 4, autism spectrum cut-off = 2), demonstrating significant delays in the area of communication. When including the reciprocal social interaction domain, Guillermo received a score of 11 (autistic cut-off = 12, autism spectrum cut-off = 7), also demonstrating significant delays in social skills. Guillermo also received a score of 2 on the stereotypical behaviors and restricted interests domain.

To confirm the previous diagnostic results, the researcher administered the GARS-2, a diagnostic interview with both the child's teacher and the child's parent. Results from the interviews were consistent with the previous diagnosis. Both the parent and teacher perceived Guillermo as demonstrating significant delays in the areas of communication and social interaction, as well as stereotypical behaviors. See Table 3 for a summary of scores on each subtest. The overall score suggests that Guillermo demonstrated an average to below average degree of severity of autism based on parent and teacher reports.

Table 3

Summary of Scores Based on the Gilliam Autism Rating Scale-2

	Parent Responses		Teacher Responses	
Domain	Raw Score	Standard Score	Raw Score	Standard Score
Stereotyped Behaviors	16	9	18	10
Communication	25	11	25	11
Social Interaction	13	6	34	13
Developmental	2	6	N/A	N/A
Sum of Standard Score		32		34
Autism Quotient		**87**		**109**

Parent.

Guillermo's mother, Leah, is a Caucasian female, who was 29 years old at the onset of the study. Leah earned her bachelor's degree in finance and was currently working part time

from home. Prior to this study, Leah had no experience as a participant in any research studies. However, when Guillermo was enrolled in the state early intervention program, Leah received regular support from an early intervention provider. She and her husband were taught general strategies for supporting her son's communication, play, and social skills in the natural environment.

Teacher.

Guillermo's teacher, Tara, was an African American female, who was 37 years old at the onset of the study. Tara received her associate's degree in early childhood development and her bachelor's degree in education. She was certified to teach in the state of Florida in Exceptional Student Education (Kindergarten through twelfth grade), pre-kindergarten through third grade, and has completed some coursework in English Speakers of Other Languages (ESOL). She has three years experience as a classroom teacher and 12 years experience as a teaching assistant. Although Tara had never received any formal training on implementing Activity-Based Intervention prior to her participation in the study, she shared that she feels confident in supporting children's IEP goals during typical classroom routines.

Setting

All collaborative planning meetings were conducted at the child's preschool. At the time of the study, Guillermo was attending a preschool charter school in Central Florida. Although the charter preschool specializes in serving children with disabilities, typically developing children are also served in the program. Within the school, all classrooms were staffed with a certified teacher and at least two teaching assistants. Classrooms had a small student to teacher ratio, with no more than 7-15 children in each classroom. Therapy services, such as speech, physical, occupational, or behavioral therapies were provided within the school.

The setting for data collection was in the context of Guillermo's typical classroom and home activities. The child's classroom included a total of 13 students. Of the 13 students, 4 were typically developing, 3 students had ASD, 1 student was wheelchair bound as a result of seizures, and the remaining 5 students had mild language or developmental delays. Tara served as the classroom's certified teacher and was supported by 2 teaching assistants. In the classroom, daily activities included routines such as circle-time, direct teaching centers, outdoor play, and lunch. Specific routines for intervention were selected at the pre-intervention collaborative meeting.

In the home, Guillermo had interactions with his father, mother, and three siblings. Observations were conducted during daily activities with his mother. Daily activities included typical home routines such as getting dressed, playing with siblings, mealtimes, and bath time. Again, specific routines for intervention and observation were selected at the pre-intervention collaborative meeting.

Independent Variable

The independent variable was teacher and parent participation in three collaborative planning meetings (one per routine) in which an activity matrix was developed to plan for an activity-based approach to early intervention, spanning across classroom and home settings. Each collaborative planning session was designed to plan opportunities for embedding instruction for an IEP goal within the context of a daily routine or activity in the home and a matched routine in the school. Information from each collaborative planning meeting was combined to develop a comprehensive activity matrix for the child's goal across a total of three matched routines. Appendix C provides a sample collaborative planning activity matrix.

Dependent Measures

Observational data were collected within the context of school and home routines. The primary dependent measure was combined rate of ABI learning opportunities provided by the teacher and parent for the targeted IEP objective across settings. ABI learning opportunities are defined as a complete, three-part cycle that includes an ABI instructional strategy, the child's behavior, and a consequence. The learning cycle must begin with one or more of the ABI instructional strategies defined in Table 2: (a) contextual support, (b) responsive interactions, (c) environmental arrangements, (d) time delay, (e) modeling and requesting imitation, (f) prompting and fading, and (g) interspersing maintenance and acquisition tasks. Furthermore, to be counted as an ABI learning opportunity, the learning cycle must conclude with a natural and directly related consequence that is contingently delivered immediately following engagement in the target behavior. For example, a child's target behavior may be to identify colors. If the teacher or parent follows the child's lead (contextual support) while playing with cars and says, "Let's race the red cars," and models by pushing one of the red cars to encourage the child to identify a red car to race, then the first part of the learning cycle has been provided. If the child identifies the colored car incorrectly, then the adult must provide a consequence, such as saying, "oops, that's not red" and returning the car to the starting line. In this example, an ABI learning opportunity was provided; however, the child did not demonstrate the target behavior. If the adult encourages the child to try again by saying, says, "Let's race the red cars," and prompts the child by placing the red car closest to him, then the first part of a new ABI learning cycle has been provided. This time, if the child correctly identifies the red car, then the child has demonstrated the target behavior. Nonetheless, if this example is to be considered a completed ABI learning opportunity, then the adult must respond to the child's correct demonstration of the

targeted behavior by providing an immediate and directly related consequence. For example, within 3 seconds of the demonstration of the targeted behavior, the adult may say, "That's it! Go, red car, go!" Unrelated rewards such as a candy or gold star sticker would not constitute the completion of an ABI learning opportunity. In summary, the scenario where the adult prompts the child by placing the red car closest to the child, the child correctly identifies the color, and then the adult immediately responds with acknowledgement of identification of the correct color and allows the child to complete the race is an example of both an ABI learning opportunity, and the child's demonstration of the target behavior.

It was expected that an increase in delivery of learning opportunities, would result in a subsequent increase in the child demonstration of the target behavior. Hence, the second dependent measure was the combined rate of the child's demonstration of the desired behavior outlined by the targeted IEP goal across both the classroom and home settings for each routine. The rate for each dependent measure was calculated by determining the total frequency first and dividing by the duration of the routine in minutes. The final dependent measure related to social validity. Parent and teacher perceptions of the value and effectiveness of collaborative planning for an activity-based approach to early intervention were gathered using pre- and post-survey responses as well as information from a final interview.

Experimental Design and Data Analysis

Single subject methodology was selected to analyze the effect of collaborative planning for an activity-based approach to early intervention for young children with ASD across school and home settings. Single subject research has proven effective in defining educational practices addressing the level of the individual learner (Horner et al., 2005). Children with ASD present heterogeneous deficits and learning styles (Boyd et al., 2010; Woods & Whetherby, 2003).

Analysis at the individual level is relevant when working with such a uniquely diverse population. Single subject research provides experimental control because each participant serves as his or her own control, and direct manipulation of the independent variable results in a visual change in the dependent variable (Hammond & Gast, 2010).

A multiple-probe design across home and school matched routines was used to evaluate the effects of collaborative planning for activity-based intervention (Gast, 2010; Horner & Baer, 1978; Kazdin, 1982; Tawney & Gast, 1984). A multiple-probe design was selected instead of multiple-baseline in an effort to reduce the obtrusive nature of frequent observations throughout multiple school and family routines each day. Due to the frequency of observations and time obligations, replication was provided across multiple routines using a single participant triad rather than across multiple participants. Collaborative, activity-based planning support for the same IEP goal across each of the three selected routines was introduced in a staggered fashion. Effects of a multiple-probe design were demonstrated by introducing intervention (collaborative planning support) for the selected routines at different times (Gast, 2010; Kazdin, 1982). Daily observational data were collected on the three matched routines to establish a true baseline. Criteria for establishing baseline were set at the presence of a non-ascending, stable or consistent trend across four data points. Once a true baseline was established and collaborative activity-based planning for the first routine was completed, bi-weekly (two out of five weekdays) probes of the non-active routines were collected.

Research has shown that probes occurring every two or three days accurately approximate data collected from daily observations (Bijou, Peterson, Harris, Allen, & Johnston, 1969; Gast, 2010; Kazdin, 1982). Criteria for phase change were set at the collection of 3 to 5 data points with a minimum of 3 points falling above the highest level of baseline across a stable

or increasing trend. Although data were collected on both adult performance and child performance, considerations for phase change were based on the combined rate of adult (teacher and parent) delivery of ABI learning opportunities alone. If following 5 days of data collection, 3 of the data points had not yet demonstrated a stable or increasing trend above baseline for rate of ABI learning opportunities, the researcher would initiate an alternate phase that incorporated delivery of immediate coaching and feedback to support the adult's behavior during the targeted routine.

Using visual analysis, if a pattern of changes in the dependent variables was evident following the collaborative planning meeting, then this change could be attributed to the intervention planning. In addition to visual analysis, results were quantitatively analyzed by computing the percentage of nonoverlaping data (PND) between baseline and intervention phases (Scruggs & Mastropieri, 1998). If there was a difference (nonoverlapping data) in performance during baseline and subsequent intervention phases when the data points were plotted over time and the distribution difference was replicated across other treatment phases, then the effects could be attributed to the intervention (Kazdin, 1978). Furthermore, lower percentages of overlapping data result in greater evidence for the intervention's impact on the targeted behavior (Tawney & Gast, 1984). PND was calculated as the proportion of intervention data points that fell higher than the greatest value recorded during baseline (Scruggs & Mastropieri, 1998). A PND score that fell above 90 percent could be interpreted as a very effective intervention, a score from 70 to 90 percent could be interpreted as an effective intervention, a score from 50 to 70 percent could be interpreted as having low or questionable effectiveness, and a score that fell below 50 percent could be interpreted as an ineffective intervention (Scruggs & Mastropieri, 1998).

Procedures and Data Collection

The experimental procedures and data collection section outlines the steps that were followed within each phase of the study as well as the actions taken to ensure accurate data collection. The phases of the study included (a) recruitment of participants, (b) pre-intervention (goal selection and identification of typical routines), (c) baseline, (d) intervention for routine 1, (e) intervention for routine 2, (f) intervention for routine 3, and (g) post intervention interviews. At the onset of the study, the teacher and parent met with the researcher for the pre-intervention condition. The intention of this initial meeting was to review the purpose of the study and obtain informed consent. During the pre-intervention meeting, the teacher, parent, and researcher reviewed the child's IEP goals and selected a goal for intervention based on parent priority. The parent was involved in the selection of the instructional target, as well as the context for intervention implementation. Following identification of the IEP goal, the researcher, teacher, and parent selected three routines in each setting (school and home) that occur on a daily basis. The teacher was supported in helping the parent identify existing family routines that might provide the context for embedded instruction. A protocol with guided questions for the parent was provided to facilitate the selection of routines in the home environment (see Appendix D). A parallel protocol was also provided to structure the selection of routines in the classroom environment (see Appendix E). Based on the family or home routines selected and the typical daily schedule in the classroom, an effort was made to match similar routines across both environments [i.e. 1) story time at home might be matched with reading during circle time at school; 2) breakfast or dinner at home matched with lunch time at school; and 3) outings to the park at home matched with recess on the playground at school]. The researcher collected baseline data during the three selected routines both at home and at school for the identified goal.

The researcher used web-cameras to record the direct observations of interactions within each of the routines in the school and home settings to increase accuracy of data collection. Each participant received an Internet-equipped laptop and accompanying web-camera for the duration of the study. However, both the teacher and parent preferred to use their own personal Internet-equipped laptop with the external web-camera that was provided. The web-cameras used were Logitech Webcam Pro 9000. The cameras connect to the laptop via USB cable and can rest on the top of the laptop or stand alone. The researcher programmed each personal laptop with a large icon placed in the center of the screen allowing directly linked, easy access to a secure login for a web-conference meeting room through Adobe Connect. Prior to each recorded observation, the teacher or parent needed to power on the laptop and web-camera and log in to the Adobe Connect meeting room. The web-conference meeting room displayed the image that the web-camera was capturing and a copy of the current activity matrix (See Appendix F). The researcher remotely joined the web-conference and recorded the session as soon as the participant was ready to begin the routine. The researcher provided technical assistance and training for the web-conferencing at the end of the pre-intervention meeting.

Following each recorded session across all phases, the data were reviewed and coded using the data collection form provided in Appendix G. Learning opportunities were defined as a complete, three-part cycle: ABI instructional strategy, target behavior, and consequence. The data collection form provided a system of documenting the time that the ABI learning opportunity occurred within the recorded routine, as well as the occurrence of all three components the ABI learning cycle. Within each component, the observer selected the instructional strategy or strategies used, documented whether the target behavior was demonstrated, and confirmed that a consequence was provided that was both immediate and

related to the target behavior. The rate of ABI learning opportunities was calculated by counting the total number of complete, 3-part learning cycles that occurred during the recorded session, divided by the duration of the routine in minutes. The child's performance was calculated by counting the total number of correct demonstrations of the target behavior and dividing by the duration of the routine in minutes. Baseline data were established following a non-ascending stable or consistent trend across four data points.

Following baseline, the teacher and parent met with the researcher for the first of three collaborative planning meetings. The purpose of the meeting was to develop a collaborative planning matrix to address the IEP goal across both school and home routines and activities (see Appendix C for a sample matrix). In the first intervention condition, the first collaborative planning meeting focused on the child's IEP goal in the context of the first matched-routines selected. The researcher guided the teacher in planning embedded learning opportunities to address the IEP goal during the first identified routine. The researcher supported the teacher and parent in analyzing the existing routine and identifying additional learning opportunities for the selected goal in both the classroom and home (see Appendix H). The researcher shared naturalistic instructional strategies from Table 2 with the parent and teacher in order to support additional learning opportunities within the context of the selected classroom and home matched routines. The activity matrix provided a system for documenting the strategies selected to support learning opportunities during the first routine. As additional routines were introduced at subsequent collaborative planning meetings, the researcher added corresponding strategies to the final planning matrix. Following the collaborative planning meeting, the teacher and parent independently implemented the intervention plans within the context of the identified routine. Daily classroom and home data were collected using recorded web-conferencing observations of

the IEP goal within the context of the first routine in the school and home settings. The researcher continued to collect bi-weekly probe data on the combined rate of ABI learning opportunities provided and the rate of correct demonstration of the IEP goal within the context of the remaining two routines selected for intervention.

Once 3 data points falling above the highest level of baseline demonstrated a stable or increasing trend for the first intervention condition, the second condition was introduced. However, if following 5 observations, there was no evidence of stability or an increase in learning opportunities provided by the teacher or parent, the researcher would have introduced an alternate phase that provides additional support through feedback and immediate coaching within the context of the current routine. Coaching and timely feedback would be provided using the web-conferencing feature as the routine was being observed remotely. The researcher would support the parent or teacher in implementing the plans identified in the planning matrix. The parent or teacher would also be coached in identifying and embedding learning opportunities within the context of the routine. The researcher would support the adult in completing the three-part learning cycle through delivery of natural and directly related reinforcement immediately following the child's engagement in the desired behavior defined in the selected IEP goal.

In the second condition, the parent was asked to return to the preschool for another collaborative planning meeting. The same procedures were applied in order to target the IEP goal, within the context of the second typical routine identified in the school and home settings. Daily classroom and home data were collected for the IEP goal within the context of the second routine in the school and home settings. Bi-weekly probe data continued to be collected on the

combined rate of ABI learning opportunities provided and correct demonstration of the IEP goal within the context of the first and third routines selected for intervention.

Once 3 data points falling above the highest level of baseline demonstrated a stable or increasing trend for the second intervention condition, the third condition was introduced. However, like the previous condition, if following 5 observations, there was no evidence of stability or an increase trend in learning opportunities provided by the teacher or parent, the researcher would have introduced an alternate phase that provided additional support through feedback and immediate coaching within the context of the current routine.

For the third intervention condition, a third collaborative planning meeting with the teacher and parent was held to discuss the IEP goal in the context of the third routine in both the school and home settings. Planning from each of the meetings was combined into a final activity matrix. The collective activity matrix organized the information from all three collaborative planning meetings to provide the teacher and parent with strategies that address the selected IEP goal throughout the day, across multiple settings, within the context of a variety of daily routines. (For a summary of research procedures, see Appendix I). Again, observational data of the third matched routine was collected daily via recorded web-conferencing sessions, and bi-weekly probes were conducted for the first and second matched routines. Recorded observations were reviewed and coded using the data collection form provided in Appendix G.

Procedural Fidelity of Collaborative Planning Sessions

Each collaborative planning session should be individualized based on the needs of the child and family, the target IEP goal selected for intervention, and the routines selected for embedding learning opportunities. Thus, in an effort to ensure procedural fidelity across support provided during each collaborative planning meeting as well as future replication, this section

provides a guide for implementation of collaborative planning support. Appendix J provides a fidelity checklist used by the researcher to confirm each step of the collaborative planning sessions had been completed.

Collaborative planning meetings each began with a review of the target IEP goal selected for intervention. To ensure accurate understanding of the desired behavior, the researcher asked the teacher to describe at least two examples of how the child might engage in the desired behavior described in the targeted IEP objective. The parent was also asked to generate at least two examples of how the child might engage in the desired behavior at home. For example, if the target behavior were for the child to combine 2-3 words to request desired items and activities, the meeting would begin with reading over the IEP goal. The teacher was then asked to provide at least two examples of the child engaging in the desired behavior. The teacher identified instances such as the child requesting, "I want juice" during snack time and "push, please" while on the swings during recess. The parent was also asked to provide at least two examples and identify instances such as requesting "more cereal" during breakfast, and "I want bubbles" during bath time. The researcher proceeded by asking if either the teacher or parent had any questions about the desired behavior.

Once a clear understanding of the IEP goal and corresponding desired behavior was established, the researcher, teacher, and parent discussed the routine selected as the context for embedding learning opportunities. The classroom routine was discussed first to help the parent establish a framework of the process before discussing the home routine. The teacher was asked to describe the general sequence and procedures involved in the selected routine as well as describe how the child currently participated in the routine (documented using Appendix H). The teacher was asked if she had any ideas about how to provide additional opportunities to

address the target goal within the context of the classroom routine. After reviewing the teacher's ideas, the researcher suggested the use of 1-3 strategies from Table 2 to expand upon the number and variety of learning opportunities within the routine. Strategies were discussed in terms of practical examples in an effort to avoid the use of technical terms that may cause confusion. Then the teacher and parent generated examples of strategy use within the classroom routine to support multiple and varied opportunities to address the target IEP goal. Strategies and specific examples for implementation were documented within the activity matrix (See Appendix C for sample).

Following discussion of the classroom routine, the parent was asked to describe the typical sequence and procedures involved in the selected home routine as well as describe how the child currently participated in the routine (documented using Appendix H). Similar to the discussion of the classroom routine, the parent was asked if she had any ideas about how to provide additional opportunities to address the target goal within the context of the home routine. After reviewing the parent's ideas, the teacher was asked if she had any additional ideas or suggestions. The researcher summarized the ideas generated by the parent and teacher. Then, the researcher suggested the use of 1-3 strategies from Table 2 to expand upon the number and variety of learning opportunities within the routine. Again, strategies were discussed in terms of practical examples in an effort to avoid the use of technical terms that may cause confusion. To confirm comprehension, the teacher and parent generated additional examples of strategy use within the classroom routine to support multiple and varied opportunities to address the target IEP goal. Strategies and specific examples for implementation within the home routine were documented within the activity matrix (See Appendix C for sample). Again, a checklist for

ensuring procedural fidelity of the support provided during collaborative planning sessions is provided in Appendix J.

Social Validity

The purpose of the social validity measures was to determine whether the intervention was socially perceived as practical and effective. Parent and teacher perceptions were measured using pre- and post-intervention surveys and a final interview aimed at exposing the perceived value, strengths, and weaknesses for the collaborative planning process for an activity-based approach to early intervention (See Appendix K). Furthermore, responses from the pre- and post-intervention surveys and a final interview were analyzed to determine whether participant perceptions were consistent with the observed data.

Prior to initiating intervention, the researcher conducted a brief interview with both the teacher and the parent. A structured interview with a four-point Likert scale was designed to assess teacher and parent perceptions related to current practices for collaboratively addressing IEP goals for the child as well as individual perceptions of competence and confidence in supporting the child's goals.

Following the completion of the three collaborative planning conditions, the investigator re-administered the same structured interview to assess any change in perceptions related to current practices for collaboratively addressing IEP goals for the child. Additionally, a face-to-face, unstructured post-interview was conducted with both the teacher and the parent to gather additional information on the perceptions of the collaborative planning meetings, the ease of implementation for each condition, and the perceived impact on child learning related to the selected IEP goal (See Appendix L).

Reliability

The researcher was the primary data collector throughout each phase of the study. Two alternate observers were trained on data collection methods to establish interobserver reliability. The researcher met with the alternate observers to discuss definitions of the various naturalistic strategies for embedding learning opportunities as well as the three required components of a complete ABI learning opportunity. Guided practice was provided by collaboratively scoring a practice video of a child interacting in a typical routine using the provided data collection form (Appendix G). Following initial training with the researcher, each alternate observer independently scored another practice video clip. Training procedures continued until the alternate observer's data and researcher's data were independently in agreement (100% agreement). Total frequency values were used rather than rate to calculate interobserver agreement because each observer reviewed the same recorded session of the same duration. The total frequency for each dependent measure was calculated by both the principal investigator and alternate observer. Interobserver agreement was calculated by dividing the smaller total by the larger total and multiplying by 100 for both the total number of complete learning cycles and the total number of correct responses observed. In other words, interobserver agreement for each dependent measure was calculated by dividing the number of agreements (smaller total) between the researcher and the alternate observer, by the number of agreements plus disagreements (larger total) and multiplying by 100. Once agreement was established on training videos, interobserver reliability data on total frequency of ABI learning opportunities and total frequency of child demonstration of the target behavior were collected by the researcher and alternate observer across baseline and all three intervention phases using the data collection form provided in Appendix G. Kazdin (1982) suggests that interobserver agreement be established for at least

25% of the observations. Because the researcher was the primary data collector across all phases, an increased percentage of interobserver reliability was collected. Reliability probes were collected for 30% of the sessions. It is suggested that interobserver agreement for student responses and rate of ABI learning opportunities during baseline and intervention phases should average a minimum of 80% (Horner et al., 2005).

CHAPTER IV: RESULTS

The purpose of this study was to examine the effects of a collaborative planning approach to activity-based early intervention for children with ASD across school and home settings. The study was conducted across 5 phases. The phases of the study included (a) recruitment of participants, (b) pre-intervention (goal selection, identification of typical routines, and pre-intervention survey), (c) baseline, (d) intervention, and (e) post intervention survey and interviews. This chapter will discuss the findings from each of the phases within the study. The intervention phase consisted of three conditions, each introducing planning within the context of a new routine or activity. The data for each routine are presented in terms of combined results across the home and school settings, providing a measure of total impact following the collaborative planning for both settings. A summary of the disaggregated data by individual setting is also presented. Pre- and post-intervention surveys and final interviews were conducted as measures of social validity. Interobserver agreement and procedural fidelity were conducted to assess the reliability of implementation, behavioral observations, and findings.

Pre-Intervention

Before beginning intervention, an initial meeting was scheduled at Guillermo's preschool during a time that was convenient for both the parent and the teacher. The purpose of this initial meeting was to obtain informed consent, review the purpose and procedures of the study, select a target IEP goal, identify typical routines and activities that occur at home and at school, and select three matched routines for the context of intervention.

IEP Goal Selection.

The parent, teacher, and researcher began by reviewing the child's existing IEP goals and discussing his current level of functioning and participation both at home and at school.

Guillermo's IEP goals related to the following developmental domains: a) pre-academic skills such as counting and tracing his name, b) effective communication, c) cooperative play, and d) independent functioning. Guillermo's mother, Leah, shared that she was most concerned with her son's effective use of communication. The teacher, Tara, shared this concern and agreed with the appropriateness of targeting a communication goal for the purpose of this study. Thus, the specific IEP goal identified for intervention was: The child will correctly use descriptive words when requesting and commenting. Descriptive identifiers included a) size (i.e. big/little; tall/ short), b) color (i.e. red/blue/green; dark/light), and shape (i.e. round/square). Examples of correct demonstration of the target behavior include the following requests and comments: "Mommy, I want the *big* puzzle"; "I see a *small* doggie"; "Can I have the *green* crayon?"; "It's a *purple* flower"; "I want the *round* cookie"; and "We made a *square* puzzle".

Identifying Routines.

Following identification of a priority goal from the child's existing IEP, the researcher, teacher, and parent began discussing the child's typical daily routine and activities. The parallel forms provided as Appendices D and E were used to facilitate and guide this discussion. The researcher asked Leah, Guillermo's mother, to begin by describing her family and whom Guillermo interacts with on a regular basis. Leah shared that Guillermo interacts daily with his immediate family, which includes Guillermo's mother, father, older brother (6 years old), younger sister (2 years old), and baby brother (3 months old). In addition to his immediate family, Guillermo also spends time with his grandparents and aunt and uncle. Leah proceeded by describing the typical routines and activities that Guillermo engages in on a daily basis. She listed and described several routines in a chronological manner, beginning with the typical morning activities and concluding with Guillermo's bedtime routine. The researcher organized

the various routines into four categories: caregiver routines, play routines, pre-academic routines, and community and family routines. The researcher also asked Leah to expand by describing how Guillermo participates in the various routines. The discussion continued with a description of the interactions that are most enjoyable to Leah, as well as the interactions that appear to be the most enjoyable to Guillermo. Finally, Leah shared the routines she felt allowed the most opportunities for learning and interaction. Some of the routines and activities that were identified included snack time, puzzles, coloring, reading books, ball play with siblings, and bubbles. See Appendix M for additional details on the identification of typical family routines.

Prior to selecting specific routines for intervention, a similar discussion was initiated to identify the typical routines and activities that occur on a daily basis in Guillermo's classroom. Like the family routines, the discussion of typical classroom routines began with an inquiry of whom Guillermo typically interacts with on a daily basis. Tara, Guillermo's teacher, described that the classroom had 13 students: 4 were typically developing, 3 students were on the autism spectrum, 1 student was wheelchair bound as a result of seizures, and the remaining 5 students had mild language or developmental delays. Tara's classroom was staffed with two teaching assistants. She also described that Guillermo occasionally expressed a preference for interacting with one of the teaching assistants and the only girl in the class. Tara then described her classroom's typical schedule. Like Leah, Tara described the routines in a chronological manner, beginning with arrival and concluding with dismissal at the end of the school day. The classroom schedule included typical preschool activities such as tabletop toys (lacing, puzzles, and matching games), snack time, circle time, centers (blocks, dramatic/ dress-up, fluid or sand play, art, and computer), story, lunch, and outdoor play. Tara was also asked to expand be describing the ways in which Guillermo participates in the various classroom routines and

identify routines that she perceived might allow the most opportunities for learning and interaction. See Appendix N for additional details on the identification of typical classroom routines.

Finally, Tara and Leah considered which routines matched well between the school and home settings. The parent and teacher collaboratively identified the following matched routines for intervention: snack, tabletop activities, and story. Table 4 outlines the matched routines selected for intervention. At home, snack occurred in the afternoon as soon as Guillermo arrived from school. The routine involved the mother and child sitting at the kitchen table although Guillermo's siblings were typically in the same room playing. At school, snack occurred in the mornings at 9 am, shortly after arrival. Guillermo typically sat at a small round table with the teacher and 2-3 other peers. At home, tabletop activities, which included activities such as coloring and puzzles, typically occurred with Guillermo and his mother sitting at the kitchen table after snack. While at school, tabletop activities occurred upon arrival, at the same tables as snack. Typically, Guillermo sat at a table with 2-3 other peers and was joined by the teacher. Finally, at home, a story was read every night before bed. Guillermo and his mother typically sat together in his bed to read the story. At school, story time was held at the end of circle time with the entire class sitting at the carpet. Typically, half of the student sat directly on the carpet in a half-circle around the teacher, and the remaining students sat in small chairs making an outer row of the circle. The two teaching assistants sat behind the students in chairs. Guillermo sat in this second row of chairs for story time. For each routine, the camera was placed on a bookshelf or high ledge, out of reach to children. The laptop was always turned away so that the computer screen with the camera image could not be seen.

Table 4

Matched Routines Identified for Intervention

	Routine		
Setting	1	2	3
Home	Afternoon Snack	Tabletop Activities	Bedtime Story
School	Morning Snack	Tabletop Activities	Circle Time Story

Baseline and Intervention

To determine the effectiveness of collaborative planning for an activity-based approach to early intervention, a single subject, multiple probe design across matched routines was employed. The two primary dependent measures were the combined rate of complete ABI learning cycles provided by the teacher and parent and the combined rate of correct demonstrations of the targeted goal for each routine across settings. To assess the effectiveness of the intervention on the dependent measures, visual analysis of both the changes among baseline and intervention phases and stability or variability of data within phases. Furthermore, overall effectiveness was verified by calculating the percentage of nonoverlapping data (PND) between baseline and intervention phases. A PND score that falls above 90 percent can be interpreted as a very effective intervention, a score from 70 to 90 percent can be interpreted as an effective intervention, a score from 50 to 70 percent can be interpreted as having low or questionable effectiveness, and a score falling below 50 percent can be interpreted as an ineffective intervention (Scruggs & Mastropieri, 1998). Results are summarized in Table 5 and graphically displayed in Figure 1.

Table 5

Study Results

Routine 1: Snack	Mean Duration of Routine (Minutes)	Mean Rate ABI Learning Opportunities	Mean Rate Correct Demonstrations
Baseline	12 (R= 6-17)	0 (R= 0)	0.015 (R= 0-0.06)
Intervention	13 (R= 10-16)	1.333 (R=1.17-1.63)	1.310 (R= 1.08-1.75)

Routine 2: Tabletop	Mean Duration of Routine (Minutes)	Mean Rate ABI Learning Opportunities	Mean Rate Correct Demonstrations
Baseline	12 (R= 9-15)	0.018 (R= 0-0.09)	0.018 (R= 0-0.09)
Intervention	14 (R= 10-15)	1.428 (R=1-1.87)	1.393 (R= 1-1.67)

Routine 3: Story	Mean Duration of Routine (Minutes)	Mean Rate ABI Learning Opportunities	Mean Rate Correct Demonstrations
Baseline	10 (R= 9-13)	0.018 (R= 0-0.11)	0.018 (R= 0-0.11)
Intervention	15 (R= 14-15)	1.477 (R=1.29-1.67)	1.540 (R= 1.36-1.73)

Note: Rate based on per minute calculations; R = Range

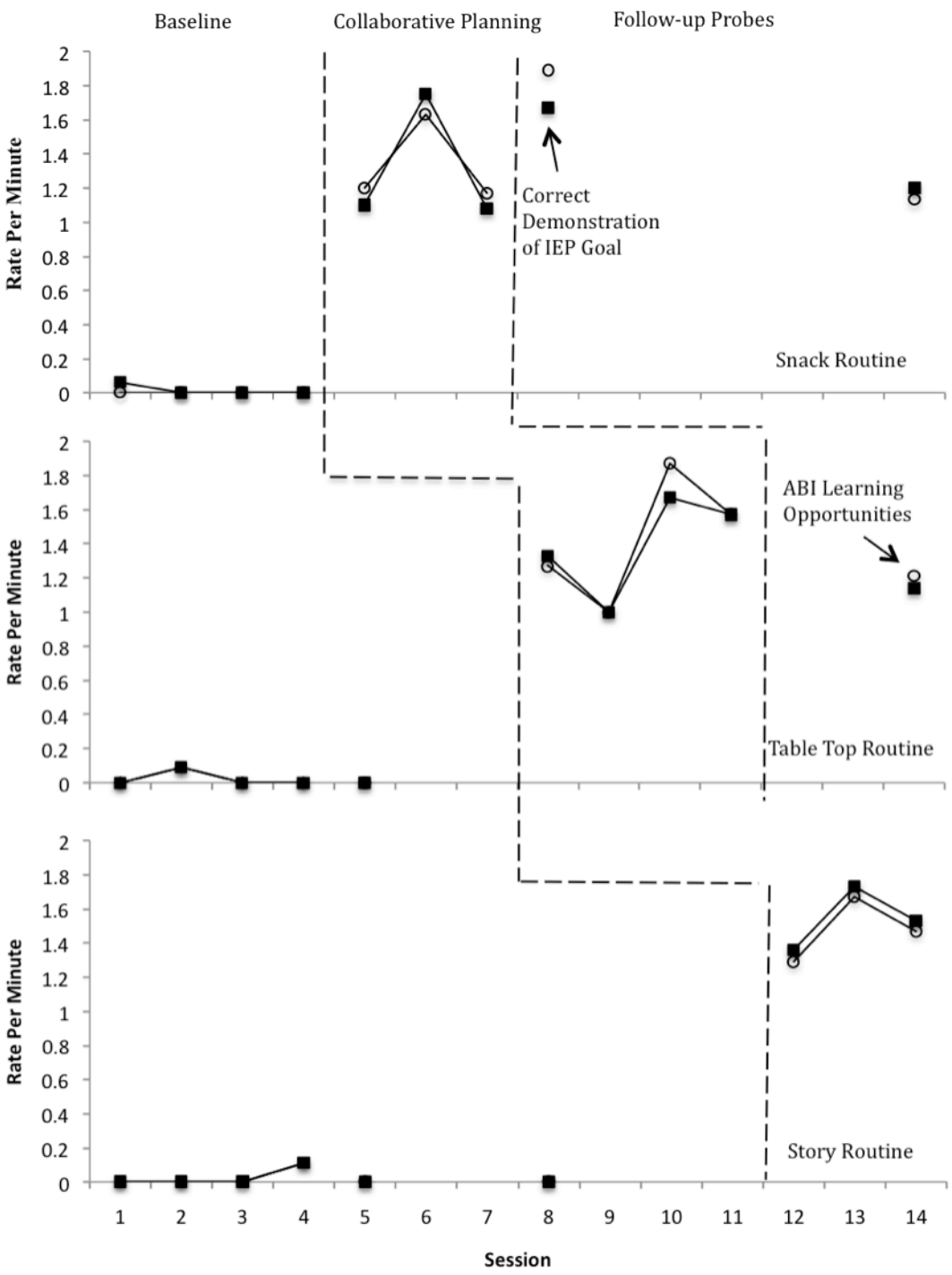


Figure 1. Combined rate of ABI learning opportunities and combined rate of correct demonstrations of the IEP goal during each matched routine.

Baseline.

During baseline the researcher observed all three matched routines in both the school and home settings prior to any discussion or collaborative planning for addressing Guillermo's IEP goal within the context of the routine. Interactions for the duration of the routine were observed and recorded via web-conferencing. Recorded routines were later reviewed and scored for rate of ABI learning opportunities and rate of Guillermo's correct demonstration of the selected IEP goal. Rate was calculated by determining the total frequency of each dependent measure and dividing by the duration of the routine in minutes. Baseline was nearly zero for both rate of ABI learning opportunities and correct demonstrations of the IEP goal across all three routines. For the first routine, snack, the mean duration of the routine was 12 minutes (Range = 6-17 minutes). As outlined in Table 5, the baseline combined rate of ABI learning opportunities for routine 1 (snack) was 0 (range = 0). The mean rate of combined correct demonstrations of the target IEP goal was 0.015 (range = 0-0.06). During the second routine, tabletop activities, the mean duration of the routine was also 12 minutes (Range = 9-15 minutes). The baseline combined rate of ABI learning opportunities for routine 2 (tabletop) was 0.018 (range = 0-0.09), and mean combined rate of correct demonstrations of the target IEP goal was also 0.018 (range = 0-0.09). During the third routine, story time, the mean duration of the routine was 10 minutes (Range = 9-13 minutes). The baseline combined rate of ABI learning opportunities for routine 3 (story) was 0.018 (range = 0-0.11), and mean combined rate of correct demonstrations of the target IEP goal was also 0.018 (range = 0-0.11). Baseline criteria were met with the presence of a non-ascending, stable or consistent trend across four data points.

Intervention.

Routine 1: Snack.

Once the baseline was stable, the researcher scheduled a collaborative planning meeting with the parent and teacher to plan learning opportunities within the context of the first routine matched across school and home settings, snack-time. The collaborative planning meeting took place at a time that was convenient for both the teacher and the parent and was held at the child's school in a private meeting room. The researcher began the collaborative planning meeting by reviewing the IEP goal that was selected for intervention within the context of the current routine. After defining the IEP goal and providing specific examples of correct demonstration of the goal within the context a typical snack routine, Tara (teacher) and Leah (parent) each asked generated additional examples of how Guillermo might correctly demonstrate the IEP goal during snack time. See Appendix O for a list of the examples generated.

After ensuring that there were no additional questions relating to the IEP goal, the researcher asked Tara to describe the typical proceedings of the daily snack routine in the classroom and share how Guillermo currently participated in the routine. See Appendix P for a summary of the existing routine as well as Guillermo's current level of participation prior to planning. Once strategies were suggested for enhancing Guillermo's participation in the routine, the teacher and parent shared additional ideas for providing learning opportunities for the IEP goal during snack time at school.

The same proceedings were repeated to plan for the typical snack routine at home. Leah described the typical daily snack routine at home and shared how Guillermo currently participated in the routine. Appendix P provides a summary of the existing routine as well as Guillermo's current level of participation prior to planning. Once strategies were discussed for

enhancing Guillermo's participation in the routine at home, the teacher and parent shared additional ideas for providing learning opportunities for the IEP goal during snack time at home. Finally, a summary of the strategies for providing learning opportunities was transcribed into the collaborative planning matrix.

Following the collaborative planning meeting, Tara and Leah were each asked to begin implementing the strategies that were planned for within the context of the snack routine. Daily observations of interactions during snack time at school and at home were conducted, and additional probe observations were conducted for the two routines that had not yet been planned for (tabletop and story). During intervention, the mean duration across both settings of the snack routine increased from 12 to 13 minutes (range = 10-16 minutes). For the snack routine, the mean intervention rate of ABI learning opportunities increased from 0 to 1.333 opportunities per minute (range = 1.17-1.63). The mean intervention rate of Guillermo's correct demonstrations of the IEP goal during snack increased from 0.015 to 1.31 demonstrations per minute (range = 1.08-1.75) across school and home settings (see Table 5 for summary). Criteria for initiating the subsequent intervention phase were met following the first three data points, which demonstrated a slightly variable acceleration trend. Probe data remained consistent with initial baseline data for the tabletop and story routines. Furthermore, as displayed in figure 1, 100% of the intervention data points for snack fell above the highest point in baseline, indicating strong effectiveness of the collaborative planning intervention in the context of the first routine.

Routine 2: Tabletop.

Once the intervention criteria were met with at least three data points that fell above the highest level of baseline with a stable or increasing trend for routine one, a collaborative planning meeting was scheduled with the parent and teacher to plan learning opportunities within

the context of the second routine matched across school and home settings, tabletop activities. Again, the collaborative planning meeting was scheduled for a time that was convenient for both the teacher and the parent and was held at the child's school in a private meeting room. The structure of each collaborative planning meeting was the same. The researcher began the collaborative planning meeting by reviewing the IEP goal that was selected for intervention within the context of the current routine. After defining the IEP goal and providing specific examples of correct demonstration of the goal within the context of a typical tabletop routine, the teacher and parent generated additional examples of how Guillermo might correctly demonstrate the IEP goal during typical tabletop activities. See Appendix Q for a list of the examples generated.

After ensuring that there were no additional questions relating to the IEP goal within the context of the second matched routine, the researcher asked Guillermo's teacher to describe what typically occurs during the typical morning tabletop activities in the classroom and share how Guillermo currently participated in the routine. See Appendix R for a summary of the existing routine as well as Guillermo's previous level of participation. Once strategies were suggested for enhancing Guillermo's participation in the routine, the teacher and parent shared additional ideas for providing learning opportunities for the IEP goal during tabletop activities at school.

Similarly, Guillermo's mother was asked to explain what typically occurred during the tabletop activities at home. Leah described the typical tabletop routine at home and shared how Guillermo currently participated in the routine. Appendix R provides a summary of the existing routine as well as Guillermo's current level of participation prior to planning. Once strategies were discussed for enhancing Guillermo's participation in the routine at home, the teacher and parent shared additional ideas for providing learning opportunities for the IEP goal during snack

time at home. Finally, a summary of the strategies for providing learning opportunities was transcribed into the collaborative planning matrix, expanding upon the matrix developed during the first collaborative planning meeting.

Following the collaborative planning meeting, the parent and teacher were each asked to begin implementing the strategies that were planned for within the context of the typical tabletop activities. Daily observations of interactions during tabletop activities at school and at home were conducted, and additional probe observations were conducted for the final routine (story) that had not yet been planned for. During intervention, the mean duration across both settings of the tabletop routine increased from 12 to 14 minutes (Range = 10-15 minutes). As outlined in Table 5, for tabletop activities, the mean combined intervention rate of ABI learning opportunities increased from 0.018 to 1.428 opportunities per minute (range = 1-1.87). The mean combined intervention rate of Guillermo's correct demonstrations of the IEP goal during snack increased from 0.018 to 1.393 demonstrations per minute (range = 1-1.67) across school and home settings. Criteria for initiating the subsequent intervention phase were met following the first four data points, which demonstrated a slightly variable acceleration trend. Probe data remained consistent with initial baseline data for story routine. Also consistent was a 100% PND score, which indicates strong effectiveness of the collaborative planning intervention in the context of the tabletop routine as depicted in figure 1.

Routine 3: Story.

Once intervention criteria were met for the second routine, a collaborative planning meeting was scheduled with the parent and teacher to plan learning opportunities within the context of the third routine, story time. Consistent with previous meetings, the third collaborative planning meeting was scheduled for a time that was convenient for both the teacher

and the parent and was held at the child's school in a private meeting room. The researcher initiated the collaborative planning meeting by reviewing the IEP goal that was selected for intervention and providing specific examples of correct demonstration of the goal within the context a typical story routine. The teacher and parent each produced some of their own ideas of how Guillermo might correctly demonstrate the IEP goal during a typical story. See Appendix S for a list of the examples generated.

After ensuring that there were no additional questions relating to the IEP goal within the context of the third matched routine, Guillermo's teacher took the lead and described what typically occurs during the morning story and shared how Guillermo currently participated in the routine. See Appendix T for a summary of the existing routine as well as Guillermo's previous level of participation. Once strategies were suggested for enhancing Guillermo's participation in the routine, the teacher and parent shared additional ideas for providing learning opportunities for the IEP goal during the story routine at school.

The interactive discussion proceeded with Guillermo's mother explaining what typically occurs during the bedtime story each night at home. Appendix T provides a summary of the existing routine as well as Guillermo's level of participation prior to the collaborative planning meeting. Once strategies were discussed for enhancing Guillermo's participation in the routine at home, the teacher and parent shared additional ideas for providing learning opportunities for the IEP goal during story time at home. A summary of the strategies for providing learning opportunities was transcribed into the final collaborative planning matrix, provided in Appendix U. The completed planning matrix included information from all three collaborative planning meetings.

Following the collaborative planning meeting, the parent and teacher were each asked to begin implementing the strategies that were planned for within the context of the typical story routine both at school and at home. Observations of interactions during the story routine at school and at home were conducted daily. During intervention, the mean duration across both settings of the story routine increased from 10 to 15 minutes (Range = 14-15 minutes). As summarized in Table 5, for the story routine, the mean combined intervention rate of ABI learning opportunities increased from 0.018 to 1.477 opportunities per minute (range = 1.29-1.67). The mean combined intervention rate of Guillermo's correct demonstrations of the IEP goal during snack increased from 0.018 to 1.540 demonstrations per minute (range = 1.36-1.73) across school and home settings. The first three data points demonstrated a slightly variable acceleration trend. Finally, as depicted in figure 1,100% of the intervention data points fell above the highest level of baseline, signifying that the collaborative planning intervention was very effective in the context of the third routine.

Summary of Disaggregated Data by Setting

The combined data were disaggregated to provide additional information on the individual contributions based on the parent and teacher in the school and home settings. Table 6 provides a summary of the mean rate of learning opportunities provided and the mean rate of correct demonstrations of the IEP goal across routines for each individual setting. Figure 2 depicts the data on rate of learning opportunities and child performance based on observations in the school alone. Figure 3 depicts the data on rate of learning opportunities and child performance based on observations in the home alone. Based on the disaggregated data, increases for both of the primary dependent measures were evident in each of the school and home settings. In other words, both the teacher and the parent were individually successful in

delivering increased learning opportunities and promoting increased correct demonstrations of the targeted IEP goal from the child. However, learning opportunities delivered by the parent at home and associated observations of correct demonstrations of the targeted IEP goal contributed a larger proportion of the total increases observed for all routines.

Table 6

Contribution Summaries Across Settings

Routine 1: Snack	Total Across Settings	School	Home
Baseline *ABI Learning Opportunities*	Mean Rate = 0 (Range = 0)	Mean Rate = 0 (Range = 0)	Mean Rate = 0 (Range = 0)
Baseline *Correct Demonstrations*	Mean Rate = 0.015 (Range = 0-0.06)	Mean Rate = 0.028 (Range = 0-0.11)	Mean Rate = 0 (Range = 0)
Intervention *ABI Learning Opportunities*	Mean Rate = 1.333 (Range = 1.17-1.63)	Mean Rate = 0.583 (Range = 0.25-0.83)	Mean Rate = 1.843 (Range = 1.5-2.2)
Intervention *Correct Demonstrations*	Mean Rate = 1.31 (Range = 1.08-1.75)	Mean Rate = 0.583 (Range = 0.25-0.83)	Mean Rate = 1.823 (Range = 1.5-2.3)

Routine 2: Tabletop	Total Across Settings	School	Home
Baseline *ABI Learning*	Mean Rate = 0.018	Mean Rate = 0.026	Mean Rate = 0
Opportunities	(Range = 0-0.09)	(Range = 0-0.13)	(Range = 0)
Baseline	Mean Rate = 0.018	Mean Rate = 0.026	Mean Rate = 0
Correct Demonstrations	(Range = 0-0.09)	(Range = 0-0.13)	(Range = 0)
Intervention *ABI*	Mean Rate = 1.428	Mean Rate = 0.713	Mean Rate = 2.268
Learning Opportunities	(Range = 1-1.87)	(Range = 0.5-1.25)	(Range = 1.33-3.43)
Intervention	Mean Rate = 1.393	Mean Rate = 0.683	Mean Rate = 2.245
Correct Demonstrations	(Range = 1-1.67)	(Range = 0.38-1.25)	(Range = 1.33-3.14)

Routine 3: Story	Total Across Settings	School	Home
Baseline *ABI Learning*	Mean Rate = 0.018	Mean Rate = 0	Mean Rate = 0.05
Opportunities	(Range = 0-0.11)	(Range = 0)	(Range = 0-0.2)
Baseline	Mean Rate = 0.018	Mean Rate = 0	Mean Rate = 0.05
Correct Demonstrations	(Range = 0-0.11)	(Range = 0)	(Range = 0-0.2)
Intervention *ABI*	Mean Rate = 1.477	Mean Rate = 1.067	Mean Rate = 1.973
Learning Opportunities	(Range = 1.29-1.67)	(Range = 0.57-2)	(Range = 1.5-2.25)
Intervention	Mean Rate = 1.540	Mean Rate = 1.307	Mean Rate = 1.950
Correct Demonstrations	(Range = 1.36-1.73)	(Range = 0.57-2.6)	(Range = 1.3-2.38)

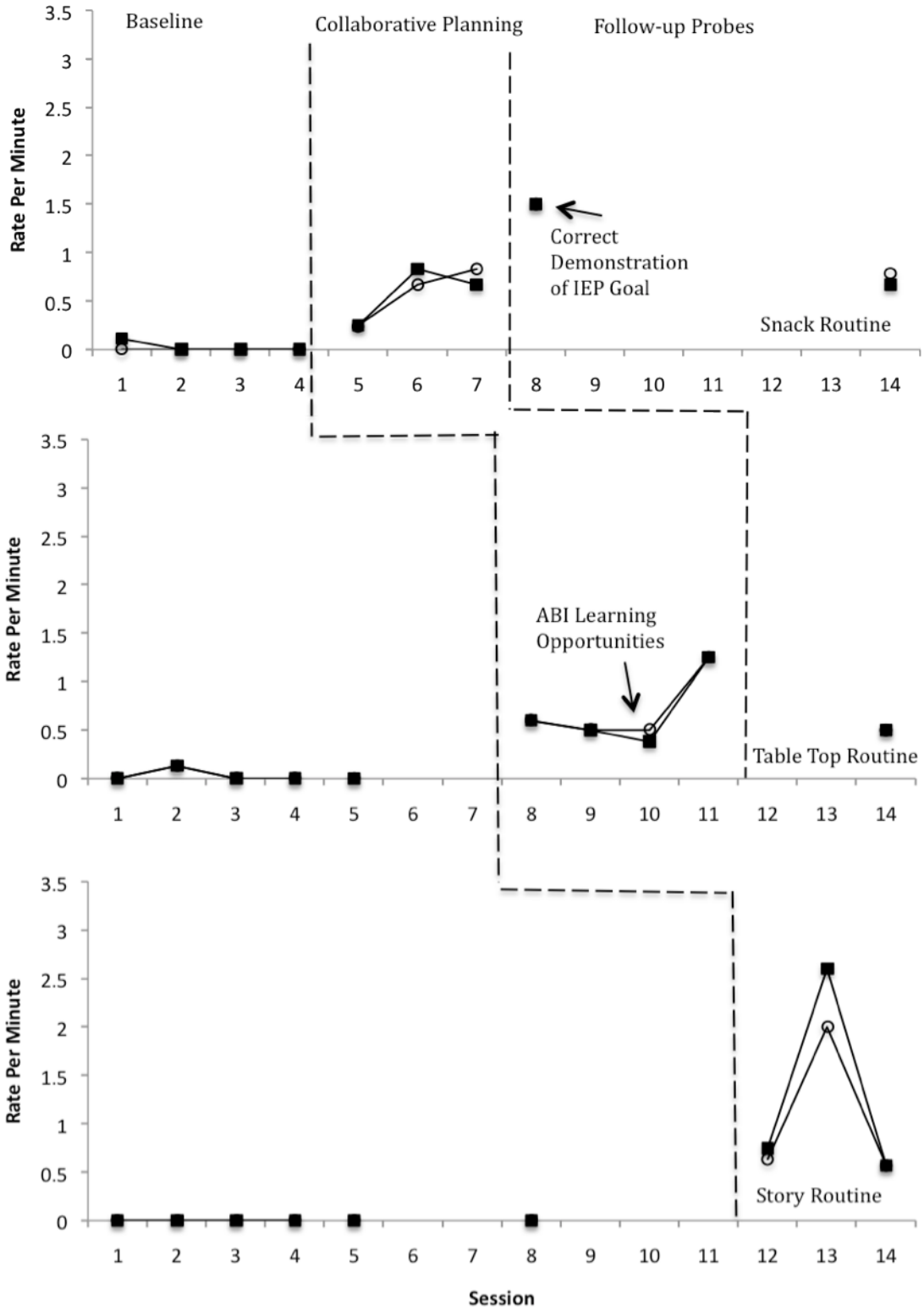


Figure 2. Disaggregated Data for the School Setting

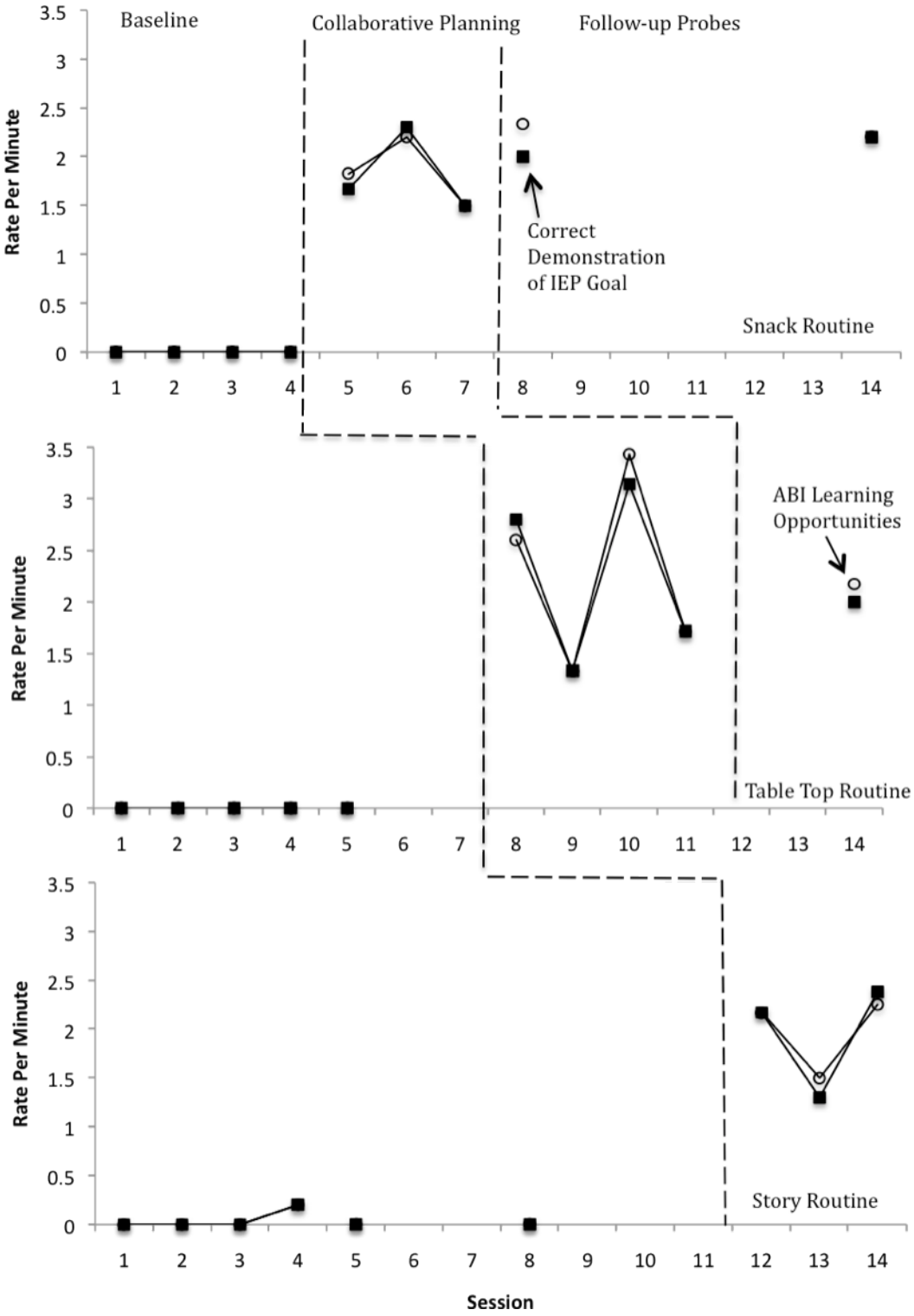


Figure 3. Disaggregated Data for the Home Setting

Social Validity

Pre- and post-intervention surveys and a final interview were used as measures of social validity. Pre- and post-intervention surveys based on a four-point Likert scale were administered to the teacher and parent to assess perceptions related to current practices for collaboratively addressing IEP goals for the child. The survey also explored individual perceptions of personal competence and confidence in supporting the Guillermo's IEP goals. Following intervention, in addition to the survey, a face-to-face, post-interview was conducted individually with the teacher and the parent to gather more detailed and personalized information on the perceptions of the collaborative planning meetings. The interview aimed at assessing the perceived ease of implementation for each condition as well as the perceived impact on Guillermo's learning related to the selected IEP goal.

Based on the pre-intervention survey, Tara, Guillermo's teacher, agreed with each statement presented in Appendix K. She perceived herself as a teacher who regularly interacts with her students' parents to discuss IEP goals and share examples of how to support goals both at school and at home. She also agreed that she felt confident supporting IEP goals within typical classroom routines and comfortable planning with parents to support IEP goals at home. Contrarily, Leah, Guillermo's mother, initially felt that she did not interact with the teacher on a regular basis to discuss IEP goals or share examples of how to support goals at school or at home. However, Leah did agree that she felt confident supporting IEP goals at home and comfortable trying new strategies to support Guillermo's learning at home.

Following intervention, in response to the same questions, Tara's survey responses were similar to her initial perceptions. However, Tara asserted that she now strongly agreed with the fact that she regularly interacts with her students' parents to discuss IEP goals. She also strongly

agreed that she feels confident in supporting students' IEP goals within the context of typical classroom routines. Leah's responses following intervention also demonstrated a positive impact on her perceptions. She strongly agreed that she interacted with Guillermo's teacher on a regular basis to discuss IEP goals. However, she still disagreed that her child's teacher was able to offer useful ideas for supporting Guillermo's IEP goals at home. Nonetheless, she strongly agreed with feeling comfortable and confident in trying strategies and supporting her child's learning at home. Please see Appendix V for a comparison of pre- and post-interview responses.

In addition to the pre- and post-intervention surveys, participants responded to a brief interview and were encouraged to expand upon their perceptions following the collaborative planning for activity-based intervention. The teacher shared that she enjoyed the collaborative planning process as a whole. She also found the development of a planning matrix to be helpful in that, "it served as a visual reminder that really guided [her] in what [she] needed to be doing." In addition to the planning process, the teacher also shared that she felt comfortable implementing the strategies that were planned for: "I was actually really comfortable with implementing what we planned for. I think because it was within the context of things I already do everyday- that made it easier. The planning really made me more conscious of the goal everyday." Tara, Guillermo's teacher shared that the only barriers she encountered related to scheduling. She shared that she was often given late notice of administrator mandated meetings that may have interfered with our scheduled meeting times. Furthermore, when asked if she experienced any challenges incorporated the instructional strategies within typical routines, Tara shared that she was sometimes uncomfortable because she may have been over thinking what she was supposed to be doing. She expressed that she wasn't always "just being natural," which may have been related to the camera. Nonetheless, she "definitely" felt that the collaborative

planning meetings positively impacted the Guillermo's performance on the selected IEP goal. She explained that, "His level of independence really went up, even outside of the three routines. He really started using those descriptors so much more on his own." Tara asserted that she plans to continue to use the strategies that were planned for, not only with Guillermo, but also with other students in her classroom: "I really think this worked, and not just for Guillermo or a child like him, but really for everybody." In addition to generalization across students, Tara also felt that this approach could be generalized to other parents as well: "Yes, this is something that could really be used with another parent. I think it would help so much more than just talking with a parent. Creating that matrix and having it written out really helps with giving specific ideas of what they can be doing at home."

Leah, Guillermo's mother also shared her perceptions on the study. Overall, Leah's general impressions of the collaborative planning approach to activity-based intervention were positive. She felt that one of the greatest strengths of the approach was that she and the teacher were able to brainstorm together and come up with ideas that may not have developed independently. Based on some initial concerns that the teacher may not have always understood what was going on, Leah felt that the collaborative planning meetings were especially beneficial for the teacher. She shared: "I think sharing my insights and your [researcher] support really helped her to try out new things and practice strategies that work with Guillermo. I think the best thing about it was that we could all be on the same page. She could know what I was doing at home and I knew a little more of what was going on at school, and we could all work on the same thing." Leah asserted that she felt comfortable and effective in implementing strategies to support Guillermo throughout the day. She shared that she "still tr[ies] to use the strategies throughout the day now. [She tries] to remember to use them because [she] really [has] noticed a

difference with Guillermo since we started." The only barrier that Leah identified was that it was sometimes difficult to implement strategies during scheduled times if Guillermo was not in a good mood. It can be difficult to engage Guillermo when he is not interested or is focused on another activity. However, she shared that following his lead often helped to get Guillermo engaged in the current activity or routine. Nonetheless, Leah felt that the collaborative planning not only positively impacted her interactions at home with Guillermo, but she also felt that they benefited his interactions at school, and even with his father and siblings at home:

> I really think that it helped Guillermo a lot at school. I think it made it a lot easier for the teacher to work with him once we got to know each other and she learned more about his specific needs and strengths. I think it was good for her to have specific strategies to focus on with him. At home I really saw a lot of improvement too. Even my husband started using some of the strategies to help Guillermo. I never even taught them to my husband specifically, but I think because he saw what I would do and saw how well Guillermo responded that he tried it out too. For example, I saw him playing with Guillermo the other day and he asked him if he wanted the book. Then my husband asked him what kind of book it was and had him ask for the square book. Now, I hear my husband all the time just randomly when he is playing with Guillermo or trying to put him to bed. He gives Guillermo choices between different sizes or colors and works on Guillermo using the descriptor with the option. There have even been a few times with my other children where Guillermo will say it on his own. Recently he was playing with a ball with his brother and sister and I remember him saying I want my round ball. At dinner he'll use it too. Sometimes he fights with his sister about who gets which plate or

cup, and now he will say I want my blue plate or I want my big cup instead of just yelling or snatching it.

Based on the positive gains, Leah plans to continue to implement the strategies she learned and planned for during the collaborative planning meetings. She intends to focus on a specific component of the IEP goal (using *size* descriptors) because she feels he has mastered the other components (shape and color descriptors).

Although some minor challenges existed for both the teacher and the parent, both had positive impressions of the study. They each agreed that the collaborative planning meetings positively impacted Guillermo's performance on the IEP goal within the planned routines. The consensus was that the gains in performance also generalized to unplanned routines. Additionally, both the teacher and parent plan on continuing to implement the strategies. Specifically, the teacher perceived the collaborative planning for an activity-based approach to early intervention as useful for other students and parents.

Reliability

Interobserver reliability was established by having two doctoral students in exceptional student education independently score 30% of the recorded sessions across all phases of the study. The alternate observers were first trained using sample videos to 100% agreement. Comparisons of agreements and disagreements between the principal investigator and the alternate observers were calculated for each dependent measure. For each session, the observer calculated the total ABI learning opportunities that were provided as well as the total correct demonstrations of the IEP goal that were observed. Interobserver agreement was calculated by dividing the smaller total by the larger total and multiplying by 100 for both the total number of complete learning cycles and the total number of correct responses observed. In other words,

interobserver agreement for each dependent measure was calculated by dividing the number of agreements (smaller total) between the researcher and the alternate observer, by the number of agreements plus disagreements (larger total) and multiplying by 100. For the first dependent measure, ABI learning opportunities, interobserver agreement was calculated as an average of 96% agreement (range 80-100%). Interobserver agreement for the second dependent measure, the child's correct demonstrations of the IEP goal was calculated as an average of 94% agreement (range 80-100%).

CHAPTER V: DISCUSSION

Introduction

The purpose of this chapter is to expand upon and discuss the significance of the study results. The chapter begins with a summary of the findings in terms of each of the three research questions and considers how the findings contribute to the current body of literature. Next, the limitations of the study are presented. Finally, the chapter concludes with implications for future research and ongoing practice.

Summary of Findings

It was hypothesized that when parents and teachers are supported in collaboratively planning for activity-based early intervention that addresses an IEP goal across school and home settings, the adults would be able to provide meaningful learning opportunities at an increased rate. Further, the increased learning opportunities provided across environments were expected to subsequently increase the child's performance on the selected IEP goal. In research question 1 (*Is there an increase in the rate of collective ABI learning opportunities provided by the teacher and parent for the identified IEP objective following collaborative planning meetings for activity-based intervention in the school and home?)*, the results indicated a functional relationship between collaborative planning for each activity or routine and an increase in the rate of ABI learning opportunities delivered across school and home settings. The immediacy and strength of change was demonstrated across all three routines. Interestingly, the typical duration of the routines also increased. Thus, not only did the rate of ABI learning opportunities increase, but the length of time that the higher rate of learning opportunities were being delivered also increased. Follow-up probe data from the first two routines indicated that the gains in learning opportunities provided by the teacher and parent maintained over time beyond each

collaborative planning phase. Thus, collaborative planning for an IEP goal using an activity-based approach to early intervention resulted in both the teacher and parent providing increased learning opportunities across multiple routines, throughout the day, and in the school and home settings. The findings in the study are consistent with previous research on increases in learning opportunities when implementing activity-based intervention (Dunst et al., 2001; Horn et al., 2000; Kashinath et al., 2006; Kohler et al., 2001; McBride & Schwartz, 2003; Wolery et al., 2002).

This study expanded upon previous research by combining the effects of learning opportunities delivered by a teacher and parent through collaborative planning. Not only was there a collective increase in learning opportunities provided across both the child's school and home environments, but also both the teacher and the parent each contributed to the increase. When examining the disaggregated data by setting, there were simultaneous increases in both environments that contributed to a total increase in learning opportunities delivered throughout the day. As summarized in Table 6, the mean rate of learning opportunities delivered by the teacher at school as well as the parent at home increased following each collaborative planning meeting. Interestingly, the parent consistently delivered a more significant increase in rate of learning opportunities across all three routines. It is possible that the difference in learning opportunities delivered may be related to the instructional context. At home with the parent, virtually all interactions were one-on-one. Whereas, at school with the teacher, all interactions occurred in small and large group settings. Nonetheless, the significant contribution to increased learning opportunities delivered by the parent provides evidence for the importance of collaboration and parent involvement. Through the collaborative planning for activity-based intervention, the early childhood educator was supported in implementing family-centered

practices that represented the parent as an equal decision maker and active participant in supporting her child's learning. The parent's active role expanded upon and absolutely strengthened what the teacher was able to implement within the classroom alone. Not only did the parent contribute to the planning for how additional learning opportunities could be provided within the classroom, but she was also effective in supporting her child's learning outside of the classroom by implementing a higher rate of learning opportunities during typical routines at home.

In research question 2 (*Is there an increase in the child's demonstration of the targeted IEP objective in the classroom and home settings following collaborative planning meetings for activity-based intervention?),* the results indicated a functional relationship between collaborative planning for each activity or routine and subsequent increase in rate of the child's correct demonstration of the targeted IEP objective. Similar to the changes in rate of learning opportunities, the immediacy and strength of change in correct demonstration of the targeted goal was established across all three routines following collaborative planning sessions. Follow-up probe data from the first two routines indicated that the gains in the child's performance on the IEP goal also maintained over time beyond each collaborative planning phase. Thus, not only did the collaborative planning for activity-based intervention result in an increase in the learning opportunities provided for an IEP goal, but the increase in learning opportunities coincided with increased child outcomes. As learning opportunities increased across both settings, the rate of the child's correct demonstration of the IEP goal also increased. The findings in the study are consistent with previous research on increases in child performance or skill acquisition following activity-based intervention (Dunst et al., 2001; Kashinath et al., 2006; Kohler et al., 2001; McBride & Schwartz, 2003; Schwartz et al., 1996). Although support was

only provided within the context of collaborative planning meetings with the teacher and parent, there is evidence for a positive impact on child performance. The collaborative planning process resulted in both an increase in the collective learning opportunities delivered both at home and at school, as well as a simultaneous increase in child outcome for the targeted IEP objective in both settings. In other words, as the rate of learning opportunities delivered to the child increased following collaborative planning for activity-based intervention, the rate of correct demonstration of the targeted IEP objective also increased. The contribution summaries across settings outlined in Table 6 provide additional evidence for the connection between learning opportunities delivered and subsequent child performance. Both the collective learning opportunities delivered and the individual contributions from each setting demonstrate parallel changes in the child's correct demonstration of the targeted IEP objective. As was observed with the change in learning opportunities, when the data were disaggregated by setting, it was evident that increases were concurrent across both settings. However, the most significant increases in child performance occurred in the home setting. Again, the parent's active role in the planning process for activity-based intervention successfully expanded upon and strengthened child outcomes.

The third and final research question explored how the parent and teacher perceived the value and effectiveness of the collaborative planning meetings for activity-based intervention in the school and home. Despite the fact that neither the parent nor the teacher had any prior experience with planning for activity-based intervention, both expressed comfort and confidence in planning for and implementing activity-based intervention. Moreover, each perceived the collaborative planning as effective in positively impacting the child's performance.

The teacher, Tara, asserted that the planning undoubtedly made a difference in her own attention to the child's individualized goal as well as the child's performance on the goal. She noticed obvious improvements within the context of the routines that were planned. However, it is important to note that she also noticed increased and independent demonstrations of the goal in other generalized settings, outside of the routines that were planned for, and while interacting with other peers and adults in the classroom. Tara identified the planning matrix as a useful tool that served as a visual guide to support her plans in action. She also felt that the structure of the planning matrix supported her in offering specific examples and suggestions when planning with a parent. But most importantly, she felt that the collaborative planning for activity-based intervention would be an effective approach when working with other children and families in the future.

The parent, Leah, valued the collaborative planning meetings as an opportunity to learn more about what her child was doing at school, as well as a time to work together and share strategies that work best for her son, Guillermo. Because each child with autism is so unique, presenting with distinctive strengths, interests, preferences, dislikes or sensitivities, and overall learning styles, Leah truly perceived herself as an asset to the teacher. She felt more comfortable knowing that her son was at school with a teacher whom she was able to share, contribute experiences and ideas, and ultimately, provide a more unified approach to supporting her son's development. Like the teacher, Leah felt that the strategies that were planned for were effective. She also shared that she continues to implement the strategies even after the conclusion of data collection. Leah emphasized that she observed a significant improvement in her son both at school and at home. She was proud to share that her son had generalized the skill of using descriptors when requesting and commenting during interactions with other family members,

including his father and siblings. During typical interactions with his brother and sister, Guillermo began incorporating descriptors into his requests and comments. For example, Guillermo independently requested his "round ball" while playing outside with his siblings, and he commented, "that's *my* blue plate" while arguing with his sister at dinner. Furthermore, without any explicit instruction or support, Leah's husband began initiating some of the strategies he had observed his wife using during the three routines that were planned for. Leah explained that on several occasions she over-heard her husband prompting and supporting Guillermo to use descriptors while the two were playing or engaging in other activities. Thus, Leah expressed that the gains that resulted from the collaborative planning for activity-based intervention had generalized beyond the three routines that were planned for into a variety of natural settings. Not only was Guillermo observed as increasing his correct demonstration of the goal, but he also integrated this new skill throughout his daily interactions. These results are consistent with previous research supporting the theory that skill acquisition and generalization for young children with ASD are maximized when learning is facilitated throughout the day with distributed opportunities for practice across a variety of meaningful contexts (Filler & Xu 2006-2007; Pretti-Frontczak & Bricker, 2004; Vismara et al., 2009).

Limitations

Although the results from this study were promising, the following limitations to external and internal validity must be considered. First, due to the small sample size used in single subject research, generalization or external validity is limited (Kazdin, 1982). The participants included a teacher, parent, and child. The individual characteristics of each participant contribute to the extent to which general conclusions may be drawn. It is unknown whether the study's findings could be replicated with different participants. For example, the teacher

selected for participation was African American, had 3 years teaching experience, 12 years experience as a teaching assistant, and was certified to teach Exceptional Student Education (Kindergarten through twelfth grade) and pre-kindergarten through third grade. The parent was Caucasian, had college level education, worked part-time from home, and was actively involved in supporting her son's education and development. Although she did not have previous experience with activity-based intervention, her son had received early intervention services before entering the school system, and both parents received education and training support from an early intervention provider (Part C). Thus, it is unknown whether the significant results demonstrated in the home setting would be replicated with parents from other ethnic, socio-economic, and education backgrounds. Additionally, the researcher knew the parent prior to beginning the study. Thus, it is unknown whether the pre-established rapport with the researcher impacted the parent's level of participation, commitment to the study activities, and ability to deliver learning opportunities. With other families, it is possible that additional time may be required in establishing rapport. Study activities, including collaborative planning meetings and intentional delivery of learning opportunities within typical routines, required a time commitment from the parent and teacher as well as some level of organization. Some practical barriers may exist with scheduling and implementation of study activities when participants include families with busy work schedules or extracurricular activities. The parent who participated in this study was the mother of the child; thus, it is unknown whether results would be consistent if a father were selected for participation. Finally, the child was Hispanic, approximately 4 and a half years old, and was diagnosed with PDD-NOS. Due to the heterogeneous nature of Autism Spectrum disorders (Boyd et al., 2010; Woods & Whetherby, 2003), it is unknown whether the results can be accurately generalized to all young children with

ASD or other disabilities. Furthermore, it is unknown whether the results could be replicated with children from other age groups or ethnic, cultural or linguistic backgrounds. In addition to the individualized nature of the child's functioning, selection of a single individualized education plan goal also limits generalization. Young children with ASD with special education services tend to have a variety of individualized educational planning goals that are expected to be targeted simultaneously. Because this study only targets a single goal, it is unknown how well the collaborative planning intervention package would generalize to settings where multiple goals are being targeted simultaneously. The unique nature of the school and classroom setting contributed additional limitations to generalization. Although the charter school and specific classroom were identified as inclusive, the ratio of students with and without special needs was likely unique from other private and public school settings. It is unknown whether the results could be replicated across a variety of classroom settings including special education or inclusive general education classrooms.

In addition to the limitation to the extent to which the results may be generalized, the study design also included some limitations of internal validity. A core feature of activity-based intervention is that is that instruction is embedded into ongoing activities and routines throughout the entire day (Pretti-Frontczak & Bricker, 2004). Thus, because learning opportunities may be occurring continuously throughout the day, it is difficult to effectively evaluate and observe all of the activities where learning may be occurring (Hemmeter, 2000). For the purposes of this study, three routines were selected for planning intervention across both the school and home settings. Although observations were consistently conducted across the three selected routines, the rate of learning opportunities for the selected IEP goal and rate of the child's correct demonstrations were not accounted for outside of the three matched routines. Furthermore, in an

effort to reduce the obtrusive nature of conducting observations, a webcamera was used and probes rather than daily observations were used for routines that were not in an active planning phase. The presence of the webcamera may have influenced the behaviors of both the adults and the child. The use of probes, rather than daily observations, assumes that each probe was representative of the days that were not observed. Nonetheless, research has shown that probes occurring every two or three days accurately approximate data collected from daily observations (Gast, 2010; Kazdin, 1982). Follow-up probes were collected for the first two routines following the active planning phase; however, due to time constraints and the teacher's unexpected transfer to another school, no follow-up probes were collected for the third and final routine. Although a functional relationship between collaborative planning and the continued increase of both learning opportunities the child's performance was established for the first two routines, evidence was not available to confirm that such increases would have also maintained for the third routine that was planned for. Although the interview responses provided some information on the generalization of the results, the study did not include formal generalization measures beyond the three routines that were planned for. Finally, standardization of the collaborative planning meetings will be difficult due to the individualized guidance provided by the researcher. Although the meetings followed a procedural fidelity checklist, individualized suggestions and recommendations for strategy use were based on professional experience and judgment of the researcher. To aid accurate replication, the guidance or directive role of the researcher needs to be reduced or removed.

Implications for Future Research

With single-subject research, replication is required to validate the effectiveness of collaborative planning for an activity-based approach to early intervention for young children

with ASD across school and home settings. Horner and colleagues (2005) assert that replication is needed across, participants, researchers, and settings as criteria for evidence-based practices. Furthermore, the National Professional Development Center on Autism Spectrum Disorders (NPDC) requires single-subject research to have undergone at least five high quality single subject design studies conducted by at least three different investigators or research groups to be considered an evidence-based practice for individuals with ASD (Odom et al., 2010).

Future replications are needed that include a larger sample size and are representative of a variety of teachers, parents, and young children with ASD. Due to the heterogeneous characteristics of children with autism spectrum disorders, replications are needed with children who are representative of a variety of levels of functioning. Furthermore, replications need to be representative of a variety of targeted IEP goals, including goals relating to language and communication development, social skills, self-help skills, behavior management, play, and academic engagement. Future studies should consider expanding the methodology to include formal measures of generalization and maintenance. Although the current study conducted observations in a variety of contexts across multiple settings, observations were not conducted outside of the specific routines that were planned for. Additional maintenance probes are also needed across all three phases to evaluate the extent that gains were maintained over time.

A unique component of this study was that support was only provided within the context of collaborative planning meetings. It was not necessary to provide any additional support in implementation of the strategies planned for in order to produce a positive impact on both the learning opportunities delivered and, ultimately, the child's performance. Additional research is needed to explore how teachers can be supported in initiating the collaborative planning process with parents and guiding the collaborative planning meetings without the directive role of the

researcher. A step in accomplishing this goal may begin with a supportive role from the researcher for the first collaborative planning meeting, and investigating strategies for fading the researchers level of involvement during subsequent planning meetings. Within the current study, neither the teacher nor the parent had prior training in planning for or implementing activity-based intervention. If the teacher were expected to take on a leadership role in the collaborative planning process, it would be important to identify teachers with experience in implementing activity-based intervention.

Implications for Practice

The prevalence of autism spectrum disorders has increased dramatically over the last ten years (Boyd et al., 2010). With more and more children being diagnosed with ASD at younger ages, effective early interventions are needed that meet the heterogeneous and individualized needs of each child and family. Evidence exists for a variety of effective intervention approaches (Prizant & Rubin, 1999; Rogers, 1999; Simpson, 2005). The challenge is identifying which intervention best meets the needs of each specific child. An activity-based approach to early intervention allows for incorporation of multiple strategies from a variety of evidence-based interventions. What is most unique about activity-based intervention is the context in which instruction is delivered. Within activity-based intervention, instruction is delivered through brief and distributed learning opportunities that are provided throughout the day during typical routines and activities. The brief teaching episodes paired with the predictive nature of routines allows for ease of implementation, facilitation of student motivation, and reduction of student frustration. There is evidence for both teacher-implemented and parent-implemented activity-based early intervention with young children with ASD (Dunst et al., 2001; Horn et al., 2000; Kashinath et al., 2006; McBride, & Schwartz, 2003; Wolery et al., 2002). The results

from this study aimed to bridge the evidence in support for a collaborative approach, where teachers and parents work together to provide an activity-based approach to early intervention.

The collective increase in learning opportunities delivered by a parent and teacher and related increase in child performance following collaborative planning for an activity-based approach to early intervention supports the critical role of parents and teachers working together on shared goals. The activity-based approach to intervention and the use of the collaborative planning matrix appears to provide a practical framework for delivering brief episodes of intervention throughout the day, across a variety of contexts, and in meaningful settings. Activity-based intervention with the collaborative planning matrix also allows parents and teachers to incorporate learning opportunities within the structure of their ongoing daily routines and activities. Thus, intervention can be provided without disrupting ongoing classroom and home routines. The unobtrusive nature of activity-based intervention makes it ideal for natural and inclusive settings.

In summary, collaborative planning for activity-based intervention yielded increased learning opportunities for an IEP goal, which also resulted in increased child outcomes. The use of a collaborative planning matrix for activity-based intervention with both the teacher and the parent strengthened the power of the intervention through an increase in multiple and varied learning opportunities provided throughout the day and across settings. As the teacher and parent planned for intentional learning opportunities for an IEP goal throughout the day during typical routines, instruction was enhanced and ultimately, child outcomes improved. Although parents and teachers have individually been effective in providing activity-based intervention, the combination of parents and teachers working together resulted in a collective increase in learning opportunities and related child outcomes that may not have otherwise been possible.

Collaborative planning between the teacher and parent allowed for active parent involvement that supported the child's development both at school and at home. The collaborative planning expanded upon and strengthened what the teacher and parent were each able to implement individually, and provided a unified or shared approach for supporting the child's development both at school and at home.

APPENDIX A:
RECRUITMENT LETTER

September ___, 2010

Dear _____name of parents_____,

I am seeking families to participate in a study that seeks to investigate how young children with autism spectrum disorders (ASD) best learn in their typical school and home environments. By participating in the study you will receive specialized support for collaborating with your child's classroom teacher as well as individualized planning support for home-based naturalistic teaching strategies to help you work on an educational goal of your choice.

In order to participate in the study, your child must be currently enrolled in an inclusive preschool setting and must be receiving supports through an individualized education plan (IEP) under the eligibility category of ASD. Participation in the study will last approximately 5-6 weeks. The participation requirements include attending an initial meeting at the beginning of the study, three planning meetings (one per week) with the researcher and your child's teacher at his or her preschool, some videotaping of everyday home-based routines, and a final meeting at your child's preschool to discuss your perceptions of the study. The study requires only one of the primary caregivers to participate, however, both are welcomed to participate if interested.

If you are interested in participating, please reply to this email or call 407-462-9004. Participants will be selected on a first come first served basis. I look forward to hearing from you.

Sincerely,

Marisa J. Salazar

APPENDIX B:
INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Marisa Salazar**

Date: **September 30, 2010**

Dear Researcher:

On September 30, 2010, the IRB approved the following human participant research until 9/29/2011 inclusive:

Type of Review:	UCF Initial Review Submission Form
Project Title:	Collaborative Planning for An Activity-Based Approach to Early Intervention
Investigator:	Marisa Salazar
IRB Number:	SBE-10-07113
Funding Agency:	None

Please provide a copy of approval documentation from the preschool(s) when they become available.

The Continuing Review Application must be submitted 30days prior to the expiration date for studies that were previously expedited, and 60 days prior to the expiration date for research that was previously reviewed at a convened meeting. Do not make changes to the study (i.e., protocol, methodology, consent form, personnel, site, etc.) before obtaining IRB approval. A Modification Form **cannot** be used to extend the approval period of a study. All forms may be completed and submitted online at https://iris.research.ucf.edu .

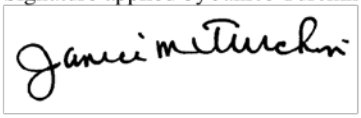
If continuing review approval is not granted before the expiration date of 9/29/2011, approval of this research expires on that date. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

Use of the approved, stamped consent document(s) is required. The new form supersedes all previous versions, which are now invalid for further use. Only approved investigators (or other approved key study personnel) may solicit consent for research participation. Participants or their representatives must receive a signed and dated copy of the consent form(s).

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Joseph Bielitzki, DVM, UCF IRB Chair, this letter is signed by:

Signature applied by Janice Turchin on 09/30/2010 12:05:49 PM EDT



IRB Coordinator

APPENDIX C:
SAMPLE PLANNING MATRIX

		Goal & Respective Learning Opportunities *(Sample)*
		1. C. will combine 2-3 words to request desired items and activities.
School Routines	Circle Time	Offer specific choices between two items & model the correct request. Ex: Choosing sea animals, music choice board, letter folders. Use peer models.
	Direct Teaching 1: Reading	C. can use his words to request which station to go to first. Offer choices between games. C. can choose which folder to start with. Request missing items.
	Direct Teaching 2: Art/ handwriting	Playful Obstruction: pretend to forget a necessary item (pencil, crayon, or paper). Offer small amounts of items to glue so he can request more
Home Routines	Music Time	C. enjoys listening to his favorite CD and controlling which song will be played. Place CD's out of reach but still visible to encourage C. to request the CD of his choice. Model for C. to ask you to press play and skip to desired songs.
	Reading during Bedtime Routine	Sit side-by-side rather than with C. in your lap to promote face-to-face interactions. Wait expectantly for C. to initiate request before turning the page. Provide models to expand single word requests.
	Coloring with Big Brother	Playful Obstruction: pretend to forget a necessary item (pencil, crayon, or paper). Wait expectantly before prompting C. to request missing item. Place crayon bin out of C.'s reach so that he has to ask his brother for more crayons.

APPENDIX D:
IDENTIFYING FAMILY ROUTINES

Identifying Family Routines

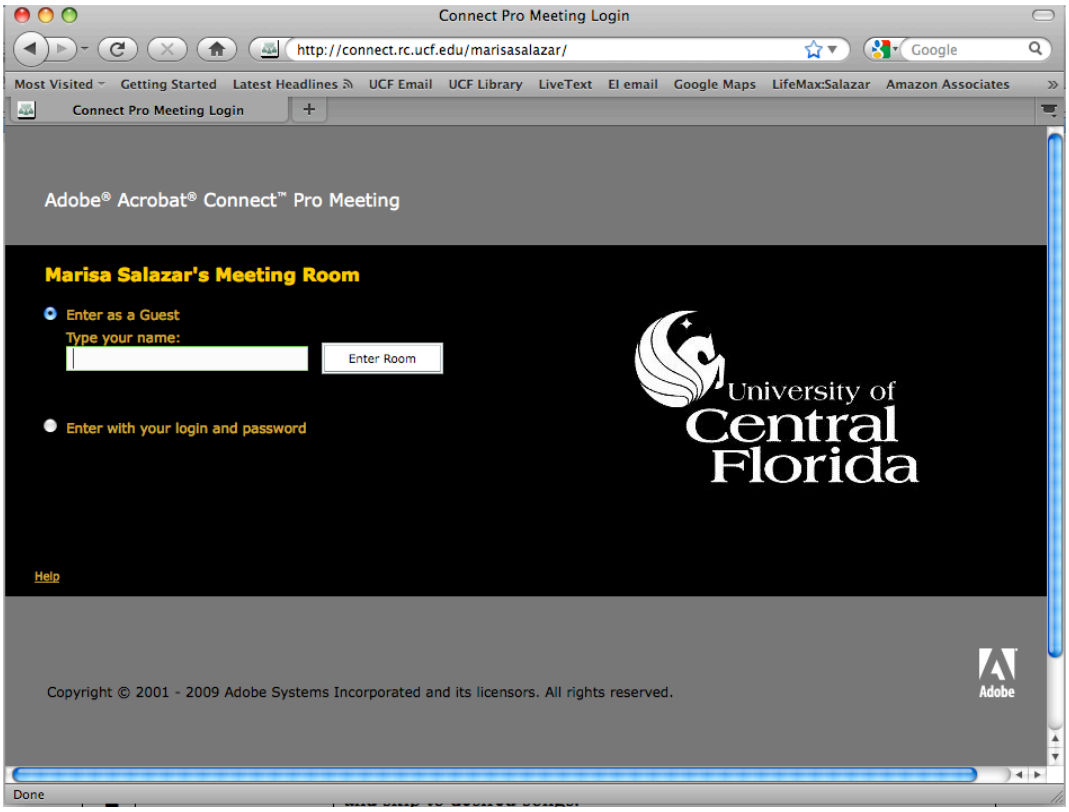
Describe your family (Who does your child interact with on a regular basis? List names and relationship to child).	
Describe your family's typical routines. (Name the things you do on a daily basis).	
Caregiver Routines (food related, dressing, bathing)	***Play Routines***
Pre-academic Routines (books, TV, computer, coloring, singing)	***Community and Family Routines (chores, errands, outings)***
How does your child participate in the various routines?	
Tell me about the interactions you have with your child that are most enjoyable to you.	
What kinds of interactions does your child enjoy the most?	
Which of the routines do you feel allow the most opportunities for learning and interaction?	
Three home routines for intervention: ***1. _____ 2. _____ 3. _____***	

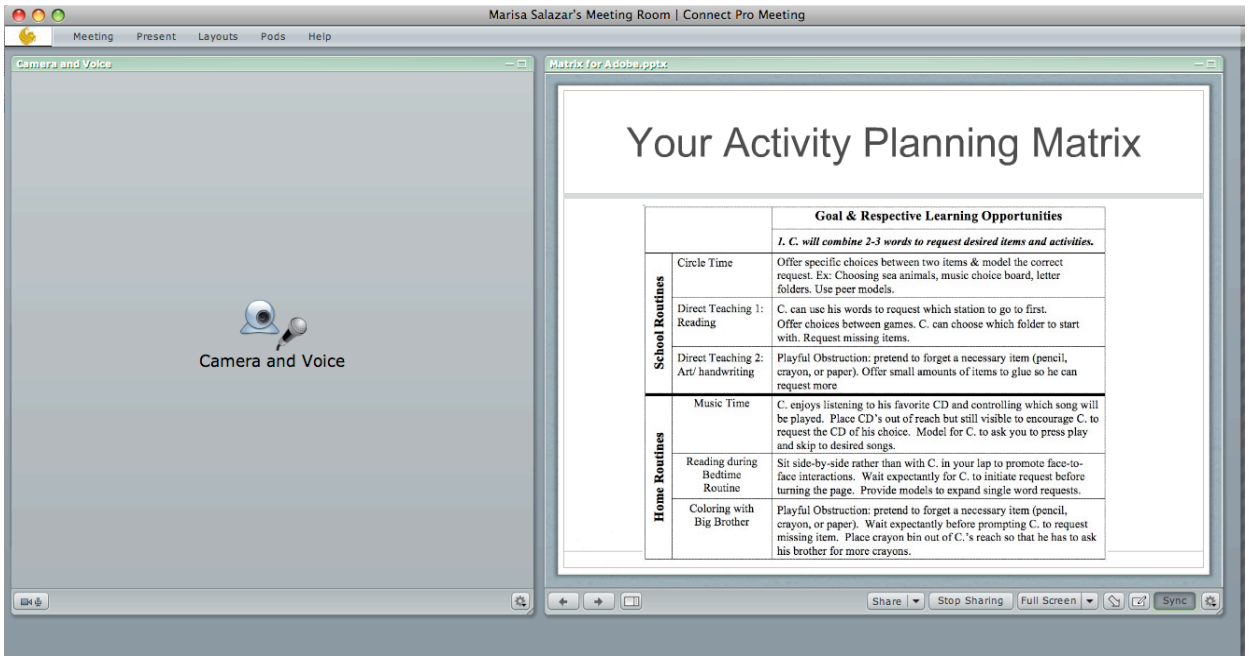
APPENDIX E:
IDENTIFYING CLASSROOM ROUTINES

Identifying Classroom Routines

Describe the individuals in your classroom. (Number of students with and without disabilities; adults in the classroom; other service providers)
Describe your classroom's typical daily schedule (major activities that occur each day).
Describe how the child typically participates in each of the classroom routines.
Which of the routines do you feel allow the most opportunities for learning and interaction in relation to the selected IEP goal?
Identify any classroom routines that you feel would match well with the identified home routines.
Three school routines for intervention: ***1. _____ 2. _____ 3. _____***

APPENDIX F:
WEB-CONFERENCING


Connect Pro Meeting Login
http://connect.rc.ucf.edu/marisasalazar/
Google
Most Visited
Getting Started
Latest Headlines
UCF Email
UCF Library
LiveText
EI email
Google Maps
LifeMax:Salazar
Amazon Associates
Connect Pro Meeting Login
Adobe® Acrobat® Connect™ Pro Meeting
Marisa Salazar's Meeting Room
Enter as a Guest
Type your name:
Enter Room
Enter with your login and password
University of Central Florida
Help
Copyright © 2001 - 2009 Adobe Systems Incorporated and its licensors. All rights reserved.
Adobe
Done


Marisa Salazar's Meeting Room | Connect Pro Meeting
Meeting
Present
Layouts
Pods
Help
Camera and Voice
Camera and Voice
Matrix for Adobe.pptx
Your Activity Planning Matrix
Goal & Respective Learning Opportunities
1. C. will combine 2-3 words to request desired items and activities.
School Routines
Circle Time
Offer specific choices between two items & model the correct request. Ex: Choosing sea animals, music choice board, letter folders. Use peer models.
Direct Teaching 1: Reading
C. can use his words to request which station to go to first. Offer choices between games. C. can choose which folder to start with. Request missing items.
Direct Teaching 2: Art/ handwriting
Playful Obstruction: pretend to forget a necessary item (pencil, crayon, or paper). Offer small amounts of items to glue so he can request more
Home Routines
Music Time
C. enjoys listening to his favorite CD and controlling which song will be played. Place CD's out of reach but still visible to encourage C. to request the CD of his choice. Model for C. to ask you to press play and skip to desired songs.
Reading during Bedtime Routine
Sit side-by-side rather than with C. in your lap to promote face-to-face interactions. Wait expectantly for C. to initiate request before turning the page. Provide models to expand single word requests.
Coloring with Big Brother
Playful Obstruction: pretend to forget a necessary item (pencil, crayon, or paper). Wait expectantly before prompting C. to request missing item. Place crayon bin out of C.'s reach so that he has to ask his brother for more crayons.
Share
Stop Sharing
Full Screen
Sync

APPENDIX G:
SCORING DIRECTIONS AND DATA COLLECTION FORM

Scoring Directions

Web-based video recordings will be coded for observation of a three-part learning cycle. The three components of the learning cycle include: 1) Activity-Based Intervention (ABI) instructional strategy, 2) behavior or child response, and 3) an immediate and directly related consequence.

ABI Instructional Strategy: Each learning cycle must begin with one of the ABI instructional strategies listed and defined in the table below. Although ABI strategies can be combined, a minimum of one ABI strategy must be present at the onset of an ABI learning cycle.

Behavior: Within the ABI learning cycle, the child's behavior may include no response, an incorrect response, or correct demonstration of the target behavior as defined within the selected IEP objective.

Consequence: Immediately following the child's engagement in the desired behavior, the adult will provide a consequence that is natural and directly related to the behavior. A consequence is immediate when delivered within three seconds following the child's response.

Strategy	Brief Description
Contextual Support	Gain child's attention and intervention follows the child's interests. Materials are developmentally appropriate.
Responsive Interactions	Expand upon child's interests and promote reciprocal interactions by asking questions, providing examples, and encouraging balanced turn taking.
Environmental Arrangements	Changes to physical surroundings that increase learning opportunities: place items out of reach; give small amounts; adjust stimuli.
Time Delay	Provide additional time for processing and opportunity to initiate. Adult or peer waits quietly with an expectant look.
Modeling and Requesting Imitation	Adult or peer demonstrates a behavior to the child then helps the child to perform the same behavior.
Prompting and Fading	Offer support initially and systematically reduce the amount of assistance provided.
Interspersing Maintenance and Acquisition Tasks	Varying the difficulty across tasks to increase motivation and frequency of success.
Natural and Direct Consequences	A consequence that strengthens a behavior. The consequence is natural, contingent, and directly related to the behavior.

Data Collection Form

Child: _____ Routine: _____ Location: School / Home

Time	ABI Instructional Strategy	Behavior	Consequence	Notes
	C R E P TD M MA	**NR I C**	**I R N**	
	C R E P TD M MA	**NR I C**	**I R N**	
	C R E P TD M MA	**NR I C**	**I R N**	
	C R E P TD M MA	**NR I C**	**I R N**	
	C R E P TD M MA	**NR I C**	**I R N**	
	C R E P TD M MA	**NR I C**	**I R N**	
	C R E P TD M MA	**NR I C**	**I R N**	
	C R E P TD M MA	**NR I C**	**I R N**	
	C R E P TD M MA	**NR I C**	**I R N**	
	C R E P TD M MA	**NR I C**	**I R N**	
	C R E P TD M MA	**NR I C**	**I R N**	
	C R E P TD M MA	**NR I C**	**I R N**	
	C R E P TD M MA	**NR I C**	**I R N**	

Total Complete Learning Cycles: _____

Total Correct Child Responses: _____

Scoring Codes:
ABI Instructional Strategy: C = Contextual Support; **R** = Responsive Interactions; **E** = Environmental Arrangements; **P**= Prompting/fading; **TD** = Time Delay; **M** = Modeling and Requesting Imitation; **MA**= Interspersing Maintenance and Acquisition Tasks
Behavior: NR = No Response; **I**= Incorrect Response; or **C**= Correct Demonstration of Target Behavior
Consequence: I = Consequence Delivered Immediately Following Behavior; **R** = Consequence Related to the Behavior; **N** = No Consequence Provided

APPENDIX H:
ANALYZING ROUTINES

Analyzing Routines

Child's Name: _____ Goal: _____

Activity/Routine: _____ Setting: _____

Current Activity & Participation (Ways in which a child takes part in everyday activity)	
Possibilities (New learning opportunities, new ways of participating in activity or routine)	

APPENDIX I:
STUDY PROCEDURES

Study Procedures

Participant Recruitment

- Send out recruitment email using UCF-CARD constituent database
- Confirm child has a documented diagnosis of ASD
- Confirm child is between the ages of 3 and 5 years and being served in an inclusive preschool
- Contact preschool administration to secure permission to participate in study
- Collect voluntary and informed consent of parent and teacher

Pre-intervention & Baseline

Initial Collaborative Planning Meeting:

- Collect signed informed consent forms
- Overview of study
- Gather/verify demographic information
- Select an IEP goal based on caregiver priority
- Identify typical family routines and select 3 for context of intervention
- Identify 3 matched classroom routines
- Provide technical assistance and training for future web-conferencing sessions
    - Guided practice powering on the laptop, opening the web-browser, logging in to the Adobe Connect web-conference meeting room, and confirming camera connection
    - Parent and teacher will independently complete all steps in presence of researcher to confirm ability to connect to web-conference for video recording

Collect daily baseline data via recorded web-conferencing on 3 classroom and home routines

Intervention 1

Routine 1 Planning Meeting:

- Discuss current participation in routine
- Identify opportunities for learning within routine
- Identify corresponding strategies and planning within the activity matrix

Collect daily data via recorded web-conferencing on Routine 1 & probes for Routines 2 & 3

Intervention 2

Routine 2 Planning Meeting:

- Discuss current participation in routine
- Identify opportunities for learning within routine
- Identify corresponding strategies and planning within the activity matrix

Collect daily data via recorded web-conferencing on Routine 2 & probes for Routines 1 & 3

Intervention 3

Routine 3 Planning Meeting:

- Discuss current participation in routine
- Identify opportunities for learning within routine
- Identify corresponding strategies and planning within the activity matrix

Collect daily data via recorded web-conferencing on Routine 3 & probes for Routines 1 & 2

Post-Intervention Interview

Parent and Teacher Interviews:

- Parent privately interviewed to assess perceptions of:
    - Collaborative Activity Matrix Planning Meetings,
    - Ease of implementation for each condition, and
    - Perceived impact on child learning related to the selected IEP goal
- Teacher separately interviewed to assess perceptions of:
    - Collaborative Activity Matrix Planning Meetings,
    - Ease of implementation for each condition, and
    - Perceived impact on child learning related to the selected IEP goal
    - Potential for future implementation with other students

APPENDIX J:
PROCEDURAL FIDELITY CHECKLIST
FOR COLLABORATIVE PLANNING SESSIONS

Procedural Fidelity Checklist

Place initials in the column to the right of each step to confirm completion of each procedure.

Procedure	**Initials**
The researcher began the session by discussing the target IEP goal selected for intervention.	
The teacher provided 2 examples of the desired behavior at school.	
The parent provided 2 examples of the desired behavior at home.	
Researcher ensured any questions relating to the IEP goal and corresponding desired behavior were answered before moving on to discussion of the selected routine.	
Teacher described proceedings of selected classroom routine.	
Teacher described the child's current participation in the routine.	
Teacher shared ideas for providing additional learning opportunities.	
Researcher suggested up to three strategies in terms of practical application within the routine.	
The teacher and parent also generated examples of how strategies can be implemented to ensure multiple and varied learning opportunities.	
Parent described proceedings of selected home routine.	
Parent described the child's current participation in the routine.	
Parent shared ideas for providing additional learning opportunities.	
Teacher shared any additional ideas for providing learning opportunities within the home routine.	
Researcher summarized the ideas generated by the parent and teacher and suggested up to three strategies in terms of practical application within the routine.	
The teacher and parent also generated examples of how strategies can be implemented to ensure multiple and varied learning opportunities.	

APPENDIX K:
PARENT AND TEACHER PRE- & POST-INTERVENTION SURVEY PROTOCOLS

Parent Protocol

Directions: Circle your level of agreement to each of the following statements.

1. I interact with my child's teacher on a regular basis to discuss progress on Individualized Education Plan (IEP) goals.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

2. My child's teacher has shared examples with me of how she works on my child's goals in the classroom. (For example: "I tried _____ today, and it really seemed to work).

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

3. My child's teacher offers useful ideas for how I might work on IEP goals at home.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

4. My child's teacher has asked me to share examples of things that work well for my child at home.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

5. I feel comfortable trying strategies to help my child learn at home.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

6. I feel confident in supporting my child's IEP goals at home.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

Teacher Protocol

Directions: Circle your level of agreement to each of the following statements.

1. I interact with my students' parents on a regular basis to discuss progress on Individualized Education Plan (IEP) goals.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

2. I frequently share examples with my students' parents of how I work on student goals in the classroom. (For example: "I tried _____ today, and it really seemed to work).

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

3. I frequently offer useful ideas for how parents might work on IEP goals at home.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

4. I frequently ask parents to share examples of things that work well for their child at home.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

5. I feel confident in supporting students' IEP goals during typical classroom routines.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

6. I feel comfortable planning with parents how they can support IEP goals during typical routines at home.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

APPENDIX L:
POST-INTERVENTION INTERVIEW PROTOCOL

1. What were your general impressions of the collaborative planning meetings and development of the planning matrix with the teacher/parent?
2. What did you find to be advantages and disadvantages of developing the collaborative planning matrix with the teacher/parent?
3. Did you feel comfortable implementing the strategies that we planned for together?
4. Did you feel that you effectively incorporated the instructional strategies within your typical routines? What were some of the challenges you experienced?
5. Do you think that the collaborative planning meetings positively impacted the child's performance on the selected IEP goal?
6. Do you see yourself continuing to use any of the strategies we planned for? Why or Why not?
7. (For teachers only) Do you think that you might use the collaborative planning matrix in the future with other students and families in your classroom? Why or why not?

APPENDIX M:
SUMMARY OF FAMILY ROUTINES

Identifying Family Routines

Describe your family (Who does your child interact with on a regular basis? List names and relationship to child). *(Names removed)*
Dad; Big Brother; Little Sister; Baby Brother [Grandma; Grandpa; Aunt; & Uncle visit often]

Describe your family's typical routines. (Name the things you do on a daily basis).

Caregiver Routines (food related, dressing, bathing)	***Play Routines***
Wake up and dress at 6:30am, eat breakfast + vitamins; dad takes boys to school Home from school at 3- wash hands, sit at table for orange juice and snack Wash hands before dinner Eat dinner about 6:30 Bath time, brush teeth, pajamas Bedtime about 8pm	(some non-interactive toy preferences- wand, piggy bank) Pretend play: dress-up activities Puzzles Interactive play with siblings (tag and hide and seek)
Pre-academic Routines (books, TV, computer, coloring, singing)	***Community and Family Routines (chores, errands, outings)***
Coloring- beginning to trace and use stamps, likes using dry erase board or magnadoodle; May watch a movie (doesn't always sit for it) Read books before bed G. loves to play with instruments	Outdoor play (patio) about 30 minutes May go to play ground with dad

How does your child participate in the various routines?
Books: G. will choose book, lay next to parent in bed, will answer simple questions about picture, if familiar with book he will sometimes say what comes next
Coloring: G. may request that adult draws pictures, likes to sit with sister to color, also likes to color over what adult drew
Snack: may sit at table and wait or will get up and try to get snack on his own- parent redirects so he will request snack while waiting at table, G. will request more; very particular about foods, doesn't like different foods to touch, doesn't like certain items cut up- but did eat pb&j in small pieces

Tell me about the interactions you have with your child that are most enjoyable to you.
Typically most enjoyable routines for mom are routines that are enjoyable to G.
When first home from school: snack time
Puzzles, coloring (depending on G.'s mood), singing; Reading books at night

What kinds of interactions does your child enjoy the most?
When first home from school: snack time
Puzzles, coloring (depending on G.'s mood), singing; Reading books at night
G. also loves bubbles and sometimes chalk while outside
Sometimes enjoys playing ball inside with siblings

Which of the routines do you feel allow the most opportunities for learning and interaction?
Snack time can be really interactive; Puzzles, coloring (depending on G.'s mood). Reading books at night; G. is also interactive during ball play with siblings and bubbles

Three home routines for intervention:

1. **Afternoon Snack** ***2.*** **Table Activities (coloring or puzzles)** ***3.*** **Bedtime Story**

APPENDIX N:
SUMMARY OF CLASSROOM ROUTINES

Identifying Classroom Routines

Describe the individuals in your classroom. (Number of students with and without disabilities; adults in the classroom; other service providers)
13 students (4-5 typically developing; 3 with ASD; remaining other DD)
Teacher: Ms. Tara; TA's: Ms. Natalie & Ms. Gina
Occasional preference for Ms. Gina (she was a camp teacher) and peer Dani (only girl in class)

Describe your classroom's typical daily schedule (major activities that occur each day).
8:30- table top toys (lacing, puzzles); 9 snack, 9:15 circle time (songs –loves look who came to school today; days of the week; calendar; colors; finger plays; movement; story)
Centers: 4-5 children at each center (blocks, dramatic/dress-up, fluid play- sand/messy, art, computer); about 10:20 read another story (wh questions); 10:30 line up and go outside for 30 min; back inside at 11 for lunch
*Thursdays- music time for 20-30 min. before lunch); *Tuesday mornings OT activity
Toileting/ wash hands; around noon- soft music/nap; about 1:30 wake up small art activity; snack at 2pm; free play with books/puzzle then dismissal (2:30)

Describe how the child typically participates in each of the classroom routines.
G. loves the look who came to school today song, he prefers computer and sand play at center but has some trouble with transitions, some difficulty with staying at non-preferred centers, at water play station G. needs a little more direction; finger painting- some resistance due to hands being dirty; play-doh- G. will try to eat it, requires additional supervision; Story time: G. usually sits with TA so that he doesn't escape, if interested in story will be more interactive

Which of the routines do you feel allow the most opportunities for learning and interaction in relation to the selected IEP goal?
He seems to be most engaged during circle time; he also really enjoys the Tuesday OT activities; he also enjoys similar OT activities during centers (sand); some challenges with coloring activities; snack time can be interactive because choices are offered

Identify any classroom routines that you feel would match well with the identified home routines.
Story time, snack time, table-top activities (coloring, puzzles...)

Three school routines for intervention:

1. **Table-Top Activities (8:30)** ***2.*** **Morning Snack (9:00)** ***3.*** **Circle Time Story (9:15)**

APPENDIX O:
IEP GOAL IN CONTEXT OF ROUTINE 1

IEP Goal During Routine 1: Snack

The child will correctly use **descriptive words** when requesting and commenting.

Descriptive identifiers will include:

Size (big/little; tall/ short)

Color (red/blue/green; dark/light)

Shape (round/square)

Examples of correct demonstration of the target behavior within the context of routine 1:

Requests-

Mommy, I want the *big* plate. (Researcher generated example)

Can I have the *green* apple? (Researcher generated example)

I want the *round* cookie. (Researcher generated example)

I want the *yellow* banana. (Teacher generated example)

I want the *big* cup. (Parent generated example)

I want the *purple* grapes. (Parent generated example)

Comments-

You have a *small* cup. (Researcher generated example)

It's a *purple* grape. (Researcher generated example)

We made little pieces. (Researcher generated example)

I have a *small* pineapple (Teacher generated example).

I have a *round* hot dog (Teacher generated example).

It is a *blue* plate. (Parent generated example)

APPENDIX P:
SUMMARY OF ROUTINE 1 ANALYSIS

Analyzing Routines

Child's Name: Guillermo Goal: Use of Descriptors when Requesting & Commenting

Activity/Routine: Snack Time Setting: School

Current Activity & Participation (Ways in which child takes part in everyday activity)	G. goes to his seat at the table and waits nicely for his snack. He will occasionally need prompts to sit up or keep his feet on the floor. G. tries to pull everything out of his lunch box. Now, rather than giving him his whole lunch box, we [teacher and assistants] are trying to offer a choice between two snack items.
Possibilities (New learning opportunities, new ways of participating in activity or routine)	To encourage interactions with peers, G. can comment on his own snack or snack of his peer. Teacher suggested that she might be able to generate some learning opportunities by cutting the banana. She can prompt G. to ask for size of pieces, and then she can also have him comment on what was made. This provides the opportunity to request and then to comment. For example: T- "Should I cut the banana big or small?" G- "Big banana pieces please." After cutting. T- "Wow! What did we make? Are these big banana pieces or small banana pieces?" G- "Big banana pieces!" T- You're right! You have big banana pieces." If he uses the descriptor alone- expand by modeling the full sentence. When offering choices, include color descriptor. For Example: "Do you want the yellow banana or the purple grapes?"

*Additional Notes: The teacher would like G. to pass out napkins at least once a week. Leah suggested saying, "Do you want to be my helper?" She shared that he typically gets excited about chores and other tasks at home when she uses the term "helper."

Analyzing Routines

Child's Name: Guillermo Goal: Use of Descriptors when Requesting & Commenting

Activity/Routine: Snack Time Setting: Home

Current Activity & Participation (Ways in which child takes part in everyday activity)	G. sits at the kitchen table and waits for me [mother] to bring snack to him. Sometimes there are choices but mostly the snack is just ready for him. Typically to save time, the snacks are pre-prepared in small bowls. He usually eats some kind of fruit and/or crackers and orange juice (his favorite). While G. is eating, mother typically sits with him and initiates conversations about what happened at school that day.
Possibilities (New learning opportunities, new ways of participating in activity or routine)	Mother suggested that she might be able to generate some learning opportunities by offering a choice between colors of grapes (green or purple). She shared that she could even have G. choose the color of the bowl. The researcher suggested that each be kept separate. For example only one descriptor should be targeted in one sentence. "Can I have the purple grapes?" Then later saying, "I have a red bowl." Rather than prompting G. to say, "Can I have the purple grapes in the red bowl?" Provide direct models. Expand upon single label or single color. For example: If G. only says, "purple please," help him to expand by modeling, "Purple grapes, please." Environmental arrangements- plan opportunities by providing choices. Choices can be between size of cup, color of bowl, color of grapes, or shape of pieces of food.

APPENDIX Q:
IEP GOAL IN CONTEXT OF ROUTINE 2

IEP Goal During Routine 2: Tabletop Activities

The child will correctly use **descriptive words** when requesting and commenting.

Descriptive identifiers will include:

Size (big/little; tall/ short)

Color (red/blue/green; dark/light)

Shape (round/square)

Examples of correct demonstration of the target behavior:

Requests-

Mommy, I want the *big* puzzle.

Can I have the *green* crayon?

I want the *round* bead.

Your ideas:

I need the yellow circle. (Teacher)

Help me put the brown cow, Mommy. (Parent)

Comments-

I see a *small* doggie.

It's a *purple* flower.

We made a *square* puzzle.

Your ideas:

I made a big butterfly. (Teacher)

I put the yellow circle on. (Teacher)

I like the small horse. (Parent)

APPENDIX R:
SUMMARY OF ROUTINE 2 ANALYSIS

Analyzing Routines

Child's Name: Guillermo Goal: Use of Descriptors when Requesting & Commenting

Activity/Routine: Tabletop Setting: School

Current Activity & Participation (Ways in which child takes part in everyday activity)	Some of the preferred activities G. selects include: number puzzle, shape puzzles, and Mr. Potato Head He also enjoys using the tanagram puzzle. This can be a challenging activity for G. because it is right after drop off, and G. does not like to say good-bye to his parent. G. often requires one-on-one prompting to engage in the activity. He will slump in his chair and typically does not initiate the activity or interactions with peers. G. will also often require prompts to respond to the initiations of adults or peers.
Possibilities (New learning opportunities, new ways of participating in activity or routine)	Offer choices between two like items (ex. Do you want the blue hat or green hat for Mr. Potato Head?) Be strategic about what choices are available. Tanagram- G. can request the size of the item, or he request the color of the shapes. He can also comment on the piece that he finds, "I put the yellow square on." Potato Head: He can request the color of pieces (I need the green hat). He can identify the color of the piece he put on (I gave him red shoes). Number Puzzle: He can choose the size of the number puzzle. He can identify the color of number (blue or yellow).

Analyzing Routines

Child's Name: Guillermo Goal: Use of Descriptors when Requesting & Commenting

Activity/Routine: Tabletop Setting: Home

Current Activity & Participation (Ways in which child takes part in everyday activity)	Some of the preferred activities G. selects during tabletop activities at home include: animal puzzles, Three Little Pigs story with manipulatives, shape puzzle, and alphabet puzzle. G. will occasionally need prompts to continue or complete activities. Sometimes he will prefer to hold a puzzle piece and play with the piece rather than using it to complete the puzzle. It can be really difficult to engage G. if he is not interested in the current activity. He will become distracted more easily and may not respond to adult requests or initiations.
Possibilities (New learning opportunities, new ways of participating in activity or routine)	Be strategic about choices that are offered for activity. Try selecting activities that have natural opportunities (i.e, shape puzzle, color puzzle) Continue modeling language for full sentence requests or comments that include both the descriptor and the object/item. Expand on his language so that he combines the two rather than saying the color, size or shape alone In taking turns, G. can also request which piece the adult should put in.

APPENDIX S:
IEP GOAL IN CONTEXT OF ROUTINE 3

IEP Goal During Routine 3: Story

The child will correctly use **descriptive words** when requesting and commenting.

Descriptive identifiers will include:

Size (big/little; tall/ short)

Color (red/blue/green; dark/light)

Shape (round/square)

Examples of correct demonstration of the target behavior:

Requests-

Mommy, I want the *big* book.

Can I have the *green* monster story?

I want the *square* house book.

I want to find the small snail. (Teacher)

I want the small pond book. (Parent)

I want the apples in the red bucket. (Teacher)

Comments-

I see a *small* bird.

It's a *blue* cloud.

I found the round pizza.

I see a red bird. I see a brown bear. (Parent)

I found the small snail. (Teacher)

I like the purple kite. (Parent)

I see a big star. (Parent)

APPENDIX T:
SUMMARY OF ROUTINE 3 ANALYSIS

Analyzing Routines

Child's Name: Guillermo Goal: Use of Descriptors when Requesting & Commenting

Activity/Routine: Story Time Setting: School

Current Activity & Participation (Ways in which child takes part in everyday activity)	Whole group activity. G. sits in a chair with his peers for circle time. There are two rows of chairs. G. typically sits in the second row. An adult will usually sit directly behind G. or close by to provide assistance if needed. G. will often slide out of his chair and may not follow along with the story. If it is a preferred story, G. is more likely to be engaged.
Possibilities (New learning opportunities, new ways of participating in activity or routine)	Ask whole group questions, and then ask individuals to repeat responses. This allows the whole group/ peer responses to serve as a model. Pre-read the story with G. to prime and increase familiarity/interest with the book. Provide opportunities to request to find items in the book.

Analyzing Routines

Child's Name: Guillermo Goal: Use of Descriptors when Requesting & Commenting

Activity/Routine: Story Time Setting: Home

Current Activity & Participation (Ways in which child takes part in everyday activity)	Story time occurs in G.'s bed before bedtime. Either G. or G.'s mom will select the story. G. lays down, and his mom lays next to him to read the story. G. comments about the pictures and answers questions. He also requests to turn the page.
Possibilities (New learning opportunities, new ways of participating in activity or routine)	Begin reducing direct models by using time delay. Intersperse maintenance and acquisition by providing the direct model occasionally to support future initiations. Rather than prompting G. when he is not interested, try to follow his lead by talking about items in the book that seem to catch his interest. If he points to the bear, then model "it's a…" and see if G. will fill in, "It's a brown bear."

APPENDIX U:
FINAL PLANNING MATRIX

Planning Matrix

Goal: *The child will correctly use **descriptive words** when requesting and commenting.*		
School Routines	Snack Time	Offer Choices: size of banana pieces, color of snack item Silly questions: Is this a purple banana? Model interactions with peers: He can comment on color or size of his own snack; color/size/shape of friend's snack Try to place G. next to girl in class Model Expansions when G. uses label or descriptor alone Provide positive consequences- acknowledge when he uses descriptors (repeat back the full combination)
	Table Top Activities	Offer strategic choices between like items (Which hat should we put on Mr. Potato Head? G. can request the color of the hat; G. can also request using size or color with the tanagram). Expand interactions by following requests with a comment (If G. requests the green hat, model for G. to say: "He has a green hat on." If G. says he needs the yellow circle, he can then say, "I found the yellow circle.") Use silly questions or turn-taking to help keep G. engaged: Ex. Do I have a yellow number or a purple number?
	Story during Circle Time	Ask whole group questions, and then repeat questions for individual students. Use peer responses to model. Repeat correct responses as an additional model. Pre-read new stories to increase familiarity/interest with book. Provide opportunities to request to find items in book by using descriptor.
Home Routines	Snack Time	Offer Choices: color of grapes, color of bowls, size of the cup, shape of pretzels, shape of graham cracker, shape of plate Model comments: My (snack) is in the (color) bowl. I have the (size) cup. Silly questions: Is this a purple banana? When using multiple descriptors, break down to one at a time (Ex. I want the purple grapes. Then, model request for color of bowl separately). Model Expansions when G. uses label or descriptor alone Provide positive consequences- acknowledge when he uses descriptors (repeat back the full combination)
	Table Top Activities	Offer strategic choices based on G.'s preferences and opportunities for the goal (shape, numbers, or alphabet puzzles) Expand interactions by following requests with a comment ("I need the orange 7…I put the orange 7 in.") Use turns to promote requests and comments (Mommy, you put the blue A in. I want to put the green B in the puzzle.)
	Story Before Bed	Begin reducing direct models by starting and then waiting quietly. Mix it up: vary the difficulty by providing the direct model occasionally to support future initiations. Go with the flow: follow G.'s interests and build off of what he is focused on.

APPENDIX V:
TEACHER & PARENT PRE- AND POST-INTERVENTION SURVEY RESPONSES

Teacher Pre- & Post-Intervention Interview Responses

Directions: Circle your level of agreement to each of the following statements.

1. I interact with my students' parents on a regular basis to discuss progress on Individualized Education Plan (IEP) goals.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

2. I frequently share examples with my students' parents of how I work on student goals in the classroom. (For example: "I tried _____ today, and it really seemed to work).

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

3. I frequently offer useful ideas for how parents might work on IEP goals at home.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

4. I frequently ask parents to share examples of things that work well for their child at home.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

5. I feel confident in supporting students' IEP goals during typical classroom routines.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

6. I feel comfortable planning with parents how they can support IEP goals during typical routines at home.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

Code: Pre responses indicated with single box; Post responses indicated with double box.

* Note: If Pre- and Post-responses were the same, response was indicated with a triple box.

Parent Pre- & Post-Intervention Interview Responses

Directions: Circle your level of agreement to each of the following statements.

1. I interact with my child's teacher on a regular basis to discuss progress on Individualized Education Plan (IEP) goals.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

2. My child's teacher has shared examples with me of how she works on my child's goals in the classroom. (For example: "I tried _____ today, and it really seemed to work).

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

3. My child's teacher offers useful ideas for how I might work on IEP goals at home.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

4. My child's teacher has asked me to share examples of things that work well for my child at home.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

5. I feel comfortable trying strategies to help my child learn at home.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

6. I feel confident in supporting my child's IEP goals at home.

   Strongly Disagree **Disagree** **Agree** **Strongly Agree**

Code: Pre responses indicated with single box; Post responses indicated with double box.

* Note: If Pre- and Post-responses were the same, response was indicated with a triple box.

REFERENCES

Alpert, C. L., & Kaiser, A. P. (1992). Training parents as milieu language teachers. *Journal of Early Intervention, 16*(1), 31-52.

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

Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 1,* 91-97.

Bailey, E. J., & Bricker, D. (1985). Evaluation of a three-year early intervention demonstration project. *Topics in Early Childhood Special Education, 5*(2), 52-65.

Bailey, D. B. Jr., Bruder, M. B., Hebbeler, K., Carta, J., Defosset, M., Greenwood, C., et al. (2006). Recommended outcomes for families of young children with disabilities. *Journal of Early Intervention, 28*(4), 227-251.

Bijou, S. W., Peterson, R. F., Harris, F. R., Allen, K. E., & Johnston, M. S. (1969). Methodology for experimental studies of young children in natural settings. *Psychological Record, 19,* 177-210.

Blue-Banning, M., Summers, J. A., Frankland, H. C., Lord Nelson, L., & Beegle, G. (2004). Dimensions of family and professional partnerships: Constructive guidelines for collaboration. *Exceptional Children, 70*(2), 167-184.

Bondy, A. S. & Frost, L. A. (1994).The picture exchange communication system. *Focus on Autistic Behavior, 9*(3), 1-19.

Boyd, B. A., Odom, S. L., Humphreys, B. P., & Sam, A. M. (2010). Infants and toddlers with autism spectrum disorder: Early identification and early intervention. *Journal of Early Intervention, 32*(2), 75-98.

Bricker, D., Bruder, M., & Bailey, E. (1982). Developmental integration of preschool children. *Analysis and Intervention in Developmental Disabilities, 2,* 207-222.

Bricker, D., & Sheehan, R. (1981). Effectiveness of an early intervention program as indexed by measures of child change. *Journal of Early Intervention, 4*(1), 11-27.

Brigman, G., Lane, D., Switzer, D., Lane, D., & Law- rence, R. (1999). Teaching children school success skills. *The Journal of Educational Research, 92,* 323–329.

Bruder, M. B. (2000). Family-centered early intervention: Clarifying our values for the

Bruder, M. B. (2010). Early childhood intervention: A promise to children and families for their future. *Exceptional Children*, *76*(3), 339-355.

Carr, E. G., Dunlap, G., Horner, R. H., Koegel, R. L., Turnbull, A. P., Sailor, W., et al. (2002). Positive behavior support: Evolution of an applied science. *Journal of Positive Behavior Intervention, 4,* 4-16, 20.

Carr, E. G., & Durand, V. M. (1985). Reducing behavior problems through functional communication training. *Journal of Applied Behavior Analysis, 18,* 111-126.

Carr, E. G., & Kemp, D. C. (1989). Functional equivalence of autistic leading and pointing: Analysis and treatment. *Journal of Autism and Developmental Disorders, 19*(4), 561-578.

Charlop-Christy, M. H., & Carpenter, M. H. (2000). Modified incidental teaching sessions: A procedure for parents to increase spontaneous speech in their children with autism. *Journal of Positive Behavior Interventions, 2*, 98-112.

Charlop-Christy, M. H., Carpenter, M., Le, L., LeBlanc, L. A., & Kellet, K. (2002). Using the Picture Exchange Communication System (PECS) with children with autism: Assessment of PECS acquisition, speech, social-communicative behavior, and problem behavior. *Journal of Applied Behavior Analysis, 35*(3), 213-231.

Charlop, M. H., Schreibman, L, Thibodeau, M. G. (1985). Increasing spontaneous verbal responding in autistic children using a time delay procedure. *Journal of Applied Behavior Analysis, 18*, 155-166.

Cross, L., Salazar, M. J., Dopson-Campuzano, N., & Batchelder, H. W. (2009). Best practices and considerations: Including young children with disabilities in early childhood settings. *Focus on Exceptional Children, 41*(8), 1-8.

Daugherty, S., Grisham-Brown, J., & Hemmeter, M. L. (2001). The effects of embedded skill instruction on the acquisition of target and nontarget skills in preschoolers with developmental delays. *Topics in Early Childhood Special Education, 21,* 213–221.

Dinnebeil, L. A., Hale, L. M., & Rule, S. (1996). A qualitative analysis of parents' and service coordinators' descriptions of variables that influence collaborative relationships. *Topics in Early Childhood Special Education, 16*, 322-347.

Dunlap, G. (1999). Consensus, engagement, and family involvement for young children with autism. *The Journal of the Association for Persons with Severe Handicaps, 24*(3), 222-225.

Dunlap, G., & Robbins, F. (1991). Current perspectives in service delivery for young children with autism. *Comprehensive Mental Health Care, 1*(3), 177-194.

Dunst, C. J., Bruder, M. B., Trivette, C. M., Hamby, D., Raab, M., & McLean, M. (2001). Characteristics and consequences of everyday natural learning opportunities. *Topics in Early Childhood Special Education, 21,* 68–92.

Dunst**,** C. J. & Dempsey, I. (2007). Family-professional partnerships and parenting competence, confidence, and enjoyment. *International Journal of Disability, Development & Education, 54* (3), 305-318.

Durand, V. M., & Carr, E. G. (1987). Social influences on "self-stimulatory" behavior: Analysis and treatment application. *Journal of Applied Behavior Analysis, 20*, 119-132.

Durand, V. M., & Merges, E. (2001). Functional communication training: A contemporary behavior analytic intervention for problem behaviors. *Focus on Autism and Other Developmental Disabilities, 16*, 110-119.

Feuer, M. J., Towne, L., & Shavelson, R. J. (2002). Scientific culture and educational research. *Educational Researcher, 31(8)*, 4-14.

Filler, J., & Xu, Y. (2006-2007). Including children with disabilities in early childhood education programs individualizing developmentally appropriate practices. *Childhood Education, 83* (2), 92-98.

Flippin, M., Reszka, S., & Watson, L. R. (2010). Effectiveness of the Picture Exchange Communication System (PECS) on communication and speech for children with autism spectrum disorders: A meta-analysis. *Journal of Speech-Language Pathology, 19*, 178-195.

Fox, L., & Hanline, M. F. (1993). A preliminary evaluation of learning within developmentally appropriate early childhood settings. *Topics in Early Childhood Special Education, 13*, 308–327.

Frankel, R., Leary, M., & Kilman, B. (1987). Building social skills through pragmatic analysis: Assessment and treatment implications for children with autism. In D. Cohen, A. Donnellan, & R. Paul (Eds.). Handbook of Autism and Pervasive Developmental Disorders. New York: Wiley.

Gallagher, J. J. (2000). The beginnings of federal help for young children with disabilities. *Topics in Early Childhood Special Education, 10*, 3-6.

Gast, D. L. (2010). *Single subject research methodology in behavioral sciences.* New York: Routledge.

Grisham-Brown, J., Hemmeter, M.L. & Pretti-Frontczak, K. (2005). *Blended practices for teaching young children in inclusive settings.* Baltimore: Paul H. Brookes Publishing Co.

Grisham-Brown, J., Schuster, J. W., Hemmeter, M. L., & Collins, B. C. (2000). Using an embedding strategy to teach preschoolers with significant disabilities. *Journal of Behavioral Education, 10*(2/3), 139-162.

Hammond, D., & Gast, D. L. (2010). Descriptive analysis of single subject research designs: 1983-2007. *Education and Training in Autism and Developmental Disabilities, 45*(2), 187-202.

Hancock, T. B., & Kaiser, A. P. (2002). The effects of trainer-implemented enhanced milieu teaching on the social communication of children with autism. *Topics in Early Childhood Special Education, 22*(1), 39-54.

Harbin, G. L., Bruder, M. B., Adams, C., Mazzarella, C., Whitbread, K., Gabbard, G., & Staff, I. (2004). Early intervention service coordination policies: National policy infrastructure. *Topics in Early Childhood Special Education, 24*(2), 89-97.

Harris, S. L. & Handleman, J. S. (2000). Age and IQ at intake as predictors of placement for young children with autism: A four- to six-year follow-up. *Journal of Autism and Developmental Disorders, 30*(2), 137-142.

Hemmeter, M. L. (2000). Classroom-based interventions: Evaluating the past and looking toward the future. *Topics in Early Childhood Special Education, 20*(1), 56-61.

Hirsto, L. (2010). Strategies in home and school collaboration among early education teachers. *Scandinavian Journal of Educational Research, 54*(2), 99-108.

Horn, E., Lieber, J., Li, S. M., Sandall, S., & Schwartz, I. (2000). Supporting young children's IEP goals in inclusive settings through embedded learning opportunities. *Topics in Early Childhood Special Education, 20*, 208–223.

Horner, R. D., & Baer, D. M. (1978). Multiple-probe technique: A variation of the multiple baseline. *Journal of Applied Behavior Analysis, 11*, 189-196.

Horner, R, H., Carr, E. G., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education. *Exceptional Children, 71*(2), 165-179.

Hurth, J., Shaw, E., Izeman, S. G., Whaley, K., & Rogers, S. J. (1999). Areas of agreement about effective practices among programs serving young children with autism spectrum disorders. *Infants and Young Children, 12*2, 17-26.

Hwang, B., & Hughes, C. (2000). Increasing early social-communicative skills of preverbal preschool children with autism through social interactive training. *Journal of Association for Persons with Severe Handicaps*, *25*(1), 18-28.

Individuals with Disabilities Education Improvement Act of 2004, 20 U.S.C. **S** 1400 *et seq*. (2004)(reauthorization of the Disabilities Education Act of 1990).

Ingersoll, B., Dvortcsak, A., Whalen, C., & Sikora, D. (2005). The effects of a developmental, social-pragmatic language intervention on rate of expressive language production in young children with autistic spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 20*(4), 213-222.

Iovannone, R., Dunlap, G., Huber, H., & Kincaid, D. (2003). Effective educational practices for students with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 18*(3), 150-165.

Kaiser, A. P. (1993). Functional language. In M. E. Snell (Ed.), *Instruction of students with severe disabilities*. New York: Macmillan.

Kaiser, A. P., Hemmeter, M. L., Ostrosky, M. M., Fischer, R., Yoder, P., & Keefer, M. (1996). The effects of teaching parents to use responsive interaction strategies. *Topics in Early Childhood Special Education, 16*(3), 375-406.

Kashinath, S., Woods, J., & Goldstein, H. (2006). Enhancing generalized teaching strategy use in daily routines by parents of children with autism. *Journal of Speech, Hearing, and Language Research, 49*, 466-485.

Kazdin, A. (1978). Methodological and interpretive problems of single case experimental designs. *Journal of Consulting and Clinical Psychology, 46*, 629-642.

Kazdin, A. E. (1982). Single-case research designs: Methods for clinical and applied settings. New York: Oxford University Press.

Koegel, L. (1995). Communication and language intervention. *Teaching children with autism: Strategies for initiating positive interactions and improving learning opportunities* (pp. 17-32). Baltimore, MD: Paul H Brookes Publishing.

Koegel, R, Camarata, S., Koegel, L., Ben-Tall, A., & Smith, A., (1998). Increasing speech intelligibility in children with autism. *Journal of Autism and Developmental Disorders, 28*, 241-251.

Koegel, L. K., Koegel, R. L., Harrower, J. K., & Carter, C. M. (1999). Pivotal response intervention I: Overview of approach. *The Journal of the Association for Persons with Severe Handicaps, 24*(3), 174-185.

Koegel, R. Koegel, L., & Surratt, A. (1992). Language intervention and disruptive behavior in preschool children with autism. *Journal of Autism and Developmental Disorders, 22,* 141-153.

Kohler, F. W., Anthony, L. J., Steighner, S. A., & Hoyson, M. (2001). Teaching social interaction skills in the integrated preschool: An examination of naturalistic tactics. *Topics in Early Childhood Special Education, 21,* 93–103.

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

Losardo, A., & Bricker, D. (1994). Activity-based intervention and direct instruction: A comparison study. *American Journal on Mental Retardation, 98,* 744-765.

Lovaas, O. I. (1977). *The autistic child: Language development through behavior modification.* New York: Irvington Press.

Lovaas, O. I. (1987). Behavioral treatment and normal educational and intellectual functioning in young autistic children. *Journal of Consulting and Clinical Psychology, 55,* 3-9.

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,* 203–216.

Mancil, G., Conroy, M., & Haydon, T. (2009). Effects of a modified milieu therapy intervention on the social communicative behaviors of young children with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 39*(1), 149-163.

Mancil, G. R., Conroy, M. A., Nakao, T., & Alter, P. T. (2006). Functional communication training in the natural environment: A pilot investigation with a young child with Autism Spectrum Disorder. Education and Treatment of Children, 29(4), 615-633.

McBride, B. J., & Schwartz, I. S. (2003). Effects of teaching early interventionists to use discrete trials during ongoing classroom activities. *Topics in Early Childhood Special Education, 23*(1), 5-17.

McGee, G. G., Daly, T., Izeman, S. G., Mann, L., Risely, T. R. (1991). Use of classroom materials to promote preschool engagement. *Teaching Exceptional Children, 23*, 44-47.

McGee, G., Daly, T., & Jacobs, H. (1994). The Walden Preschool. In Harris, S. & Handleman, J., (Eds.), Preschool Education Programs for Children with Autism (pp. 127-162). Austin TX: Pro-Ed, Inc.

McGee, G. G., Krantz, P. J., & McClannahan, L. E. (1985). The facilitative effects of incidental teaching on preposition use by autistic children. *Journal of Applied Behavior Analysis*, 18, 17-31.

McGee, G., Morrier, M., & Daly, T. (1999). An incidental teaching approach to early intervention for toddlers with autism. *Journal of the Association for Persons with Severe Handicaps,* 24, 133-146.

Mesibov, G. B., Schopler, E., & Hearsey, K. A. (1994). Structured teaching. In Schopler, E. & Mesibov, G. B., (Eds.), Behavioral Issues in Autism (pp. 195-207). New York, NY US: Plenum Press.

Mesibov, G. B., & Shea, V. (2010). The TEACCH program in the era of evidence-based practice. *Journal of Autism and Developmental Disorders, 40,* 570-579.

Mitchell, Y. L., & Espin, C. A. (1990). The handicapped children's protection act of 1986: Time to pay the piper? *Exceptional Children, 56*(5), 396-407.

National Association of State Directors of Special Education, W. (1991). *Side-by-Side Profile of Changes in New IDEA.* Liaison Bulletin.

National Research Council. (2001). *Educating children with autism.* Committee on Educational Interventions for Children with Autism. Division of Behavioral and Social Sciences and Autism. Washington, DC: National Academy Press.

Noonan, M. J., & McCormick, L. (2006). *Young children with disabilities in natural environments: Methods and procedures.* Belmont, CA: Brooks/Cole.

Odom, S. L., Brantlinger, E. Gersten, R., Horner, R. H., Thompson, B. & Harris, K. R. (2005). Research in special education: Scientific methods and evidence-based practices. *Exceptional Children, 71*(2), 137-148.

Odom, S. L., Collet-Klingenberg, L., Rogers, S. J., & Hatton, D. D. (2010). Evidence-based practices in interventions for children and youth with autism spectrum disorders. *Preventing School Failure, 54*(4), 275-282.

Panerai, S., Zingale, M., Trubia, G., Finocchiaro, M., Zuccarello, R., Ferri, R., & Elia, M. (2009). Special education versus inclusive education: The role of the TEACCH program. *Journal of Autism and Developmental Disorders, 39,* 874-882.

Pretti-Frontczak, K. L., Barr, D. M., Macy, M., & Carter, A. (2003). Research and resources related to activity-based intervention, embedded learning opportunities, and routines-based instruction: An annotated bibliography. *Topics in Early Childhood Special Education, 23,* 29-39.

Pretti-Frontczack, K., & Bricker, D. (2004). *An activity-based approach to early intervention* (3rd ed.). Balitimore: Brookes.

Prizant, B. M., & Rubin, E. (1999). Contemporary issues in interventions for autism spectrum disorders: A commentary. *The Journal of the Association for Persons with Severe Handicaps, 24*(3), 199-208.

Pruitt, P., Wandry, D., & Hollums, D. (1998). Listen to us! Parents speak out about their interactions with special educators. *Preventing School Failure, 42* (4), 161-166.

Rogers, S. J. (1999). Intervention for young children with autism: From research to practice. *Infants and Young Children, 12*(2), 1-16.

Sandall, S., Hemmeter, M. L., Smith, B. J., & McLean, M. E. (2005). DEC recommended practices: A comprehensive guide for practical application in Early Intervention/Early Childhood Special Education. Longmont, CO: Sopris West.

Sandall, S. R, & Swartz, I. S. (2008). *Building blocks for teaching preschoolers with special needs.* Baltimore, MD: Paul H. Brookes.

Schindler, H., & Horner, R. (2005). Generalized reduction of problem behavior of young children with autism: Building trans-situational interactions. *American Journal on Mental Retardation: 110*(1), 36-47.

Schreibman, L. (2005). *The science and fiction of autism.* Cambridge, Massachusetts: Harvard University Press.

Schreibman, L., Heyser, L., & Stahmer, A. (1999). Autistic disorder: Characteristics and behavioral treatment. In Hanson (Eds.), *Challenging behaviors of persons with mental health disorders and severe developmental disabilities* (pp. 39-63). Washington, DC: American Association of Mental Retardation.

Schreibman, L., & Koegel, R. (2005). Training for Parents of Children With Autism: Pivotal Responses, Generalization, and Individualization of Interventions. Psychosocial treatments for child and adolescent disorders: Empirically based strategies for clinical practice (2nd ed.) (pp. 605-631). Washington, DC: American Psychological Association.

Schreibman, L., Loos, L. M., & Stahmer, A. C. (1999). Autistic disorder. *Prescriptive treatments for children and adolescents.* In Ammerman, Hersen, & Last (Eds.) Prescriptive Treatments for Children and Adolescents (pp. 10-30). Allyon & Bacon, MA.

Schwartz, I. S., Carta, J., & Grant, S. (1996). Examining the use of recommended language intervention practices in early childhood special education classrooms. *Topics in Early Childhood Special Education, 16,* 251–272.

Schwartz, I. S., & Sandall, S. R. (2010). Is autism the disability that breaks Part C? A commentary on "Infants and toddlers with autism spectrum disorder: Early identification and early intervention," by Boyd, Odom, Humphreys, and Sam. *Journal of Early Intervention, 32*(2), 105-109.

Scruggs, T. E., & Mastropieri, M. A. (1998). Summarizing single subject research. *Behavior Modification, 22*(3), 221-242.

Sewell, T. J., Collins, B. C., Hemmeter, M. L., & Schuster, J. W. (1998). Using simultaneous prompting within an activity-based format to teach dressing skills to preschoolers with developmental delays. *Journal of Early Intervention, 21,* 132–145.

Siegel, B., Pliner, C., Eschler, J., & Elliot, G. R. (1988). How children with autism are diagnosed: Difficulties in identification of children with multiple developmental delays. *Journal of Developmental and Behavioral Pediatrics, 9*(4), 199-204.

Simpson, R. L. (2005). Evidence-based practices and students with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 20*(3), 140-149.

Skinner, B. F. (1957). *Verbal behavior*. East Norwalk, CT, US: Appleton-Century-Crofts.

Skinner, B. F. (1963). Operant behavior. *American Psychologist, 18*(8), 503-515.

Skinner, B. F. (1974). *About behaviorism.* New York: Random House, Inc.

Smith, D. D. (2007). *Introduction to special education: Making a difference (6th ed.).* Boston, MA: Pearson Education, Inc.

Stone, W., Lee, E., Ashford, L., Brissie, J., Hepurn, S., Coonrod, E., et al. (1999). Can autism be reliably diagnosed accurately in children under 3 years? *Journal of Child Psychology and Psychiatry, 40*, 219-226.

Strain, P. & Cordisco, K. (1994). The LEAP Preschool. In Harris, S. & Handleman, J., (Eds.), Preschool Education Programs for Children with Autism (pp. 115-126). Austin, TX: Pro-Ed, Inc.

Sundberg, M. L., & Partington, J. W. (1998). *Teaching Language to Children with Autism or Other Developmental Disabilities (*version 7.1*).* Pleasant Hill, CA: Behavior Analsysts, Inc.

Sweeney-Kerwin, E., Carbone, V., O'Brien, L., Zecchin, G., & Janecky, M. (2007). Transferring control of the mand to the motivating operation in children with autism. *Analysis of Verbal Behavior, 23*, 89-102.

Tager-Flusberg, H., Rogers, S., Cooper, J., Landa, R., Lord, C., Paul, R., & ... Yoder, P. (2009). Defining spoken language benchmarks and selecting measures of expressive language development for young children with autism spectrum disorders. *Journal of Speech, Language & Hearing Research, 52*(3), 643-652.

Turnbull, A. P., Summers, J. A., Turnbull, R., Brotherson, M. J., Winton, P., Roberts, R., et al. (2007). Family supports and services: A bold vision. *Journal of Early Intervention, 29*(3), 187- 206.

Venn, M. L., Wolery, M., Werts, M. G., Morris, A., DeCesare, L. D., & Cuffs, M. S. (1993). Embedding instruction into art activities to teach preschoolers with disabilities to imitate their peers. *Early Childhood Research Quarterly, 8,* 277–294.

Vismara, L. A., Colombi, C., & Rogers, S. J. (2009). Can one hour per week of therapy lead to lasting changes in young children with autism? *Autism, 13*(1), 93-115.

Vopat, J. (1994). *The parent project: A workshop approach to parent involvement.* York, ME: Stenhouse.

Wacker, D. P., Steege, M. W., Northup, J., Sasso, G., Berg, W., Reimers, T. et. al. (1990). A component analysis of functional communication training across three topographies of severe behavior problems. *Journal of Applied Behavior Analysis, 23,* 417-429.

Watson, J. B. (1913). Psychology as the behaviorist views it. *Psychological Review, 20,* 158-177.

Wehman, T. (1998). Family-centered early intervention services: Factors contributing to increased parent involvement and participation. *Focus on Autism and Other Developmental Disabilities, 13*(2), 80-87.

Williams, T. I. (1990). Language acquisition in autistic children: A research note. *European Journal of Psychiatry, 4, 173-179.*

Wolery, M., Anthony, L., Caldwell, N. K., Snyder, E. D., & Morgante, J. D. (2002). Embedding and distributing constant time delay in circle time and transitions. *Topics in Early Childhood Special Education, 22*, 14–25.

Woodruff, G., & Shelton, T. L. (2006). The transdisciplinary approach to early intervention. In G. M. Foley, J. D. Hochman (Eds.) , *Mental health in early intervention: Achieving unity in principles and practice* (pp. 81-110). Baltimore, MD US: Paul H Brookes Publishing.

Woods, J. J., & Kashinath, S. (2007). Expanding opportunities for social communication into daily routines. *Early Childhood Services, 1*(2), 137-154.

Woods, J. J., & Wetherby, A. M. (2003). Early identification of and intervention for infants and toddlers who are at risk for autism spectrum disorder. *Language, Speech, and Hearing Services in Schools, 34*, 180-193.

Xu, Y., & Filler, J. (2008). Facilitating family involvement and support for inclusive education. *The School Community Journal, 18*(2), 53-71.

Yoder, P. J., & Warren, S. F. (2002). Effects of prelinguistic milieu teaching and parent responsivity education on dyads involving children with intellectual disabilities. *Journal of Speech, Language, and Hearing Research, 45*, 1158-1174.

Zwaigenbaum, L., Bryson, S., Lord, C., Rogers, S., Carter, A., Carver, L., et al. (2009). Clinical assessment and management of toddlers with suspected autism spectrum disorder: Insights from studies of high-risk infants. *Pediatrics, 123*, 1383-1391.