CAREGIVING TEAMS AND TODDLERS STUDY: TWO SINGLE-CASE CHANGING CRITERION DESIGNS TO EXAMINE THE EFFECTS OF A TWO PARENT-MEDIATED INTERVENTION FOR FAMILIES WITH TODDLERS AT RISK OR WITH AUTISM SPECTRUM DISORDER

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ABSTRACT

Abigail Michelle Carroll: Caregiving Teams and Toddler Study: Two Single-Case Changing Criterion Designs to Examine the Effects of a Two Parent-mediated Intervention for Families with Toddlers at Risk or with Autism Spectrum Disorder
(Under the direction of Nancy Bagatell)

This study examined the use of a family occupation-centered coaching intervention to support two parents' implementation of evidence-based social interaction strategies in their home with their toddler with autism spectrum disorder (ASD). The study was an exploration of applied intervention research in occupational science using the transaction meta-theoretical perspective. Two-single case changing criterion designs (CCDs) within one family with a toddler with ASD were used to study the social interaction processes of a family and to determine the effect of the intervention on parent-child interactions. The research design embedded narrative reasoning and decision-making time points into the procedures to support social validity through caregiver choice of preferred activity, strategies, and criterion. The intervention yielded a 55.26% improvement in the quality of social interactions for the family, 69.27% for the mother, 64.07% for the father, and 30.69% for the child. The magnitude of effect of the study, standard mean difference, was 5.18 for the mother, 4.94 for the father, and 7.17 for the parents as group. The findings demonstrated that a two-caregiver approach to intervention offered benefits for five reasons: intervention enacted with social support helped reduce stress and facilitated skill acquisition, multiple skilled social models supported positive affect sharing, routine family practice increased dosage and generalization, and toddler exposure to more predictable quality interactions, less

variability, through the parent's participation together. Given that ASD is viewed as a disorder of prediction, toddler participation in predictable quality interactions can support practice of sustained habituation and engagement as well as lead to expansion of social skills. Theoretical and clinical reflections are provided for evidence of theory in practice and in support of the translation of occupation-centered and contextualized intervention research in the field of occupational science. The study findings inform the feasibility and social validity of a two-caregiver approach and may have implications for early intervention research, service delivery, and policy.

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LIST OF ABBREVIATIONS

ABA	Applied Behavior Analysis
ADOS	Autism Diagnostic Observation Schedule
ART	Adaptive Response Training
ASAP	Advancing Social Communication and Play
ASD	Autism Spectrum Disorder
ASQ: SE	Ages and Stages Questionnaire: Social Emotional
Brief-COPE	Brief- Coping Orientation to Problems Experienced Inventory
CCD	Changing Criterion Design
CDSA	Children's Developmental Services Agency
COPM	Canadian Occupational Performance Measure
FITT	Family Implemented TEACCH Training
IDEA	Individuals with Disabilities Education Act
IPCI	Indicator of Parent Child Interaction
IT	Information Technology
JAML	Joint Attention and Mediated Learning
JASPER	Joint Attention Symbolic Play Emotional Regulation
LPP	Life Participation for Parents
M-CHAT	Modified Checklist for Autism in Toddlers
NDBI	Naturalistic Developmental Behavioral Interventions
OT	Occupational Therapy
PhD	Doctor of Philosophy
QUIS	Quality of Interactions Schedule
RBI	Routines Based Interview
RI	Researcher/Interventionist

RRB	Restricted and Repetitive Behavior
SA	Social Affect
SCD	Single case design
SLP-CCC	Speech-Language Pathology-Certificate of Clinical Competence
TEACCH	Treatment and Education of Autistic and Communication related handicapped Children

CHAPTER 1: BACKGROUND AND SIGNIFICANCE

One of the core and pervading assumptions within occupational science and occupational therapy has been that certain patterns of occupation may promote or counteract health, development, disease, or happiness (Erlandsson, 2004). The patterns of our daily occupations constitute a mixture of value perceptions, which are related to meaning and are shown to be associated with subjective health and wellbeing (Erlandsson, Eklund, & Persson, 2011). Dickie (2010) suggested there is a vital need for both basic and applied research in occupational science to identify essential elements of occupation and occupational processes in order to "support work relating occupation to health and well-being" (p. 195). It is my desire to support translational research in occupational science through collection of empirical evidence for elements of occupation theorized to be key to the development of particular skills that can support well-being. Through use of systematic methods and processes that infuse evidence-based practices into intervention, this research may lead to knowledge generation of occupational elements to be utilized in interventions for populations with targeted needs.

Patterns of occupations can be intricately complex and can occur both within and across time as patterns of interaction or as temporal patterns of activities repeated on a periodic basis (i.e., as daily, weekly, monthly, annual routines). The word patterned implies there is a repeated experience and the habits of every day behavior develop, operate, and change through individuals' repeated experiences in particular contexts (Fritz & Cutchin, 2016). Humans acquire habits through conditions of social life (Dewey, 1922). Habit

formation is suggested to occur through two competing pathways, one based on logical conscious choice and another pathway that occurs unconsciously through routine habit situations (Fritz & Cutchin, 2016). There is a need for intervention research to connect the concept of habit formation to occupational therapy treatment innovations and outcomes (Fritz & Cutchin, 2016).

Occupational science has a history of studying family patterns of occupations and routines (Bonsall, 2014; see also DeGrace, Hoffman, Hutson, & Kolobe, 2014; Larson, 2006; Pierce, Munier & Myers, 2009; Segal, 1999; Segal, 2004) and this research can inform understandings of how patterns of participation impact early development and health across the lifespan. My current research focus is on patterns of occupation in families with young children with autism spectrum disorders (ASD). Creating conditions for people to experience meaningful patterns of daily occupations is of concern to everyone involved in promoting health and welfare. Studies show that parents of children with ASD are often stressed (Case-Smith & Arbesman, 2008), but little work has been done to examine other factors influencing early experiences of parents, particularly those with children with ASD or with children at risk of developing ASD (Dawson et al., 2010; Freuler, et al. 2013). Discussion of elements, factors, or patterns that could be influencing caregiver well-being and the irregular development of children during the first few years of life is of significant socio-cultural relevance. There is a need for research based on theoretical perspectives that can situate families of children with ASD "as capable of resilience and adaptation" (Boyd et al., 2014, p. 331) and for intervention studies using methods capable of monitoring and analyzing family change amidst complex situational factors.

Occupational scientists have suggested there be increased study of occupations that connect (Hammel, 2009), or unifying occupations (Lavalley, 2017). Parents of children with ASD report difficulty connecting with their child in ways that support mutual participation, shared meaning, and experience during family occupations (Bagby, Dickie, & Baranek, 2012). Families with children with ASD also have difficulty engaging in family routines (Bagatell, Cram, Alvarez, & Loehle, 2014; Boyd et al., 2014). In this study three family members, two parents and their toddler, were the unit of analysis transacting in coordination around and through occupational engagement in a routine activity. Research with a focus on shared participation of the family unit could "have significant implications for family centered practice" (Boyd et al., 2014, p. 331) and inform our understanding of occupations with the capacity to connect. Inquiries and consideration of the most basic unit of society, the family, and family health has the potential to yield linkages to the health of populations (DeGrace et al., 2014). Based on current ASD early intervention research, this study aims to identify and embed occupations with essential elements into family patterns and routines that may be key ingredients to the success of early intervention with families with toddlers with ASD.

Autism in Development

ASD is a neurodevelopmental disorder suggested to begin at varying points in utero and to cascade through multiple pathways during early development, resulting in the neural and clinical heterogeneity of the disorder (Courchesne, Pramparo, & Gazestani et al., 2019). ASD is characterized by core deficits in social interaction skills and communication, and restricted, repetitive patterns of behavior, interests, or activities; at times manifested as apparent hyper- or hyporeactivity to sensory input (DSM-5, Americans Psychiatric Association (APA), 2013). Over the past few decades the prevalence of ASD has consistently

risen to an estimation of 1 in 59 school age children nationally and in some southeastern states 1 in 57 (Baio et al., 2018).

Key ingredients to improving outcomes for children with ASD are early identification, intervention (Baranek et al., 2015; Buzhardt et al., 2010), and choosing evidence-based interventions individualized to the child and family's special needs (Buzhardt et al., 2010). Early intervention must take an act now approach (Landa, Holman, O-Neil & Stuart, 2011) because neurodevelopment occurs rapidly in the first few years of life and timing matters. The younger children are at the time of intervention, the greater their developmental gain and symptom reduction is across multiple forms of intervention (Rogers et al., 2012).

Early intervention for children with ASD is critical for seizing opportunities to foster the development of pivotal neurological connections and introductory social-communication skills (Mundy & Crowson, 1997). Early developmental foundations lay a framework necessary for expansion of occupation - social, academic, and daily living activities later in life (Kasari et al., 2015). Early intervention can support optimal developmental outcomes, minimize disability, and considerably reduce later burdens on families and society (Baranek et al., 2014).

Parent Implemented Intervention

Due to the key role parenting plays in a child's development, parent-mediated interventions are a common approach (Kasari, Gulsrud, Paparella, Hellermann & Berry, 2015; Schertz, Odom, Baggett, & Sideris, 2013; Turner-Brown, Hume, Boyd, & Kainz, 2016) and those embedded in family routines can yield better outcomes (Wetherby et al., 2014). Parent implemented intervention models hypothesize that adults' enhanced responsiveness supports children's motivation for social engagement and attention to their parent, thus providing parents with increased opportunities to stimulate their child's early development. Current

IDEA Part C funding requires that programs use a family-centered approach to intervention. Yet, the traditional approach is to train one parent/caregiver and this approach has resulted in mixed findings (Oono, Honey & McConachie, 2013).

Given the heterogeneity of ASD, there is a need to individualize intervention (Baranek et al., 2015) and match clients to efficacious treatments based on family characteristics (Stahmer, Schreibman, & Cunningham, 2011). Parent-mediated intervention needs to be examined using a family systems approach (Schertz et al., 2013) that delivers intervention within family's natural contexts, daily activities, and routines, and fits within Part C funding frameworks (Baranek et al., 2015). Parent-mediated coaching interventions with data collection procedures (Baranek et al., 2015) are one means to provide this type of family systems approach.

Caregiver Well-being

Increased stress is well documented for caregivers of children with ASD and may result from many sources (Kasari et al., 2015). Increased stress can lead to long-term health problems and with the current prevalence of ASD, constitutes a public health challenge of considerable magnitude (Smith, Greenberg & Mailick, 2012). Expectations on parents to deliver intervention can be one factor contributing to strain (Kasari et al., 2015). The traditional approach to train one primary caregiver can leave the burden on one parent to deliver interventions to their young child. Given social interaction is a core deficit of ASD and deficits in toddler social relatedness are associated with increased parental stress (Estes, et al., 2013), the traditional approach may exacerbate strain on the primary caregiver. No research to date has focused on simultaneous training of two parents to model and teach social interaction skills to their toddlers with ASD during family routines. There is a need for research and early interventions that target understanding and improving social interaction

processes in families to support child development alongside family well-being. Parents of children with ASD report that certain types of social support, spousal and extended family support, can help decrease stress (Mancil, Boyd, & Bedesem, 2009). Spousal support has also been shown to be an effective strategy for coping with stress for parents with children with ASD (Higgins, Baily, & Pearce, 2005). Intervention research needs to engage parents together in collaborative problem solving in order to empower them to continue evaluation of interactive strategies beyond the intervention period.

The Influence of Family Social Interaction Processes on Social Learning and Development

There is a critical need for the development of intervention designs with a family centered focus that support families in natural environments during routine family practices and can be provided within current Part C IDEA funding frameworks. Without the development of interventions that further our understanding of the social interaction processes of families with toddlers with ASD, we may lose a potentially critical component of early intervention - the role of family interactions in the social learning process and their influence on children's development of social interaction skills. The objective of this study is to identify whether a novel intervention design utilizing a two-parent implemented method may be a key clinical approach for maximizing social interaction effects in parent-mediated interventions for toddlers with ASD.

Theoretical Frameworks

This study will be guided by multiple theoretical approaches. The perspectives of transaction, the developmental niche framework, and the organism-environment system theoretical foundations inform the rationale for the design and elements of the intervention process. The enactive approach is specific to the target population and informs the rationale

for how to target improvements in the dependent variable, quality parent-child interactions, for toddlers with ASD specifically.

Perspectives of Transaction

The transactional perspective is a meta theory that has emerged in occupational science over the past decade. The field is currently exploring how this perspective could be applied to research and intervention (Cutchin & Dickie, 2013). From this perspective, occupation is considered a form of functional coordination between person and world (Cutchin & Dickie, 2013). Important aspects of occupation are meaning, learning, growth, morals, and social improvement (Cutchin & Dickie, 2013). The transactional view calls for an understanding of relations of person and world (situation) and includes social, cultural geographical, temporal, historical, political, and biological contexts (Dickie, Cutchin, & Humphry, 2006). Social contexts include relations with other people involved in situations. The focus is on relations that connect person with context and enable occupation. Given this, a transactional perspective shifts the unit of analysis beyond the individual. From this view, people mutually influence each other and are constantly constructed and constructing one another through their transactions with the world. Use of this perspective allows for examination of family systems and analysis of the family as a unit to understand social learning processes.

Application of the transactional perspective has the potential to position families of children with ASD as capable of resilience, adaptation, and growth through investigation of shared engagement as a family unit. The lens is a good fit for studying parent-child relationships because toddlers rely on caregivers to help them connect with the world and enable occupation. Parents also engage in occupations and take actions in response to their children. Social, cultural, and moral components of actions, especially in the form of habits,

are seen as essential parts of understanding the human experience in a fluctuating world (Dickie et al., 2006). There is a focus on more than action because the qualities and context of actions, like timing and place, matter.

One component of designing intervention approaches is consideration of historical and structural forces influencing situations (Bailliard, 2014). Careful analysis of situations that lead to development of patterns of occupation that moves beyond the individual is necessary (Bailliard, 2014). Research on family routines and patterns of occupations indicates that outside forces, like work or school, influence the structure of family routines (Boyd et al., 2014; Larson, 2006). In this study the family is the unit of analysis and the transactional perspective is applied to an experimental design and process. The intervention is designed to collect information on and be 'situated' within a family's developmental niche (Harkness, et al., 2007). Information on the family's developmental niche will help inform what outside forces are influencing the family's situation and the structure of their routines.

Developmental Niche Framework

The developmental niche framework as outlined by Harkness et al. (2007) supports a focus on intervention embedded in families' home routines where practices influence children's skill development. The framework includes three main components: physical and social settings of daily life, family values and customs of care, and the psychology of caregivers (Harkness et al., 2007). Family routines and practices are highly influenced by the psychology of caregivers. In addition, they shape the choices of physical and social settings inhabited, the skills children acquire, and they directly influence parent-child interactions (Harkness et al., 2011). Use of the framework supports an understanding of how and why family routines are set up as they are and how they are enacted during family interactions.

Organism-Environment System: The Importance of Emotion in Learning Processes

The organism-environment system theoretical foundation grounds the importance of use of a preferred activity/occupation (Jarvilehto, 2000) for intervention. This theory views emotions as the quality of learning and reorganizational processes. From this view feeling is knowing and emotion is viewed as the reorganization of the organism-environment system. Emotion is of key importance in the formation of cooperative systems, in this case a 'family system.' From this theory "the good learning process is happiness itself" (Jarvilehto, 2000, p. 58). Therefore, preferred activities will be utilized in the intervention process to elicit positive emotions. Positive affect sharing during shared engagement of both parents and the child will then be emphasized as the starting point for the reorganizational process to facilitate child learning of social interaction skills.

Contributions from Recent Theories on Autism: Enactive Approach

The enactive approach is a logic model for how elements of social interaction develop and what is needed to support their development in children with ASD (DeJaegher, 2013). The approach explains that sense-making, or cognition, is thoroughly embodied and is a participatory process enacted through social interaction and inter-individual coordination (DeJaegher, 2013). Understanding and meaning is generated and transformed in and through our experiences and interactions. We develop a conceptual grasp of the nature of minds through affectively patterned experiences, coordinated relations with other people to develop intersubjectivity (DeJaegher, 2013). Intersubjectivity can be defined as the ability to share mental control with another person.

Trevarthen and Aitken (2001) theorized that intersubjectivity is born of the ability to be actively engaged with another and from awareness of the subjective states of other people. It is at the heart of attachment behavior and requires intentionality as well as the ability to

adapt or fit this subjective control with the subjectivity of others (Siegal, 2001). Simply put, it requires the ability to sense the thoughts and feelings of those around us. The degree to which this sensitivity fosters the formation of healthy relationships or not depends on the child's experiences, their sense of security, the nervous system, and the development of consistent positive feedback loops (socially and physiologically). Early intervention ASD research suggests that social affect sharing and socially engaged imitation may be building blocks to the development of intersubjectivity (Landa et al., 2011). Intersubjectivity, emotional connection, and perspective taking with social partners early in life are foundational for flexible creative thought and lifelong learning (DeJaegher, 2013).

Embodiment, sensory processing, and coregulation. DeJaegher (2013) suggests children with ASD experience a different embodiment and self-organizing process. For a child with ASD this may mean that their perspective of significance is "rooted in the body" (DeJaegher, 2013, p. 3). In research, the child with autism's different embodied experience is often described as sensory processing differences that influence their ability to self-organize and self-maintain (DeJaegher, 2013). The literature suggests that children with ASD's 'breakdowns' manifest as behaviors like tantrums, aggression, or self-injury whereas their attempts to self-maintain or 'repair' as withdrawal.

If toddlers with "autism have difficulty connecting, we need to study the social interaction processes they engage in (or fail to engage in)" (DeJaegher, 2013, p. 11). The patterns of coordination between people can directly influence whether individuals sustain their disposition or change their behavior (DeJaegher & Paulo, 2007). An enactive approach explicates why the emotional quality of social interaction processes with two parents is of particular importance for toddlers with ASD. An enacted perspective on the social

interaction process may provide families with an understanding of how coregulation can occur between two or more autonomous agents, with each agent contributing to co-regulation in the interaction process (DeJaegher, 2013). A family systems approach to intervention can examine how mutual regulation between two parents and their child during engagement in a routine family activity may support toddler development of social interaction skills.

Guiding Research Question and Aims

The guiding research question for this study is: Can a two-parent implemented family and occupation-centered intervention using a coaching approach improve the quality of social interactions of families with toddlers with ASD? As with any intervention, fidelity, social validity, feasibility, and meaningful outcomes are important, therefore the secondary research aims include:

a) Determine if a two-parent implemented intervention, embedded in family home routines, improves social interaction outcomes for toddlers with ASD.
b) Determine the feasibility, fidelity, and social validity of a two-parent implemented approach to intervention.

CHAPTER 2: LITERATURE REVIEW

In this section, occupational science literature on family occupations and routines is reviewed that relates to intervention design and intervention research for toddlers with ASD. The review identifies gaps that explicate the need for the study. This is followed by a review of literature on intervention for toddlers with ASD. Throughout the review, theoretical and empirical literature is provided to support why a two-caregiver implemented coaching intervention using a preferred routine family occupation may be the research approach needed to fill current gaps in multiple fields of study.

Occupational Science Literature

Family Routines

Family routines can support health, wellbeing, and the development of language, academic, and social skills as well as contribute to family identity and cohesion (Bagatell et al., 2014; Feise, 2007; Spagnola & Fiese, 2007). Occupational scientists have studied the engagement of families as a group during family routines for decades (Segal, 1999). However, mothers have largely been the primary informants in this research (Boyd, McCarty, & Sethi, 2014; Larson, 2006). Orban and colleagues (2012) were one of the first research teams to successfully gather information about all family members' participation in routines through collection of time use diaries completed by both parents. Their research examined families' social coordination of patterns of daily occupations and how families work together. In their analysis they identified four main family types: togetherness, child, individual, or parent-child focused families. Families with children with obesity were investigated as their

target population to understand the influence of family patterns of daily occupations on health and development in this group. They applied their findings to the design of interventions for families with children with obesity to support change and development of the family system (Orban et al., 2014).

Further research is needed to explore methods that can capture the families' perspectives, including the child's (Boyd et al., 2014), to learn more about roles in family routines. Research of this nature is needed for a variety of target populations, including families with children with ASD. There is a need for occupational science research that looks closely at what children do and to examine the development of young children's interest in the activities of others (Humphry, 2016). A family-centered intervention with observation of how families do a routine activity together can inform both how children develop an interest in engaging with their parents and how families open up opportunities for participation of children in the family routine. Inquiries to understand the social interaction processes of families with children with ASD are necessary (DeJaegher, 2013) to understand their role in how children develop and learn complex adaptive skills like communication (Carpendale & Wehera, 2013) and social interaction. This study examined a preferred routine in a family with a toddler with ASD and focused on the quality of the family's social interactions in order to investigate the influence of a coaching intervention on family social skill development.

Families with children with ASD report that experience, meaning, and feelings are shared less often during family occupations than by families of typically developing children (Bagby et al., 2012). Parents of children with ASD often have a difficult time forming the connection that enables mutual engagement, shared meaning, and experience during family

occupation (Bagby et al., 2012). There is a need to investigate services for families with children with ASD that focus on the family unit as capable of supporting successful family participation in occupations (Boyd et al., 2014).

Occupational scientists and occupational therapists grapple with how to study social aspects of occupation beyond individual perspectives, and the fields continue to look for methodological approaches that will allow for evaluation and categorization of group occupational participation (Lavalley, 2017). One suggestion is to study collective occupations of groups like families and to consider how well the group is doing together (Lavalley, 2017). Families with children with ASD often have difficulty connecting through shared participation, so this group has an implicit need for research of this nature. Intervention research designs for families with children with ASD are needed that have structural elements capable of delivering a family-centered service with methodological rigor (Siller et al., 2014). Use of multiple changing criterion designs is one method that allows for examination of a family unit as well as analysis of each individual's contributions to collective participation in the family group. Using this method, the family can be viewed as a mini community of practice that works together toward socially identified collective goals to build skills that will support successful family participation in occupation.

Embodied Learning, Occupations with Preferred Elements to Support Positive Affect Sharing, Intersubjectivity, and Paths to Lifelong Learning

The importance of emotion and the embodied nature of participation in routines have been in occupational science literature, especially in work with children with ASD engaged in family occupations (Segal, 1999). The emotional valence of participation provides a deeper sense of activity engagement as a whole and can result in a "whole body feeling" of whether the "actions are right and fit the occasion" (Humphry, 2016, p. 8) or not. The

embodied affective experience during participation is a critical factor in whether additional opportunities to reengage in a similar experience will be pursued by an individual. Interventions to elicit positive emotion and affect sharing in parent-child dyadic relationships have been targeted in ASD interventions and will be discussed later in this review. However, elements of occupation capable of triggering positive affect sharing between members of a group, in this case a family, as the mechanism for change in intervention have not been studied. The connections between family occupations, the embodied experience of group participation, and its relationship to learning need to be explored using experimental methods in intervention. Investigations of this nature are well suited for families with children with ASD who commonly have challenges with emotional regulation and have core deficits in social skills that can interfere with group engagement.

Research with Toddlers with ASD

The variations in the types of intervention approaches for working with children with ASD mirror the heterogeneity of the disorder. Naturalistic Developmental Behavioral Interventions (NDBI's) are common approaches that use core instructional strategies, similar targets, and contexts of delivery (Schreibman et al., 2015). NDBI's use strategies that integrate Applied Behavioral Analysis (ABA) with developmental principles. Both parent and child outcomes have been targeted in NDBI interventions but positive family outcomes are not universal. NDBI's are often delivered through parent implemented or parent-mediated approaches and have been shown to improve outcomes for children with ASD, particularly in the quality of parent-child interactions (Oono et al., 2013). Examination of these approaches and related outcomes informs the key ingredients that have been identified for reaching targeted effects for families with children with ASD as well as the gaps in intervention results.

Instructional Strategies

Three common approaches in NDBI interventions have been identified: 1) shared control between the interventionist and child (or parent and child); 2) use of natural contingencies; and 3) strategies to teach developmentally appropriate skills (Schreibman et al., 2015). Parent-child relations are the most natural relationships to work on shared control and relational negotiation, therefore parent-mediated approaches to teach parents strategies for interaction are a common route for early intervention (Oono et al., 2013). Strategies to teach developmentally appropriate skills focus on building precursor skills to learning such as social engagement, social motivation, orienting, affect sharing, imitation, joint attention, or joint engagement.

The focus of this review is on parent-mediated approaches because of their relational focus and the premise that parental behaviors are the primary mechanism for changes in child behaviors. Parent-mediated approaches take into account the needs of the child, their interests, and their developmental level to ensure that activities are within an appropriate range of expectations for the child to be successful. Parents are trained to increase children's learning opportunities and acquisition of important skills. Parent-mediated approaches have been shown to affect outcomes in child communication skills, social skills, and social emotional well-being (Landry, Smith, & Swank, 2006). Branded names of common parent-mediated interventions include: Family Implemented TEACCH Training (FITT) (Turner-Brown et al., 2016), Joint Attention and Mediated Learning (JAML) (Schertz et al., 2013), Adaptive Response Training (ART) (Baranek et al., 2015), and Joint Attention Symbolic Play Emotional Regulation (JASPER) (Kasari et al., 2015).

In parent-mediated intervention research, some programs have coached more than one caregiver to deliver strategies (Schertz, Odom, Baggett, & Sideris, 2018); however, in

most studies one parent is usually designated as the primary caregiver during the research process and analysis. No intervention program has focused on the triadic social interaction processes of the parents with the child during the intervention, nor have they analyzed the influence of 'family as group' dynamics on the development of child social interaction skills. There is a blinding gap in ASD research on the social interaction processes of families (DeJaegher, 2013) and a need for interventions based on the premise that family behaviors can be a primary mechanism for changes in child behaviors. Innovative interventions with this approach may expand our understanding of family systems within current cultural contexts and their influence on child development.

Nature of Targets

Extensive research on interventions for toddlers with ASD has been done on a variety of targets addressing the core deficit areas for the disorder. Table 1 provides a summary of some of the positive child outcomes that have been reported for a broad range of intervention targets. Parental outcomes have also been targeted due to the stress associated with caregiving children with ASD (Kasari et al., 2015) and the influence of parent behavior on child outcomes (Rogers et al., 2012). Common parental targets are reductions in caregiver stress (Kasari et al., 2015), improved parental wellbeing, parental sensitivity and responsivity (Rogers et al., 2012), and parent-child interactions (Oono et al., 2013).

Table 1. *Common targets in intervention research for toddlers with ASD*

IQ	(Dawson et al., 2010; Landa & Kalb, 2012; Landa et al., 2011; Woods, Kashinath & Goldstein, 2004)
Verbal and language gains	(Brian, Smith, Zwaigenbaum, Roberts & Bryson, 2015)
Joint attention	(Landa et al., 2011; Schertz et al., 2013)
Joint engagement	(Kasari et al., 2015)
Social and functional communication	(Baranek et al., 2015; Brian et al., 2015; Landa & Kalb, 2012; Landa et al., 2011; Turner-Brown et al., 2016; Wetherby et al., 2014; Woods et al., 2004),
Initiation	(Brian et al., 2015)
Language expression	(Landa & Kalb, 2012; Landa et al., 2011; Wetherby et al., 2014)
Language comprehension or receptive language	(Baranek et al., 2015; Kasari et al., 2015; Oono et al., 2013; Wetherby et al., 2014)
Parent-child interaction or synchrony	(Landa & Kalb, 2012; Landa et al., 2011; Oono et al., 2013; Rogers et al., 2012)
Adaptive behavior	(Baranek et al., 2015; Dawson et al., 2010; Woods et al., 2004)
Restricted repetitive behaviors/ autism symptoms	(Baranek et al., 2015; Oono et al., 2013)
Positive affect sharing or social smiling	(Brian et al., 2015; Landa et al., 2011)
Socially engaged imitation	(Landa et al., 2011)
Social orienting	(Brian et al., 2015)

Parent-child interactions. In 2013, Oono and colleagues completed a review of seventeen parent-mediated studies completed since 2010. They evaluated ten interventions designed to enhance parent interaction style to facilitate children's communication. The review found that parent-mediated interventions were effective for enhancing parent interaction style. The approach showed significant gains for children in language comprehension, parent reported communication, joint attention, parent synchronization, and reduction in autism characteristics. There were nonsignificant outcomes in child language expression, joint language, child initiations, adaptive behavior, and decreased maladaptive behaviors.

Parent-mediated approaches included in the Oono et al. (2013) review did not show significant outcomes for reducing parent stress. However, more recent parent-mediated interventions that included a group parent training component found significant reductions in parent stress (Kasari et al., 2015; Turner-Brown, et al., 2016). For example, Brian et al. (2015) showed that use of a coaching approach with one caregiver can reduce the parent stress associated with child characteristics.

Coaching approaches yield family (parent and child) outcomes. Brian et al.'s (2015) study on the Social ABC intervention was one of the first coaching approaches to show significant child and parent outcomes, improved child initiations, and decreased parent stress. Social ABC's is an NDBI intervention that puts a strong focus on positive affect sharing. The approach is based on the premise that positive affect sharing supports learning. The study used a live video coaching model to deliver training to parent-child dyads in their homes. During the study, the children also showed improved social orienting, positive affect sharing, and social smiling but the improvements were not maintained at follow up.

The findings by Brian et al. (2015) suggest a gap in current intervention delivery for achieving sustainable outcomes for social orienting, positive affect sharing, and social smiling. The gap evokes the question of whether multiple social models (in this case a parent and coach) may be a key mechanism for child improvements in those areas. Social orienting, positive affect sharing, and social smiling seem to be reversible behaviors that may be more sensitive to social environmental change. This is of particular importance because social affect sharing is thought to be a precursor to the development of intersubjectivity, emotional connection, and perspective taking (Landa et al., 2011) which are foundational to the development of flexible creative thought and life-long learning (DeJaegher, 2013). Social

orienting and affect sharing may be one of the most important precursor skills to be targeted through a two parent-implemented intervention to support skill maintenance and generalization. Social skills require sensing and learning by watching multiple social actors transact in the environment (Thelen, 2000). Training two parents to implement an intervention based on positive affect sharing, through use of preferred activity, may help lead to enduring skill development for the child and family.

Training two parents may also lead to reductions in caregiver stress because, as Mancil et al. (2009) reported, spousal support can help reduce stress. No approach has tried training two parents as a means to integrate spousal support into the intervention design to support routine quality engagement of the family and subsequently reduce caregiver stress. Appropriate environmental support is needed by both children and parents to support skill development (Adolph et al., 2010). Across cultures, skills only stabilize after weeks and months of practice (Adolph et al., 2010), thus an approach that provides coaching to two parents to provide one another and their child with social support could enable sustainable and generalizable skill development after the intervention when the coach is removed.

The nature of social skills and a need for routine practice. Due to the nature of social skills, theoretical literature proposes why it may be one of the most challenging skills to learn and generalize. Social skills require not only knowing what to do but also the ability to make adjustments to social partner's cues in real time (Thelen, 2000). Children need to learn to attend to what people in their daily environments are doing and they benefit from cues to attend to activities caregivers are doing in their homes and communities (Humphry, 2016). Learning to cooperate is situationally embedded and based in practice (Reddy, 2015). Children need to practice this skill in familiar situations in which they have ongoing

opportunities to perform. The earlier this skill is practiced, the more children are influenced toward social behavior and positive affects as mediators of compliance (Reddy, 2015). Routines help children learn to initiate and engage with their environment and practice skills (Reddy et al., 2013). Intervention delivered in the home environment within daily routines has been shown to result in improved outcomes for children with ASD (Wetherby et al., 2014), yet two parents have not been targeted to work together with their child to practice social skills as a family on a routine basis.

Two caregiver/parental social models need to be prioritized in research as a means of embedding practice of skills into ongoing family routines to support long-term skill development. Children likely have the most enduring opportunities to watch parental social actors transact in their homes and community across the lifespan. A two-parent approach would provide the opportunity for one parent to draw the child's attention to what the other parent is doing (and vice versa) to facilitate the social learning process. Research needs to investigate whether this approach is capable of achieving sustainable caregiver and child outcomes. From a transactional view of development, patterns of interaction shape ongoing social communication and development (Wan et al., 2012), therefore understanding family patterns of interaction may be a key ingredient to improving child development of social interaction skills.

Contexts of Delivery

Experiences affect neurobiological development (Schreibman et al., 2015) and contexts of delivery like setting, location, frequency, duration, dosage, and funding frameworks can influence the primary mechanism of change in intervention approaches. Early interventions with families with children with ASD have been delivered in a variety of settings and locations like the home (Dawson et al., 2010), clinic, center-based (Kasari et al.,

2015), or classrooms (Landa et al., 2011). Delivery of intervention in the context of home routines has been shown to result in better outcomes (Wetherby et al., 2014).

Duration, dosage, frequency. Rogers et al. (2012) reported that increased frequency of intervention with children with ASD results in increased opportunities for children to practice skills and improved child outcomes. However, meta analytic findings of traditional dosage dependent practices where professionals intervene directly with children showed that dosage in early intervention did not predict better outcomes (Schertz et al., 2018). Instead, the analysis suggested that the emphasis on dosage may need to be on the child and family's opportunities to practice skills rather than the frequency of professional intervention. Intervention processes that support family-centered capacity building practices may be more important for realizing child outcomes than high intensity professionally delivered intervention (Schertz et al., 2018). The effectiveness of intervention may depend less on the intensity and dosage of "professional time commitment than on the quality of professional support to promote active parent learning and participation" (Schertz et al., 2018, p. 863). This shifts the focus to parent implemented interventions as a means to empower parents to shape family contexts in ways that provide children with ongoing physical and social stimulation to support opportunities for practice of skills.

Intervention needs to effect change through the family system in order to treat children with ASD successfully (Oono et al., 2013). A key ingredient to early intervention success in research interventions is to use methods that embed frequent data collection and progress monitoring into the intervention process to support data driven decisions and adjustments (Buzhardt et al., 2010). The dosage of parent implemented intervention can be difficult to measure. Therefore, research needs to develop means of data collection and

monitoring in family systems that can adequately measure and monitor families practicing of skills within their natural relationships and contexts. Change in interconnected systems (family, funding, or service delivery systems) during intervention can be difficult to monitor with experimental control while identifying the mechanisms of change. There is a need for innovatively designed experimental intervention research with the capacity to monitor interconnected family systems within current service delivery systems and funding frameworks.

Funding frameworks. Research by Rogers et al. (2012) is an indication that Part C services and treatment as usual are an effective intervention approach (natural context and frequency of services). Research needs to have a family-centered focus, work within Part C IDEA funding frameworks, and occur in currently funded intervention programs (Siller et al., 2014). Through shared involvement of families, teachers, clinicians, and administrators in the development of research we can bridge the research to practice gap in ASD intervention to foster large-scale use of effective treatments (Dingfelder & Mendell, 2011). Intervention models that facilitate parent participation, work within current funding frameworks, add components to reduce parent stress, and use coaching to individualize treatment to family characteristics can support this process (Schreibman et al., 2015). Parents need to be involved in a collaborative process to identify target behaviors that influence parent (Stahmer et al., 2011) and child participation and coaching models have this capacity. Coaching models have been shown to impact both child and parental outcomes (Brian et al., 2015) and can fit within current Part C service delivery systems.

Coaching models emphasize collaborative relationship approaches alongside adult learning strategies, setting and achieving goals, and building on existing skills (Dunn, Cox,

Foster, Mische-Lawson, & Tanquary, 2012). Wetherby et al. (2014) conducted a comparative study that examined coaching approaches delivered in the home environment during daily routines to a group coaching setting outside of the home. The caregivers coached individually in their home showed faster and better gains for child social communication, comprehension skills, and decreased worsening of child adaptive behaviors than the caregivers coached in a group outside of the home (Wetherby et al., 2014). There is, however, a need for more research to study clinicians using coaching approaches to empower families and match current evidence-based strategies to family needs that are delivered within the natural context of family routines and current funding frameworks.

Summary of Key Ingredients

To close this section, a summary of key ingredients is provided (see Appendix A) that highlights the need to integrate these components into future intervention research to support optimal family outcomes. Research to examine use of these components to individualize treatment is needed to realize optimal child and parent outcomes within current funding frameworks (Stahmer et al., 2011). As Oono et al.'s (2013) review highlighted, parent-mediated interventions did not show statistically significant improvements in primary aspects of child language and communication, frequency of child initiations, child adaptive skills, or parent stress. However, more recent parent-mediated interventions using coaching approaches showed improvements in parental outcomes (Baranek et al., 2015, Turner-Brown et al., 2016). Research on how to add components to interventions that elicit improvements in child language and adaptive skills must be investigated. Training two parents together may provide multiple social models to support child development of socially engaged imitation and adaptive skill development. In addition, this approach may build peer support into the intervention to help parents manage challenging child behaviors. Intervention research using

integration of methods to help embed positive emotion into the intervention approach may also facilitate positive affect sharing, child initiations, and learning.

In summary, gaps in the empirical literature and supporting theoretical literature suggest a two-parent implemented coaching intervention for toddlers with ASD may be an effective strategy. This approach may yield optimal family outcomes for four main reasons: 1) social support for stress reduction and skill acquisition; 2) multiple skilled social models for positive affect sharing; 3) dosage through routine family practice; 4) and generalization. This study examines whether a critical component of early intervention is use of a coaching approach to empower two parents to use routine family occupations as a means to support their toddler's learning and development of social interaction skills. The study also explored whether intervention targeting quality family interactions within their developmental niche can also support the child's development in other areas. Research on services focused on successful family participation in a collective occupation may support knowledge generation of elements of occupation that support group engagement. Methods that allow for involvement of key stakeholders, such as family members and clinicians, in the research design may generate knowledge of how interventions within family systems can support optimal and sustainable family, child and parent, outcomes. These methods paired with data collection and progress monitoring of family behaviors and interactions may yield a procedural decision making process that can be replicated with families with diverse characteristics.

CHAPTER 3: METHODS

Single Case Research Design

This study utilized two single case changing criterion designs (CCDs) to examine the effects of a family occupation-centered coaching intervention on the quality of family social interactions within and across three family members, two parents and one toddler. Single case designs (SCD) offer a means to understand transactional relationships between family members as well as a tool for evaluating the effectiveness of an intervention. The two-parent implemented family occupation-centered coaching intervention was the independent variable in this study. The dependent variable was the quality of family social interactions during engagement in a preferred occupation. The intervention was systematically implemented with experimental control to examine its influence on the dependent variable. The experimental process provided descriptive information, analyzed the function of behaviors, and helped explain behaviors (Gast, 2010) during a process of change and development for a family. Experimental control and causal relationships between independent and dependent variables were established through replication of effects within and across participants (Gast & Spriggs, 2010).

Changing Criterion Design

CCDs are a variation of multiple baseline single case designs that are appropriate for measurement of social interaction behaviors and interventions targeting improvements in relationships (Hartman & Hall, 1976). The design requires initial baseline observations on a single target behavior, the dependent variable. The approach is valuable for evaluation of an

intervention founded on the premise that family members' relational behaviors during routine engagement can be a primary mechanism for changes in child behaviors. CCD's were chosen as the best SCD methodology for this study for three additional reasons: 1) the design can measure dependent variables that are interconnected by nature, like family interactions; 2) the design can support gradual stepwise changes; and 3) the design has the capacity to accommodate participant choice making during intervention.

Utility of CCDs

Social interactions are complex adaptive skills that depend on the transaction of multiple interconnected social agents as they influence each other (Thelen, 2000). Experimental measurement and change of a target behavior of this nature requires application of a design that can accommodate multiple interconnected agents as they mutually influence one another. To modify behaviors that require changes in multiple family members, it is critical to use a design that can support gradual stepwise change. CCDs can support these changes. In this study, the use of two CCDs together allowed for gradual stepwise measurement of changes in the quality of parents' social interactions both individually and together as a family. Each family member devoted time to identifying their current skill level and worked together toward a collective family goal of quality social interaction of the group during engagement.

Narrative reasoning was embedded into the intervention design through use of participant choice making. CCDs have a rare capacity to accommodate choice making during the experimental process to support participant motivation and regulation. People value choice, control, and flexibility and Wolf (1978) suggested, research should be socially valid on at least three levels: 1) the social significance of the goals; 2) the social appropriateness of the procedures; and 3) the social importance of the effects. Family choice-making procedures

and proactive social validation measures were structured into the intervention process at several time points to support multiple levels of social validity during each phase of the study. The family's strengths, needs, and choices influenced the features of the CCDs as well as the researcher/interventionist's (RI's) clinical decision-making throughout the process. CCDs provided a means for evaluating the feasibility of this approach to individualizing and contextualizing interventions for families. The proactive choice making procedures embedded in the intervention process are explained throughout this chapter.

Structure of CCDs. According to Richards, Taylor and Ramasamy (2013), CCDs involve five procedural steps: 1) carefully design the target behavior; 2) collect baseline data; 3) determine criterion levels; 4) start the intervention; and 5) introduce the next criterion levels. An additional pre-intervention step was added to this study for the RI to orient the family to the study and to get to know them. Two CCDs were used and each CCD had four phases. The baseline data collection phase is referred to as Phase 1 and the intervention phases that followed are referred to as Phase 2 (First Intervention Series), Phase 3 (Second Intervention Series), and Phase 4 (Third Intervention Series). Table 2 provides a summary of the phase sequence in this study with the corresponding steps of CCDs below each phase, followed by the tasks for each step and the times when multiple steps of the CCDs occurred in parallel. Each phase and the tasks involved are described in detail in the following sections.

Table 2. *Summary of phase sequence, steps of CCDs, study tasks, and when steps of CCDs occur in parallel*

Phase sequence	Pre-Intervention	Phase 1	Phase 2		Phase 3		Phase 4	
Steps of CCDs	Get to know one another	Collect baseline data	Determine criterion levels	Start the intervention	Introduce the next criterion level	Start the intervention	Introduce the next criterion level	Start the intervention
Task summary	Develop-mental niche inter-views	Family's (mother, father, and child's) Baseline data	Training session 1	First inter-vention series: Collected data	Training session 2	Second inter-vention series: Collected data	Training session 3	Third inter-vention series: Final data
Steps in parallel			Phase 2 intervention data = Baseline data for Phase 3		Phase 3 intervention data = Baseline data for Phase 4			

One CCD was used for each parent so they could be their own control. This allowed for establishment of experimental control through implementation of the independent variable, intervention, with each parent while simultaneously examining the interrelated relationships of family members. Each parent had individual goals to improve facilitative social interaction skills while concurrently working toward the shared collective goal of quality social interaction of the group. Through the course of the intervention, three different criterion levels were set for each parent to demonstrate three replications of effect of the intervention on the target behavior in the predicted direction. This showed the functional relationship between the intervention and the target behavior. Table 3 provides an example of the phase sequence and the tasks completed during each phase of the Father's CCD. The same tasks were done concurrently with the Mother to complete the steps of her CCD.

Table 3. *Father's CCD*

Phase sequence	Pre-Inter-vention	Phase 1	Phase 2	Phase 3	Phase 4
Tasks completed for steps of Father's CCD	Develop-mental niche inter-views	Collected Father's baseline data	Father determined his criterion level 1 goal at Training session 1	Introduced the next criterion level: Father determined his criterion level 2 goal at Training session 2	Introduced the next criterion level: Parents determined their criterion level 3 goal at Training session 3
			Started the first intervention series with data collection and continued series until Father met his criterion level 1 goal	Started the second intervention series with data collection and continued series until Father met his criterion level 2 goal	Started the third intervention series with data collection and continued series until the Parents met their shared criterion level 3 goal
Steps completed in parallel			Father's Phase 2 intervention data was used as his baseline data for Phase 3	Father's Phase 3 intervention data was used as his baseline data for Phase 4	

Measurement Procedures

Primary Dependent Variable

Quality parent-child interactions were the target behavior and dependent variable outcome measure for each CCD in this study. The primary dependent variable was the child's exposure to quality, nurturing, and responsive social interaction with each parent both individually and collectively during participation in a routine occupation within the family's home environment. What qualified as quality, nurturing, responsive social interactions were based on the Indicator of Parent Child Interaction (IPCI) coding framework (Baggett, Carta & Horn, 2010). The variable was quantified based on 10-minute videos of the two parents interacting with their child during the routine occupation. The videos were recorded during

the baseline and intervention phases of the study. The Indicator of Parent Child Interaction (IPCI) Model and coding framework (Baggett et al., 2010) was used to code the videos after each session and prior to the subsequent session. Each video was coded by the RI for parent-child interactions (mother-child and father-child) and child-parent interactions. A research assistant who achieved over 85% interassessor agreement with the RI second coded at least 25 % of the videos.

Parent domains. Parent-child interactions were measured across two domains for each parent, facilitators and interrupters. Quality social interactions were comprised of higher scores in parent facilitators and lower scores in parent interrupters. Parent facilitators are associated with positive child outcomes and interrupters are associated with poor child outcomes (Baggett et al., 2010). In the 2011 version of the IPCI coding manual (Baggett, Carta, & Horn), four key elements comprise parent facilitators of quality social interaction: 1) shows acceptance and warmth; 2) uses descriptive language; 3) follows child's lead; and 4) maintains and extends child's focus. In the IPCI coding manual, two key elements comprise parental interrupters of quality social interaction: 1) use of harsh, critical behavior that at times includes rejections of children's bids for attention; and 2) use of intrusions or restrictions. The IPCI coding manual reflects these elements in the criterion for coding parent-child interactions. See Appendix B for the IPCI coding forms used to code parent behaviors. One additional facilitative behavior, uses stress reducing strategies, and one additional interruptive behavior, rejects child's bids, are discussed in the IPCI coding framework (Baggett et al., 2010). However, these behaviors were not coded because the 2011 –II manual (Baggett, Carta, & Horn) used to code decisions in this study did not define these behaviors nor give examples/nonexamples of them. The RI chose not to code for these

behaviors in this study because she did not have a manualized guide to code those elements to ensure interrater reliability with her second coder. However, if the parents used stress reducing strategies or rejected the child's bids for attention, the RI used clinical reasoning to note the behaviors she believed fell into these categories and discussed them with the parents during the coaching process.

Child domains. Child-parent interactions were measured across two domains, child engagement and child reactivity/distress. The child's quality of social interactions was comprised of high scores in child engagement and low scores in child reactivity/distress. Child engagement behaviors coded included: 1) positive feedback; 2) sustained engagement; and 3) follow through. Child reactivity/distress behaviors coded included: 1) irritable fuss/cry; 2) external distress; and 3) frozen/watchful/withdrawn. See Appendix C for copies of the IPCI coding forms used to code child behaviors.

All videos were coded by the RI following sessions. A second assessor/research assistant, an undergraduate college student, coded 29 % of the videos. The research assistant was blind to the research question and achieved 85% interassessor agreement with the RI.

The IPCI provides an approximation of what stimuli and behaviors may be observed. The IPCI typically rates each item on a 4-point scale of relative frequency (i.e., 0 = never; 1 = rarely [mild]; 2 = sometimes/inconsistent; 3 = often/consistently [severe]) (Baggett et al., 2010). However, to monitor for potential intervention effects in this study, a scale more sensitive to change was used. Partial interval recording (every thirty seconds) was used to document whether behaviors occurred during each thirty second increment of data collection, generating twenty 30-second intervals per 10 minutes of data collection. The percentage of intervals was then calculated for how much the behavior was demonstrated in that 10-minute

period. For example: if the parent demonstrated acceptance and warmth in 10/20 intervals during a session, they yielded a 50% frequency for acceptance and warmth that session.

After each family member's percentages for individual behaviors were calculated, a score was generated for each domain (i.e., parent facilitators, parent interrupters, child engagement, and child reactivity/distress). Domain percentages were calculated by adding together the percentages for each behavior in the domain and dividing the summed score by the total number of possible demonstrations for that domain (Baggett et al., 2010). This yielded a domain percentage score for each observation (Baggett et al., 2010). A percentage ranging from 0 to 100 was generated for each domain for the mother, father, and child, followed by parent domain and family percentages for quality interactions. What constituted as quality interactions were higher percentages for parental facilitative and child engagement scores and lower percentages for parental interruptive and child reactivity/ distressed scores. For example, parents' demonstration of facilitative behaviors 80% of the time or more could be considered higher quality if their interruptive behaviors were also low, less than 10 %.

Independent Variable

The independent variable in this study was a family occupation-centered intervention using a coaching approach to train two parents to implement evidence-based strategies for learning social interaction skills with their toddler with or at risk of ASD. In parent implemented interventions, parent behavior is considered the primary mechanism for changes in child behavior (Schertz et al., 2018). The intervention in this study used the family's baseline performance on the IPCI to identify the parents' current repertoire of skills and to inform which evidence-based strategies to target. The coaching approach used elements of current coaching models (see Table 4) to guide intervention delivery and allowed

for individualization/contextualization of parent training to meet the targeted needs of each family member.

Table 4. *Elements of coaching models embedded into intervention*

Occupational analysis Implementation in family's every day routines	(Erlandsson, 2012)
Collaborative relationship building Conversation and information sharing of past and current experiences	(Rush & Sheldon, 2011)
Sharing a vision Observation Joint planning Goal setting Action Reflection Demonstration Guided practice	(Stoner et al., 2013)
Problem solving	(Stiebel, 1999)
Live video feedback	(Brian et al., 2015)
Fading out of the coach to support independence	(Wetherby et al., 2014)

Rush & Sheldon's (2011) coaching elements of collaborative relationship building, conversation and information sharing of past and current experiences, played a significant part in the RI's understanding of the family's narrative during intervention in this study. Understanding the family narrative was necessary to enact the coaching. The RI's use of clinical reasoning was also an inherent part of the intervention design. In Chapters 3 and 5 narrative descriptions are provided to give the reader a sense of the family's narrative, or 'life worlds,' as the methods enfolded with the procedural choices and clinical reasoning of the intervention process across time within the context of family life.

There were six evidence-based strategy dimensions that caregivers were given an option to learn: 1) sets up the teachable moment (Watson, Boyd, Baranek, Crais, & Odom,

2011); 2) makes activity interactive (Ingersoll & Wainer, 2013); 3) models and expands language (Ingersoll & Wainer, 2013); 4) provides opportunities for initiation (Ingersoll & Wainer, 2013); 5) helps increase the complexity of initiations (Ingersoll & Wainer, 2013); and 6) paces the interaction (Ingersoll & Wainer, 2013). See Table 13 (pp. 76-77) for behavioral definitions of each strategy dimension. The parents had the opportunity to choose a maximum of three strategies from the list of six strategy dimensions throughout the course of the intervention phases.

Procedural fidelity. The functional properties of the independent variable, the intervention condition, were operationalized and directly measured using coaching fidelity forms (see Appendix D). These forms were completed by the RI for a minimum of 30% of sessions and by a second observer on 10% of sessions (Gast, 2010). Throughout the course of the study the researcher/interventionist (RI) completed coaching fidelity forms after 80% of sessions and ten percent of intervention sessions were video recorded and second coded from the video by a research assistant to help control for threats to internal validity (2010).

Implementation fidelity is important to support the transfer of interventions into the real world and to support replicability of research (Wolery, 2011). The quality of the delivery, the adherence to the key procedural elements of the intervention, the frequency of delivery, and the participant responsiveness were important elements captured in implementation fidelity measurement (Dane, & Schneider, 1998). The coaching implementation fidelity form was developed for this intervention to reflect those elements. Each of the key procedural elements of the intervention was listed on the form and the RI documented the completion of the elements and rated the quality of delivery with each family member using a 3-point scale. The Quality of Interactions Schedule (QUIS) (Dean, Proudfoot, & Lindesay, 1993) was

referenced to provide the rating prompt descriptions and examples for the 3-point quality of delivery scale on the form. The delivery frequency was determined by the number of intervention sessions provided. Participant responsiveness was considered in the scoring of the quality of delivery**.** After completion of the study, mean values for the RI's adherence and quality of delivery for the intervention sessions and phases were calculated and are reported in the results section.

Participants

Recruitment

Community organizations such as the Autism Society in a south-eastern state were contacted to identify family advocates willing to act as gate keepers. The gate keepers contacted families with children who might benefit from the intervention and who were potentially interested in research participation. Community organizations were initially contacted via email. The Autism Society Director of Family Support connected the RI to a local community agency who referred a family to the study.

Selection Criteria

To be eligible for the study, the family was required to have two caregivers with a toddler between 12 and 36 months of age (confirmed by parent report of birthdate) identified as having autism spectrum disorder (ASD) or at risk for ASD. In this study at risk for ASD was defined as in the autism spectrum cut off range on the Autism Diagnostic Observation Schedule (ADOS). See ADOS section for details on module selection cut off ranges.

Caregivers were asked to provide a copy of an ADOS report with scores if one had previously been completed. If caregivers could not provide a report with ADOS scores, an ADOS was completed by a research reliable SLP-CCC during one of the first study visits to gather baseline information on the child's characteristics. The toddler had to fall within the

autism spectrum cut off range on the ADOS to meet the criterion to participate in this study. Child exclusion criteria included children with severe visual, hearing, behavioral, or motor impairments, those with identifiable metabolic or genetic disorders (e.g., Fragile-X Syndrome), and children without any precursor social interaction or imitation skills. The child's level of precursor social interaction and imitation skills were assessed in three ways: 1) parent interview during the phone screening; 2) child interactions observed during pre-intervention visit 1; and 3) video observation of parent child interactions during pre-intervention visit 1.

The caregivers were required to be available and interested in participation in the intervention with their toddler once or twice a week for a minimum of ten weeks and a maximum duration of seven months. Caregivers who were decisionally impaired, pregnant at the start of the study, or under 18 years old were excluded.

Phone Screening

During recruitment, a verbal phone consent followed by a phone screening (see Appendix E) were completed to assess family eligibility prior to scheduling the first home visit. The phone screening was completed with the mother of a 30-month old boy. The mother remembered having early screening assessments completed for a research study when he was 18 months old, but she could not remember the name of the study, what assessments were completed, or if she had a report of the assessments. The toddler had speech delays early and did not have language at 18 months. The parents pursued speech language services at that time, but stopped because their insurance company denied coverage on the premise that not all children speak before age two. At two-years old the family was referred by the pediatrician to the CDSA and started receiving services in their home.

During the phone screening, the mother described many of her son's characteristics and concerns in sensory and communication areas. Given this and the referral from the Autism Society, the child met the requirements for further eligibility screening. Therefore, arrangements were made to schedule administration of the ADOS with the toddler.

During the phone screening, the mother identified herself, her husband, and possibly her mother-in-law as caregivers who might be available and interested in participation in the intervention. Following the phone screening, a Pre-intervention home visit and clinic based ADOS assessment were scheduled and completed to determine whether the family met the remaining inclusion or exclusion criteria. The entire recruitment process took approximately four months to complete.

Research Family

The family that was recruited had a 30-month old son at risk of ASD. They were a two-parent middle class Caucasian family with a mother, father, and five children (three boys and two girls) that lived in a two-story home in a semi-rural area. The family chose pseudonyms for themselves and the child at risk of ASD. They chose Fezzik for the child, Buttercup for the Mother, and Westley for the Father. The pseudonym, Fezzik, will be used during the descriptions that follow for the toddler. The youngest female sibling was 8 years old, and there was an 11-year old half-brother, a 14-year old half-brother, and a 15-year old half-sister. Four of the children lived in the household full-time and the oldest daughter lived with her father part of the time.

The parents were married and their highest level of education was some college or special training after high school. The father worked full-time as a cloud services manager and the mother was a stay-at-home parent and full-time caregiver for Fezzik. At times, the mother also provided childcare for a neighbor's child. The father's employer provided health

insurance that covered some therapies for Fezzik. Since Fezzik was two years old he had received speech therapy (1 time a week for 30 minutes), feeding therapy (1 time a week for 30 minutes), and occupational therapy (1 time a week for 1 hour). Per parent report, Fezzik was on one medication, Miralax, and he was in excellent health. He had no known allergies, was not on a restricted diet, and his immunizations were up to date. The parents were in good health, had no dietary restrictions, and had no previous training in providing intervention.

Researcher/Interventionist (RI)

Throughout the design and implementation of this study the researcher assumed dual roles as researcher and interventionist. Thus, researcher/interventionist (RI) is used to refer to her during the description of the procedures. However, on social validity forms completed by the family during the study, the RI was referred to as the coach. The RI was a licensed occupational therapist with twenty years of professional experience working alongside families of individuals with ASD and other developmental disabilities across the lifespan. She had clinical and research experience with families of individuals with ASD in public schools, hospitals, outpatient clinics, family homes, group homes, day programs, and vocational settings. The RI was trained on use of the IPCI coding framework while working as a research assistant on a different study. For this study, the RI coded for the same behaviors used in her IPCI training.

Research Assistant

The research assistant was an undergraduate college student majoring in Human Development and Family Studies. Her role was second assessor for video coding. She was trained using the IPCI coding manual and 3 to 10-minute parent-child interaction video samples of typically developing children. Both the research assistant and the RI coded the sample parent-child interaction videos for mother-child, father-child, and parent-child

interaction until 85% interassessor agreement was obtained across each measurement. Interassessor agreement was established prior to the collection of baseline data in the study to support the objectivity of the coding framework as well as internal validity. During the baseline and intervention phases, the research assistant coded at least 25% of the data points: 25% for the baseline phase (phase 1), 33% for the first intervention series (phase 2), 33% for the second intervention series (phase 3), and 25% for the third intervention series (phase 4).

The RI and the research assistant discussed any differences in coding within each phase to ensure consensus and reliability of questionable interactions during subsequent phases of the study. Decisions were documented for both coders to support the interval consistency and validity of the coding throughout the study. The RI used clinical reasoning and the research assistant used an objective viewpoint as an outside observer without a personal relationship to the family to come to agreements on how to score behaviors that were not easily coded based on the parameters in the IPCI manual alone. The RI also sought consultation from an expert clinician and researcher to confirm the logic behind any challenging coding decisions. Table 5 provides the interrater reliability scores between the RI and research assistant throughout the phases of the study.

Table 5. *Research Assistant and RI coding reliability throughout the study*

	Baseline	First Intervention Series	Second Intervention Series	Third Intervention Series
Mother	90.83%	88.3%	95.8%	96.67%
Father	96.7%	90.8%	97.5%	96.67%
Child	96.7%	93.3%	85.83%	96.67%

Procedures

The procedures following recruitment are outlined in Table 6 and are described in the sections that follow.

Table 6. *Procedures*

Phases	Procedure	Plan

Pre-phase	Pre-Intervention Visit 1	• Obtain parent consent
		• Take a video sample - what skills are in the child and caregiver's repertoire (precursor imitation skills)
		• Demographics – Part one
		• If the child does not have a current diagnosis and ADOS-T, schedule ADOS to confirm child diagnosis and eligibility.
		• Leave the Personality/Psychology of the Caregivers evaluations with the parents for them to complete before Pre-intervention visit two.
		  ○ Life Participation for Parents (LPP) (2)
		  ○ Brief COPE assessments (2)
		• Answer questions, plan next visit

Pre-phase	Pre-Intervention Visit 2
	
	Some baseline contextual information will be gathered at this time.
		• Developmental Niche Interview/Assessments Part two
		  ○ Collect Personality of Caregiver assessments from family
		  ○ Physical and social settings
		  ▪ Environmental assessment to see where routines take place.
		  ▪ Complete a blended assessment of the Routines Based Interview and COPM.
		  ○ Values that influence customs and practices of care
		  ▪ Complete brief interview-current and embedded cultural context together
		• Joint Decision-Making Process to select preferred activity together
		• Pretraining Social Validity Scale

PHASE 1	Baseline quantitative data collection	Four days – Approximately one day per week until baseline data is stable • 10-minute video data collection of parents and child engaged in preferred activity.
PHASE 2 Training	First training session	• Share a Vision and Set Long-Term and Short-Term Goals (Stoner, Meadan, & Angell, 2013)

		• Review videos from baseline and highlight a) activity analysis of the routine, and b) parent's natural use of strategies
		• Choose strategy to start with based on parenting teams' current repertoire of strategies. At least one of the parents had to demonstrate the chosen strategy at baseline.
		  ○ Discuss options
		  ○ Discuss pros and cons
		• Discuss strategy with both parents
		• Plan how to use strategy over the next week
		• Social Validity data collection
		• Review Questions

PHASE 2 Interven-tion series	First intervention series – Coaching -Between each session video data analysis and coding was completed to determine whether the parents met their criterion levels and when to provide the next training session and phase of intervention.	One to two times a week • Opening • Video Data collection – 10 minute videos of caregiver-child triad • Video review of previous week's video(s) - optional • Positive and Constructive feedback • Action Planning • Family Coaching • Review and Planning • Social validity data collection (optional) • RI exits- Coaching fidelity checklist, RI records clinical observation and notes, RI records clinical reasoning and problem solving.
PHASE 3 Training	Second training session	Repeat plan from training description above to choose the second criterion levels and a second strategy dimension
PHASE 3	Second intervention series	Repeat plan from intervention-coaching description above with second strategy dimension
PHASE 4 Training	Third training session	Repeat plan from first training session description above to choose the third criterion levels and third strategy dimension
PHASE 4	Third	Repeat plan from first intervention series-coaching

	intervention series	description above with third strategy dimension
	Post-test and chart review	Semi structured interview, repeat COPM and Life Participation for Parents measure – distal outcome measures, Part two of Demographics form, additional chart review of any new records of assessments provided to the researcher by the family.

Pre-Intervention Data Collection

Pre-Intervention Visit 1. To be eligible for study enrollment, the family was required to complete a Pre-Intervention Visit in the home in which both parents signed consent forms, completed part 1 of a demographic form, and recorded a video sample. Demographic information was collected to inform how resources and outside forces influenced the structure of family routines. A video sample was taken of the parents playing with their toddler to assess whether the child had evident precursor social interaction and imitation skills. Enough precursor skills were noted during the video observation to proceed with the ADOS assessment of the child. See Appendix F for an outline of the procedures for Pre-Intervention Visit 1 and Appendix G for part 1 of the demographic form.

At the end of Pre-Intervention Visit 1 the RI scheduled Pre-Intervention Visit 2 and left assessments with the parents to gather information on the psychology of the caregivers. The family's developmental niche information provided a framework for understanding how the family system was organized. The family's developmental niche information was used to guide the intervention process for goal setting and embedding intervention strategies into the family's daily life in a way that could help strengthen parent-child interactions and support the child's social skill development (Harkness et al., 2007).

The personality or psychology of the caregivers was evaluated because this aspect of the developmental niche can directly influence parent-child interactions. Each parent was asked to complete the following two measures individually before Pre-Intervention Visit 2: The Life Participation for Parents Assessment (Fingerhut, 2013) (Appendix H) and The Brief COPE (Carver, 1997) (Appendix I). Slight modifications were made to the instructions on the Brief COPE to fit the target population in this study. The RI used these assessments to inform clinical decision making processes during the intervention.

Developmental niche assessment for personality/psychology of the parents: The Life Participation for Parents Assessment (LPP) (Fingerhut, 2013). The LPP is a self-report questionnaire that measures caregiver satisfaction with the efficiency (time spent) and effectiveness (quality of performance) of parental participation in activities/occupations while raising their child with special needs. The LPP is a questionnaire appropriate for any primary caregiver of a child with special needs. The questionnaire consists of 23 items related to activities/occupations engaged in by caregivers that may be influenced by the role of raising a child with special needs. The questionnaire uses a 5-point Likert scale and provides space for qualitative comments (Fingerhut, 2013). Low scores on the assessment can indicate participation concerns. Therapists can use the assessment scores to assess parental concerns and the comments to inform dialogue that supports the development of family-centered intervention. The assessment takes approximately 10 minutes for a caregiver to complete and the same amount of time for scoring. The questions on the LPP are worded both positively and negatively so some questions are reverse scored.

Life Participation for Parents results. The mother's total score on the LPP was 75 and the father's score was 99, indicating the mother's life participation was more affected than the father's by raising their child at risk of ASD. See Table 7 for a summary of the parents scores on the Life Participation for Parents Questionnaire prior to the intervention and a sample of their quotes provided on the assessment form. The Life Participation for Parents measure was also repeated after the intervention to assess whether the parents' participation changed over the course of the study.

Table 7. *Parental scores on the Life Participation for Parents Questionnaire*

	Total score	Pre-Intervention sample quotes
Mother	75	• "I don't go out with anyone because I need to know who's staying with him will work with him and I feel bad taking him out because his behavior can be unpredictable." • "I try to spend as much time as possible helping him learn and that cuts time with my other kids but I know he needs it." • "I don't like to go do stuff on my own without him because I feel guilty not working with him." • "I would like to volunteer at my kid's school but I am not comfortable leaving him with anyone."
Father	99	• "Haircuts are difficult." • "I will do anything needed to help him have a better life." • "He isn't that easily upset and doesn't necessarily get upset about a routine break." • "Errands can be difficult because we usually have many and it takes a long time which can try his patience, but usually he is ok."

Developmental niche assessment for personality/psychology of the caregivers: The BRIEF COPE (Carver et al., 1989). The Brief COPE is a coping inventory in which 28 items are presented in the form of a coping statement and respondents are asked to rate whether they have or have not been using each way of coping. A fully anchored 4-point scale is used ranging from 'I haven't been doing this at all' to 'I've been doing this a lot' (Hastings

et al., 2005). The parents were asked to consider the extent to which they used each coping strategy to deal with raising their child with or at risk of ASD. The BRIEF COPE has 14 subscales. Examples of subscales include self-distraction, denial, active coping, use of emotional support, and humor (see Appendix I). The RI used the information about the parents' coping styles to guide the therapeutic approaches used during the intervention process. A score of 1 on the Brief Cope indicated the parents did not use that strategy for coping with stresses at all whereas a score of 4 indicated they had been using that strategy a lot.

The BRIEF COPE (Carver et al., 1989) results. The mother reported mostly using emotional support, acceptance, active coping, positive reframing, and planning to cope with stress associated with raising their son. She also reported use of instrumental supports and some self-blame. Based on the mother's responses, the RI noted that emotional and instrumental support may be the most beneficial to the mother during the intervention process. For example, if the mother demonstrated self-blame during the intervention process, the RI focused on positive reframing and encouragement strategies. The father reported mostly using active coping, positive reframing, acceptance, and planning strategies to cope with stress associated with raising their son. Based on the father's responses, the RI aimed to emphasize coaching strategies that encouraged action planning, positive reframing, and acceptance with the father.

Autism Diagnostic Observation Schedule- Second Edition *(ADOS-2;* Lord et al., 2012). Prior to Pre-Intervention Visit 2, a research reliable SLP-CCC completed the ADOS-2/Toddler Module administration at a research location outside of the family's home. ADOS administration was used to ensure the eligibility of the toddler and the family for the study

and to describe the level of autism symptomatology in the child. The SLP-CCC scored the assessment and provided the RI with a report that was shared with the family.

The Autism Diagnostic Observation Schedule, Second Edition (ADOS) is a semi-structured assessment of play, reciprocal social-interaction, and social communication skills. It consists of the presentation of a series of standard activities that allow the assessor to observe and score the occurrence or non-occurrence of behaviors that are associated with a diagnosis of ASD. The Toddler Module was used in this study based on the chronological age and language level of the toddler at the time the assessment was administered. The ADOS is scored according to an algorithm designed to determine if a child meets criteria for an autism spectrum disorder or autism. The ADOS total score is comprised of a Social Affect (SA) domain score and a Restricted and Repetitive Behavior (RRB) domain score. The standardized domain scores on the ADOS are calculated from the SA raw score and the RRB raw score, and they allow for the comparison of severity of ADOS scores across modules (Hus, Gotham, & Lord, 2012). Scores range from 0-20 on the Social Affect domain and from 0-8 on the Restricted and Repetitive Behavior domain. A total score from 0-9 indicates little to no concern for ASD, from 10-13 indicates mild to moderate concern for ASD, and a score of 14 or higher indicates moderate to severe concern for autism.

Summary of ADOS-2 results. Fezzik was 30-months chronological age at the time of the assessment. His scores on the diagnostic algorithm of the *ADOS-2* showed moderate to severe concern for the presence of an autism spectrum disorder. Fezzik's total social affect score was 20 and his restricted and repetitive behavior score was 8, with an overall total score of 28. The examiner rated numerous indicators (ASD Suspected) based on observations during the assessment. The overall clinical impression was that Fezzik presented with severe

concern for ASD. Since Fezzik fell within the autism spectrum cut off range on the ADOS, he was eligible for the study and the RI proceeded with Pre-Invention Visit 2.

The mother later realized that Fezzik had completed an ADOS assessment one year earlier during participation in another research study. The mother emailed the RI a copy of the previous reports, an ADOS-2 and a Mullen Scale of Early Learning, that were completed when Fezzik was 18 months old. At 18 months Fezzik met full criteria for ASD with accompanying language impairment and a global developmental delay. The information provided the RI with a temporal perspective on Fezzik's development.

Pre-Intervention Visit 2. The purpose of Pre-Intervention Visit 2 was to complete the remaining developmental niche assessments and the joint decision-making process to select a preferred occupation with the parents. The preferred occupation would act as the therapeutic medium during the intervention (Erlandsson, 2012). The preferred occupation was referred to as an activity with the family. Selection of the preferred activity was the first of multiple time points when narrative reasoning and choice were intentionally embedded into the process to ensure the goals of the intervention were socially significant to the family.

The developmental niche framework includes the psychology of the caregivers, the physical and social settings of daily life, and the family values and customs of care (Harkness et al., 2007). The interviews and assessments used to gather information on the family's developmental niche had ethnographic and phenomenological qualities that helped the RI gain a sense of each parent and child's 'life worlds' (See Appendix J for an outline of the procedures for Pre-intervention visit 2). At the start of Pre-Intervention Visit 2, the RI asked the parents to finish any of the psychology of the caregiver assessments they had not completed and answered parents' questions.

Developmental niche assessment for physical and social settings of daily life: Occupation-centered interview. The physical and social settings of the family were assessed with both parents together using a semi-structured occupation-centered interview that was a blended version of the Routines Based Interview (RBI) (McWilliam, Casey, & Sims, 2009) and the Canadian Occupational Performance Measure (COPM) (Carswell, McColl, Baptiste, Law, Polatajko, & Pollock, 2004) (See Appendix K). The occupation-centered interview included information on the family's routines, priorities, and performance, as well as satisfaction ratings. The questions yielded information about the structure and organization of the family system and how the family functionally coordinated through routine practices. The interview also helped the parents choose the routine they wanted to target during the intervention process, as well as the time of day and day of week to enact the intervention.

During the interview, the RI reviewed the family's typical day with them to get an idea of Fezzik's current participation, the strategies they used, and ratings of the importance of Fezzik's participation in each routine on a scale from 1 to 10 (1 meaning Fezzik's participation was least important and 10 meaning his participation was most important). The interview started with the morning when Fezzik woke up each day and identified whether the parents had any concerns with early morning, afternoon, evening, bedtime/nighttime, or weekend routines. The parents reported between one and three concerns with routines during each time-period of the day and the most concerns with morning routines.

At the end of the occupation-centered interview the results were summarized and the five areas with the highest importance ratings were established as the primary areas of concern. The parents were then asked to rate both their child's current ability to perform the routine or task and their satisfaction with that performance, again on a scale of 1 to 10 (1

meaning low and 10 meaning high). The parents' primary areas of concern on the COPM portion of the blended interview are provided in Table 8.

Table 8. *Parent's COPM pre-intervention primary areas of concern*

	Performance 1 = unhappy 10 = happy	Satisfaction (1-10) 1 = low 10 = high
1.Communication	1	3 Mom = 2, Dad = 4
2.Expand Food repertoire	2	2
3.Expand Play repertoire. They wanted confirmation he is making progress.	4	3
4.Bowel management They wanted better comfort for Fezzik during bowels and toileting routines.	1 To get off Miralax, 1 day without Miralax and he will be in pain trying to have a bowel movement.	1 He looks at them and seems to be saying 'please help me' with his expression. They don't know why he is holding his bowels.
5. For Fezzik to consistently respond to social cues in his environment.	3	2

Developmental niche assessment for physical and social settings of daily life:

Environmental assessment. A tour of the house was originally intended but not completed because the RI felt it would be too intrusive to do before development of a rapport with the family. However, a brief video of the immediate downstairs living area where the sessions would take place was recorded. Clinical notes about the environment were also recorded. The downstairs environment was visually stimulating with toys and objects on the floor, counters, and other surfaces. Upon entry, there was a stairway to the second floor and a front room to the left. The front room to the left was full of multiple shelves full of games and tables covered with toys and objects. The downstairs had a circular layout; going clockwise it started with the front room, followed by the kitchen, then dining room where there was a door to the back yard. The dining room had a table, four chairs (one of the chairs had a

booster seat), and a high chair surrounding the dining room table where the family ate meals and where parent interviews were conducted. A couch and pack-n-play divided the dining room area from the living room, where there were also a variety of toys on the floor, a trampoline, two children's riding vehicles, a children's slide and an easel. The lighting in the living room was dim. There was a hall with a bedroom and bathroom beside the living room and another hallway that led back to the front door where the stairs led to the second floor.

Developmental niche assessment for values that influence customs and practices of care: Cultural Questions Interview. The next pre-intervention procedure was an informal semi-structured interview to assess any underlying values and beliefs that may influence the parent's customs and practices of care. The parents completed this interview together. See Appendix L for a copy of the Cultural Interview Questions (Myers, Case-Smith, & Cason, 2014). This was used because, as Wolf (1978) suggested, intervention research needs to do a better job of developing systems that allow consumers to monitor how effects relate to their values. The cultural interview questions were embedded in the pre-intervention process so the RI could gain a deeper understanding of the family and their values from the beginning of the intervention process to support family motivation. The RI used this information to help monitor the social importance of the effects of the intervention to the family throughout the intervention process. The information was analyzed alongside the occupation-centered interview data to see if the family's routines and patterns of engagement consistently reflected their expressed values and beliefs.

Developmental niche assessment for values that influence customs and practices of care: Cultural Questions Interview results. During the Cultural Questions Interview, the parents initially "didn't know" their expectations for participation in the study but they hoped

"to learn techniques and tips to help communicate with their son." One of their greatest values was "family time together." The parents did not affiliate with a specific cultural group. They reported that "time gets structured for them, due to work and school activities." They explained that they try to have a family game or movie night together every month and a half or so but Fezzik does not usually participate because he is too young; however, "they try to keep Fezzik involved in everything as much as they can." When asked their beliefs about health and what constitutes healthy child development, the father expressed that his father was not around for his kids, so "he wants to be an active part of the kid's lives." The mother said she "blames herself for Fezzik's delays." The RI chose not to ask question number 8 of the Cultural Questions Interview because the child did not have a diagnosis of ASD yet and the question seemed too sensitive of a subject so late in the meeting, especially following the mother's response to the previous question.

Joint decision-making process to select a preferred activity. Following the Cultural Questions Interview, the parents were guided through a joint decision-making process to select a preferred activity which would be the intervention target (See Appendix M). Asking the parents to choose the routine activity for the study helped ensure the social significance of the goals and the procedures. The activity the parents chose had to be something they enjoyed doing together, that brought them positive feelings, and that was developmentally appropriate for the child. Engagement in the activity had to be extendable to a 10-minute time-period and to have enough flexibility for integration of learning strategies. The activity needed to be completed in one area of the family's home to ensure all family members were video recorded during engagement. Parents were required to choose an activity that used consistent types of materials during the baseline and all phases of the intervention process.

This requirement supported best practices in CCDs and facilitated demonstration of experimental control because it avoided changes in materials that could require differing skills (Klein et al., 2017).

The joint decision-making process was designed to guide parents in joining their intentions for participation in the intervention. This process was a proposed active ingredient of the intervention because when combined with the developmental niche assessments, these procedures embedded social significance of the goals, social appropriateness of the procedures, and social importance of the effects (Wolf, 1978) into the intervention planning process with both parents. Social validity was embedded into the steps of the intervention process to support conscious habit change and motivation of the family during intervention.

Results of joint decision making process to select a preferred activity. When the parents were asked to name some activities that the two of them enjoyed doing together the most, the father replied, "All I can think of is things I want to play with Fezzik, tag, chase, roll a ball. If we had more time and energy we would play more patty cake, board games, or more interactive games with Fezzik, for Fezzik to give a response and engage." The mother replied that she would "relax some, sleep more, sit on the porch, light a fire." The parents agreed that if they chose one activity to focus on it would be interactive play time, like ball play, with Fezzik daily after 7:00 p.m. The parents reported that over a year ago there were a few months when Fezzik would play ball or throw games. He did not currently do this but he would engage in a chase game with them now. The parents jointly identified 'Mommy/Daddy play time with Fezzik' as their preferred routine activity to focus on during participation in the study.

Pretraining Social Validity Questionnaire. At the end of Pre-Intervention Visit 2 the parents were asked to complete a Pretraining Social Validity Questionnaire to assess their value and satisfaction with the steps in setting up the research and intervention process (See Appendix N). The results were used to identify which of the proposed active ingredients of the pre-training sessions were most important to the caregivers, individually and collectively. The results of the Pre-Training Social Validity Questionnaires are provided in Table 35 (p.131) in the results chapter.

Implementation Checklist. Following Pre-Intervention Visit 2 the RI completed an implementation checklist for Pre-Intervention Visit 2 (see Appendix O) to monitor whether all planned procedures were conducted and to support the procedural fidelity (Lane et al., 2017) of the pre-intervention process.

Results of Implementation Checklist. Each of the items on the Pre-Intervention Visit 2 Procedures Checklist were completed prior to the first baseline session, except for the full video recording for the environmental assessment. Instead of planning the baseline data collection dates at the Pre-Intervention Visit, the RI followed up with the mother via email to schedule the first baseline visit. Preliminary analysis and synthesis of the Occupation-Centered Interview information was necessary for the RI to identify and propose consistent days of the week and times that could work for all three family members and the RI. The RI followed up with the mother via email to present a summary of next steps and a summary of time frames and days that could work for baseline and intervention sessions.

Baseline Description: Phase 1 of Experimental Data Collection (4 Sessions)

Baseline data was collected on all three family members interacting while engaged in the preferred activity chosen by the family, ‘Mommy/Daddy play time with Fezzik’. The data was collected one day per week for three or more weeks. The frequency of baseline data

collection was determined based on the results of the Pre-Intervention Visit 2 assessments, the family's schedule, and their motivation to begin intervention. If the family had requested completion of the baseline data collection faster so they could begin intervention sooner, the RI would have accommodated their request if possible.

The baseline conditions recording forms provided in Appendix P were completed prior to each baseline session to define the procedural arrangement of the independent variable. The baseline data collection procedures were designed to provide knowledge and to record information about the conditions within the family situation. The procedures were systematically constructed based on Lane, Wolery, Reichow, and Rogers' (2007) suggestions for describing baseline conditions. Baseline conditions were set up to produce stable responding and control for alternative explanations for findings.

The role of the RI for each session was to coordinate, schedule, prepare materials, conduct each baseline visit, code, and analyze baseline data between sessions. The RI's relationship with the family at the time of the baseline visits was primarily through the two pre-intervention visits and communication with the mother about potential research participation over the past four months via phone and email. The RI had also interacted with the toddler and mother during one additional clinic visit to complete the ADOS. The mother, father, and toddler were present for each baseline visit.

The activity recorded during baseline procedures was referred to as 'Mommy/Daddy playtime' and was video recorded by the RI using an iPad on a tripod, or in hand when needed for mobility. The materials consistently available in the home and used during Mommy/Daddy playtime included balls (a light up ball, a large ball, a beach ball, and a laundry basket full of cotton 'snow balls'), blocks (wooden in a wagon case and large Lego

blocks in a bag), a ball tower with mallet, books, a cookie monster toy, a shape sorter, a 'chip' box/bank, a foam sword, and living room 'furnishings'. Living room furnishings included a children's slide, trampoline, couches (adult and children's sizes), blankets, book shelves, lamps, end tables, and some bouncy toys.

Baseline Visit 1. The first baseline visit was completed at 10:30 a.m. on a Monday morning, with future sessions scheduled on Wednesday evenings at 7:00 p.m. Two additional people were present, the youngest sister and a neighbor's daughter, that the mother watched several days a week. The youngest sister listened during the conversation following video data collection. Following data collection, the parents asked questions about what to expect during the training and intervention sessions of the study. The RI explained next steps and the purpose of gathering baseline data. She explained that it could be completed one time a week at the routine time planned for training and intervention sessions, 7:00 p.m. on Wednesdays, or baseline data collection could be completed faster if they wanted to get started with the training and intervention sessions. After data collection, the RI answered questions and offered information on how to pursue diagnostic assessment at a local early screening clinic. The RI responded to questions but was careful not to prematurely introduce intervention strategies to the parents prior to the training and intervention phases.

Baseline Visit 2. Baseline Visit 2 was completed at 7:30 p.m. on a Wednesday and Fezzik's half-brother was home but he stayed in his room most of the time, occasionally coming out to play with Fezzik. The parents and RI engaged in conversation about the past week, and the father reported that on Halloween "one of the neighbors gave them a bag for Fezzik that said, 'I am autistic and I want candy but I can't ask for it.'" This was the first time the RI had heard the father refer to his son as autistic.

Following data collection, per the mother's request, the RI reviewed Fezzik's ADOS completed at 18-months old to the recent report completed at 30-months old. The RI noted the areas where Fezzik had seemingly regressed over the past year. The parents asked if there were areas of improvement and the RI expressed that if additional developmental assessments, for example the Mullen Scale of Early Learning, were repeated this year they may see improvements in certain developmental domains. The parents expressed interest in having additional developmental assessments completed and having more information on how to pursue full diagnostic assessment.

The parents also shared information about the dynamics of their extended family, due to the upcoming Thanksgiving holiday. For example, Fezzik has a female cousin who has ASD. The mother planned to ask her sister over Thanksgiving what kind of services her niece was receiving. They also shared that Fezzik's maternal grandmother had been diagnosed with cancer a year ago and would need more chemotherapy before Thanksgiving.

Baseline Visit 3. Baseline Visit 3 was completed at 7:30 p.m. on a Wednesday and three of the siblings were home. The oldest brother and youngest sister were intermittently present and the other brother was upstairs. Following data collection, the mother reported she was scheduled to take Fezzik into the early screening clinic the next day for full diagnostic assessment. The father said he "thought they would get a diagnosis." At this visit the parents asked about intervention approaches people had mentioned to them, such as DIR Floor time and ABA. The mother also expressed concerns about Fezzik's brother who was upstairs because he "rarely makes friends and most of his friends have autism." When planning the next session, the RI explained that data analysis of the baseline three session was necessary

before she could let them know whether the next session would be more baseline data collection, or if it would be the first training session.

Within phase analysis after third baseline session. After three baseline sessions, within phase analysis was conducted to determine whether the data in the phase was stable enough to move forward with the first training session, Phase 2 of the study. In single case design, baseline data collection must continue until a predictable and stable baseline pattern of at least 3-5 data points is obtained (Gast, 2014), in this case for each parent's CCD. Formative analysis of the level, trend, and variability of the data was completed to decrease threats to internal validity related to history, maturation, carryover effects, or regression to the mean (Gast, 2014). The questions suggested by Ledford et al. (2018) for visual analysis assessment of outcomes in SCD standards were used to evaluate the stability of the data within phases as well as the functional relations between phases. See Appendix Q for the questions from the Visual Analysis Worksheet from Ledford et al. (2018, p.17) used to consider the stability of the baseline data. Emphasis was placed on the level and variability of the data during the baseline phase because traditional trend lines are inappropriate for SCD research (Ledford et al., 2018).

Excel spreadsheets were set up with functions to calculate the stability envelope of the data for each parent and the child. The stability envelope can be calculated for data with or without trends. The stability envelope was calculated by finding the median value, calculating +/- 25% of the median value, and determining whether 80% of the data points were within a 30-50% range of the median value (Ledford et al., 2018). Once 80% of the mother's and father's data points were within 30-50% of their median baseline value, the data was considered stable in each CCD and the baseline phase for both CCDs was complete.

After the first three baseline sessions, 77.3% of the mother's data fell within the stability envelope and 83% of the father's data fell within the stability envelope. Therefore, additional baseline visits were needed until 80% of each parent's baseline data fell within the stability envelope. At this point the parents seemed eager to start intervention so the RI considered taking the mean for the baseline rather than using the stability envelope. However, that option would have required more data during the first intervention series to estimate the variance and some degrees of freedom would be lost. The decision was made to conduct a forth baseline visit for three reasons, explained in the next section.

Baseline Visit 4: After family receives ASD diagnosis for toddler. Baseline Visit 4 was completed at 5:00p.m. on a Tuesday and only the mother, father, and Fezzik were home. A fourth baseline visit was completed for three primary reasons. First, the baseline data needed to be stable and consistent before introduction of the training and intervention sessions. Second, the training and intervention were designed to be implemented into the families' routines. The family planned to be away for Thanksgiving during the upcoming week, so they would have less routine opportunities to practice the strategies that would be presented at the first training session. The third reason, not expressed to the family, was that the family was already processing a lot because they had received an official diagnosis of ASD for Fezzik during a diagnostic assessment the week before.

At the diagnostic assessment a Mullen Scale of Early Learning was completed with Fezzik and the mother reported how hard it was to hear the results of Fezzik's delays on various scales; he was over a year delayed on several scales. The mother shared, however, that while at the assessment she said, "I am ready for this," referring to receiving the diagnosis. The RI explained that during the training and intervention sessions for the study

she would bring resources and we would take into consideration which approaches could be appropriate for the family at multiple decision making time points.

The mother reported she had been reading "horror stories" online so the RI also explained to the parents that ASD is a broad spectrum. The RI emphasized the importance of focusing on where they are now. The mother noted she was grateful Fezzik did not have a lot of behaviors. The RI discussed the importance of observation skills to monitor behaviors, particularly as Fezzik transitioned to school. In closing, the RI explained that she would review and analyze the data from this week's baseline session and would be in touch in a few days to confirm whether the next visit would be another baseline session or the first training session.

Within phase analysis after forth baseline session. After the video for the forth baseline session was coded and data entered, the stability envelope was calculated again to assess the variability of the data. After four baseline sessions, 83.3% of the mother's data and 87.5% of the father's data fell within the stability envelope. Because over 80% of each parent's baseline data fell within the stability envelope, the baseline data was stable enough to progress to the next phase of the study, the first training session and intervention series, phase 2. See Table 9 for how the total percentage of data within the stability envelope was calculated for each parent during the baseline phase.

Table 9. *Calculations for percentage of data within the stability envelope for baseline, phase 1*

	Percentage of data for each behavior within the stability envelope					
Behavior	Acceptance/ Warmth	Descriptive Language	Follows Lead	Maintains/ Extends	Harsh Critical	Intrusive/ Restrictive
Mother	75%	75%	75%	100%	100%	75%
Mother Total	(75% + 75% + 75% + 100%+ 100% +75%) /6 = 83.3% A total of 83.3% of the mother's data fell within the stability envelope					
Father	75%	100%	75%	75%	100%	100%
Father Total	(75% + 100% + 75% + 75%+ 100% +100%) /6 = 87.5% A total of 87.5% of the father's data fell within the stability envelope					

Baseline phase means for each behavior and domain were calculated for each family member as well as parent and family mean total percentages for each domain. See Table 10 for the Baseline Phase Means.

Table 10. *Baseline means*

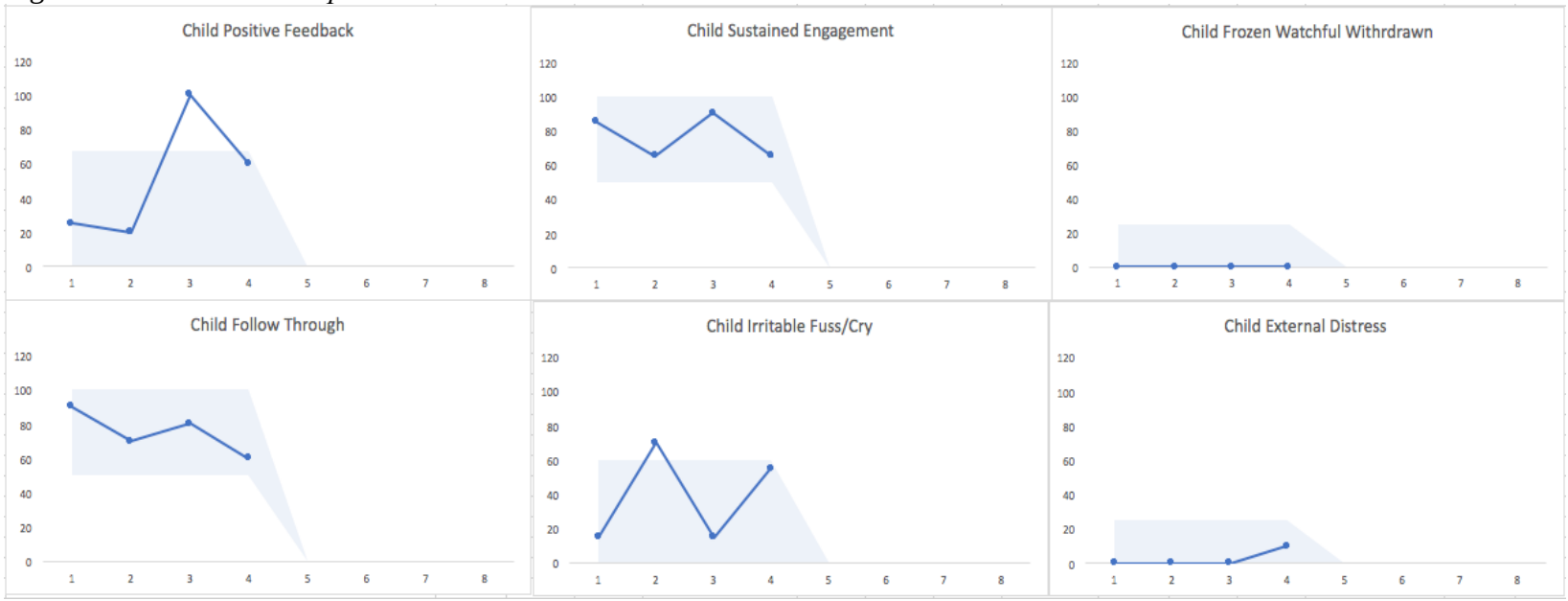
Behavior	Mother's Mean	Dad's Mean	Behavior	Child's mean
Facilitative Domain			Child Engagement Domain	
Acceptance and Warmth	43.75%	45%	Positive Feedback	51.25%
Descriptive Language	56.25%	56.25%	Sustained Engagement	76.25%
Follows Lead	41.25%	43.75%	Follow Through	75%
Maintains / Extends	10%	8.75%		
Mean total facilitative	39.69%	35.31%	Mean Child Engagement	67.5%
Mean parent facilitative	37.5%			
Interruptive Domain			Child Reactivity/distress Domain	
Harsh / Critical	3.75%	3.75%	Irritable fuss/cry	38.75%
Intrusive / Restrictive	37.5%	23.75%	External distress	2.5%
			Frozen / watchful	0%
Mean total interruptive	20.63%	13.13%	Mean reactive/distressed	13.75%
Mean parent interruptive	16.88%			
Family Domain Mean Totals				
Mean family (interruptive & reactivity distressed)				15.83%
Mean family (facilitative & child engagement)				47.5%

Line graphs of each behavior were created for the four baseline sessions showing each family members' mean performance for each behavior during the 10 minutes of data collection for all four sessions of the phase. See Figure 1 for the Mother's Baseline Phase 1 Data, Figure 2 for the Father's Baseline Phase 1 Data, and Figure 3 for the Child's Baseline Phase 1 Data.

Figure 1. *Mother's baseline phase 1 data*

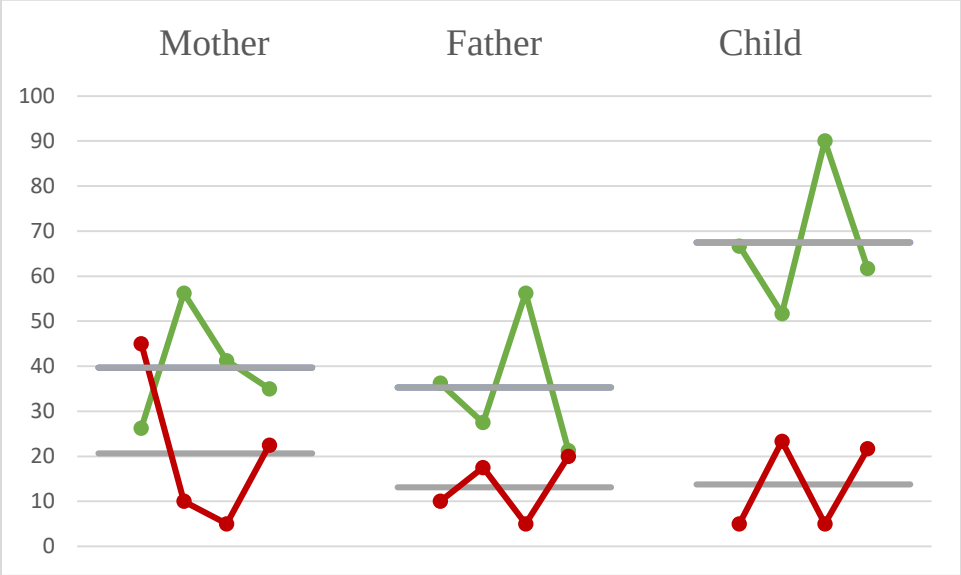
Figure 2. *Father's baseline phase 1 data*

Figure 3. *Child's baseline phase 1 data*



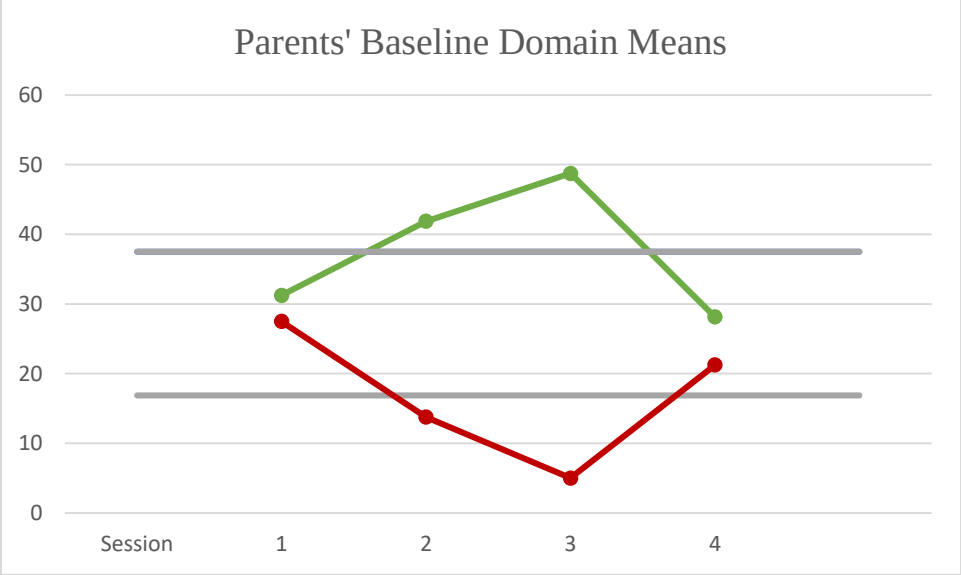
Baseline phase means for each domain for each family member as well as parent and family domain mean totals were graphed on line graphs. See Figure 4 for the Mother, Father, and Child's individual baseline domain mean totals. See Figure 5 for the parents' as a group baseline domain mean totals and Figure 6 for the family's, two parents' and child's, baseline domain mean totals.

Figure 4. *Mother, father, and child's individual baseline domain mean totals*



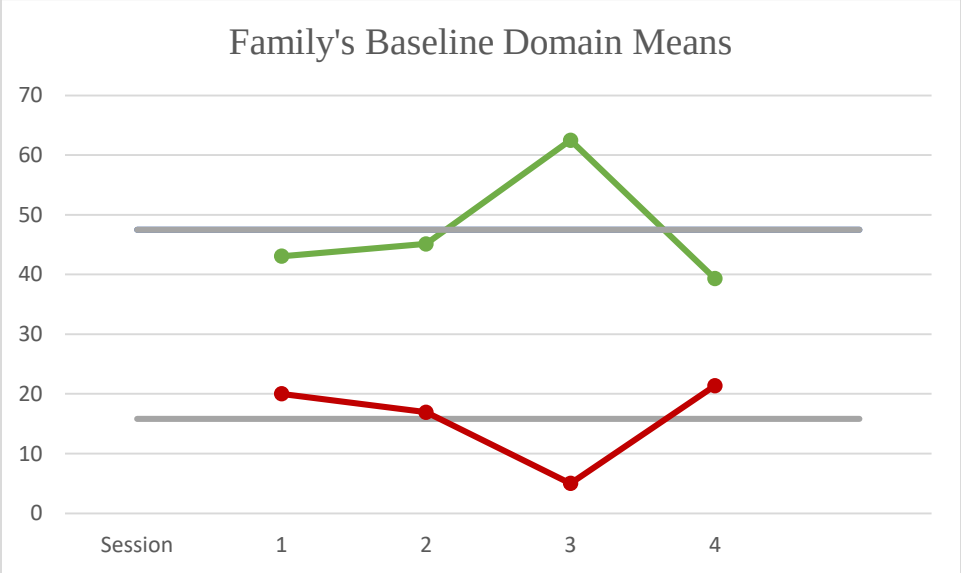
In Figure 4 Green data points are each session's mean totals for the parent's facilitative domain behaviors and the child's engagement domain behaviors. Red data points are each session's mean totals for the parent's interruptive domain behaviors and the child's reactivity/distress domain behaviors. Gray lines are the mean lines for the baseline phase for each domain.

Figure 5. *Parents as group baseline domain mean totals*



In Figure 5 Green data points are each session's mean totals for the parent's group facilitative domain behaviors. Red data points are each session's mean totals for the parent's group interruptive domain behaviors. Gray lines are the mean lines for the baseline phase for each domain.

Figure 6. *Family as group baseline domain mean totals*



In Figure 6 Green data points are each session's mean totals for the family's group parental facilitative domain behaviors and the child's engagement domain behaviors. Red data points are each session's mean totals for the family's group parental interruptive domain behaviors and the child's reactivity/distress domain behaviors. Gray lines are the family's mean lines for the baseline phase for each domain.

The baseline data revealed the elements of social interaction each family member could demonstrate to support the quality of social interactions of the group. Baseline information was used to drive the decisions during the training and intervention phases. Video recordings provided observable behavior and reliable assessment of which skills were in the parents' and child's repertoire for quality interactions. Baseline data analysis included antecedent parental behaviors that elicited occurrence of child's engagement and reactivity/distress behaviors. The baseline data was used to help parents choose socially significant goals and strategies during the training and intervention phases.

After the initial baseline phase, each criterion/intervention phase served as the baseline for the subsequent intervention phase. Each baseline phase was followed by a training session where the RI worked together with the parents to choose targets, strategies, and criterion level goals for the upcoming intervention series. Baseline data informed where the intervention process began, what evidence-based strategies could be helpful during the training process, what initial goals and criterion levels would be appropriate for each parent, and whether multiple criterion levels could be used for each strategy presented.

Description of Intervention Series Components: First Intervention Series Example, Phase 2 (Training Session 1 & Three Intervention Sessions)

Between each baseline phase and training session, the RI reviewed and analyzed the baseline data to assess parental facilitative and interruptive behaviors and the evidence-based strategies in the parents' repertoire to support quality family interactions. The RI prepared the following materials to bring to each training session: 1) video 'highlights' or 'pause points' framing the parents' best demonstrations of facilitative behaviors during the baseline sessions; 2) bar graphs with the parents' baseline means for each facilitative behavior; 3) a bar graph with the child's baseline means for each behavior; 4) a table with a summary of the parents'

baseline means for facilitative behaviors and the child's engagement behaviors; and 5) two tables, one for each parent, with options for criterion levels for facilitative elements the parents could choose to target as goals during the upcoming intervention series.

Video 'highlights' or 'pause points'. To create video 'highlights' the RI edited the parent-child interaction videos and chose video clips that were high quality examples of the parents' facilitative behaviors. The clips were then combined into a short movie with a running ticker of titles naming and framing the facilitative behaviors demonstrated by the parents. To create video 'Pause points,' the RI edited the full 10-minute video clips to insert titles indicating to 'Pause' at time points on the video where the RI wanted to provide specific feedback and coaching on the behaviors observed or demonstrated. The RI typed up a list of notes for each time point where a 'Pause' title was inserted. The RI's notes consisted of comments to: 1) provide positive feedback to parents using quality examples of their use of facilitative behaviors; 2) point out toddler behaviors and emergent skills for parents to look for when interacting with their child; 3) point out observations and interpret the child responses to visual, auditory, and other sensory features of the environment; 4) coach parents on ways to monitor environmental cues (including social) to support regulation and optimal child engagement; 5) discuss child behaviors; and 6) provide ideas or techniques parents could try in future situations to encourage quality social interactions with their toddler.

Training Session 1: Description of training sessions (phases 2, 3, & 4) and family choice making procedures to determine criterion levels. After each baseline phase a parent training session was completed with the parents in their home. The session goals and details for training sessions can be found in Appendix R. The training session components

are described in this section alongside the results of each component during the first training session to provide a concrete example of the process.

Training Session 1: Share a vision and set long term goals. At the first training session, the RI went through a process with the family to share their visions and set long term goals. The process was drawn from parent coaching research by Stoner et al. (2013). The parents identified their long-term goal for Fezzik was to communicate with him to meet his needs and to interact with peers in the next two to three years.

Training Session 1: Occupational analysis of routine, part 1. The RI guided the parents through an occupational analysis at each training session to identify elements of the occupation they could modify to support facilitative interactions. Occupation was referred to as activity with the parents. Analyzing their own occupation supported the parents' self-awareness, their understanding of the dimensions of the occupation, their identification of needs and resources, and their establishment of goals for change (Erlandsson, 2012). Occupational analyses were a key element used during the coaching intervention process (Erlandsson, 2012). Occupational analyses are an element that occupational science added to other coaching approaches previously used with toddlers with ASD. Occupational analyses supported identification of what elements of the occupation were and were not working during engagement and facilitated problem solving. The approach aimed to empower the family to participate in and begin to learn how to analyze occupations to support positive change.

Activity analysis of 'Mommy/Daddy playtime' results, part 1. The parents identified the structure of Mommy/Daddy playtime as choosing one toy, engaging, and then following Fezzik's lead. There was not always an identifiable beginning or end and they did not always

have a schedule or “realize the activity was going to end, but it did.” The preferred materials were the items identified during the baseline procedures but the parents could play with anything. For the intervention, the parents and Fezzik were the usual participants. However, during the day it was mostly the Mother. The parents discussed whether the amount of interaction seemed appropriate to the activity. The father expressed satisfaction with the interaction but he wanted more play time with Fezzik, quantity. The mother expressed a desire for more child engagement during interactions, quality, she struggled to keep Fezzik’s attention for five to ten minutes. From their view, the amount of repetition for the activity depended on Fezzik.

Video highlights. The RI reviewed the video of highlights with the parents and toddler while sitting at their dining room table to show the facilitative behaviors in their repertoire of skills when playing with Fezzik. Samples of each facilitative behavior were provided and labeled for each of the parents, as well as samples of Fezzik’s facilitative responses. No videos of the parents’ interruptive behaviors were presented to the parents at the first training session. However, the parents inquired about their ‘weaknesses’ during the training session, therefore, the format of video review was changed to ‘Pause points’. The later use of ‘Pause points’, instead of just positive highlights, allowed the parents to observe Fezzik’s responses to both their facilitative and interruptive behaviors and for them to observe antecedents to Fezzik’s engagement and reactivity/distress behaviors.

Graph and data review with parents. Following the video highlights, the RI showed the parents visual bar graphs of their performance of facilitative behaviors during the baseline sessions. Both vertical and horizontal layouts were initially provided and the parents preferred use of the horizontal bar graphs. The following figures and tables were presented to

the parents: 1) Figure 7, a bar graph of the parents' mean facilitative performance; 2) Figure 8, a bar graph of the child's baseline means; and 3) Table 11, a summary of the family's mean facilitative scores. Only a portion of the results were presented to the parents at each training session. The RI only shared the parent's data on facilitative behaviors at the first training session because the intervention was designed to use a strength-based approach. The figures and tables are included to show the data and format used to present the results to the parents. Similar data and formats were presented to the parents at each training session, but not all information is included hereafter to limit redundancy.

Figure 7. *Bar graph of the parents' baseline means*

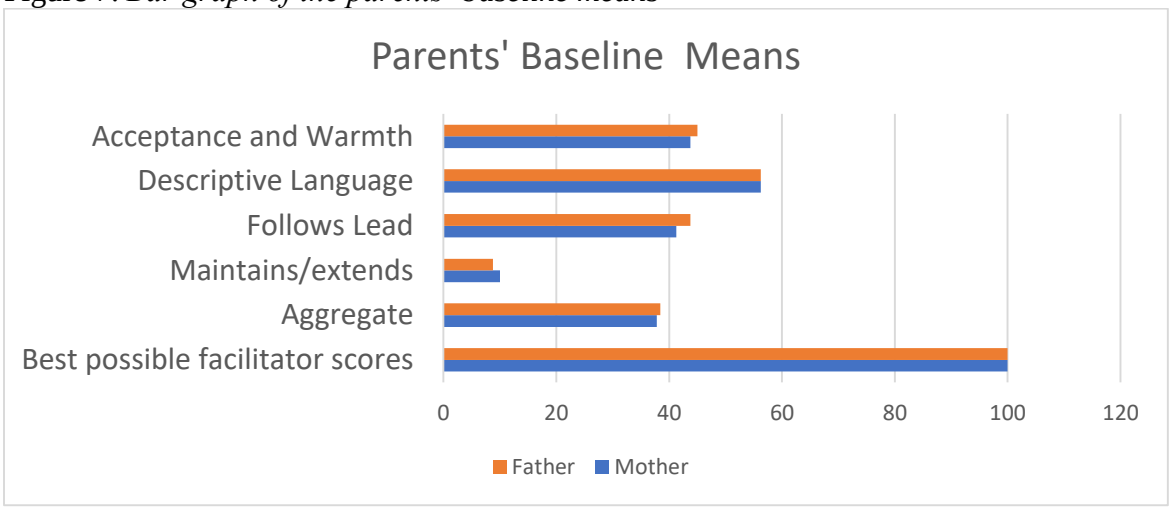


Figure 8. *Bar graph of the child's baseline means*

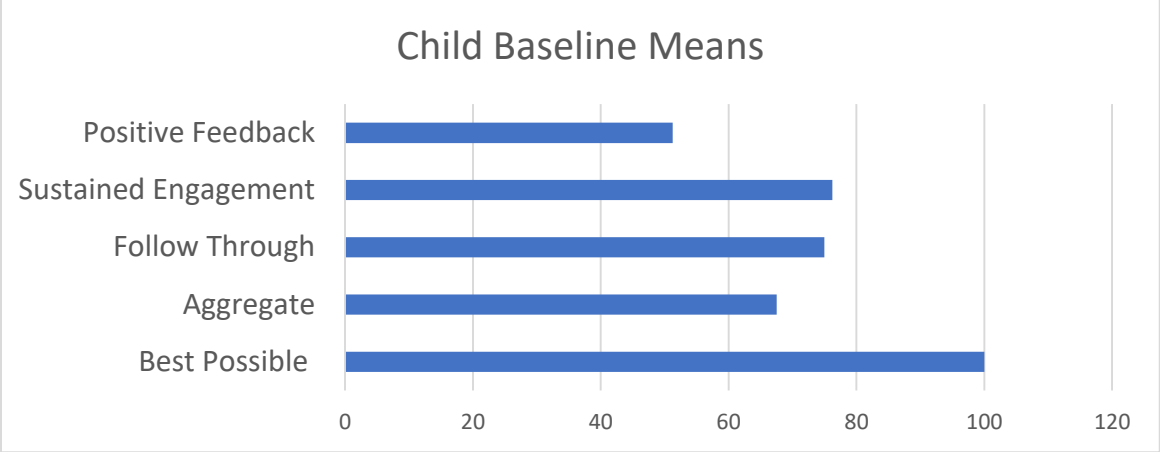


Table 11. *Summary of the family's baseline mean facilitative performance*

Behavior	Mom mean	Dad mean	Behavior	Child mean
Parent Facilitative Domain			Child Engagement Domain	
Acceptance and Warmth	43.75%	45%	Positive Feedback	51.25%
Descriptive Language	56.25%	56.25%	Sustained Engagement	76.25%
Follows Lead	41.25%	43.75%	Follow Through	75%
Maintains/Extends	10%	8.75%		
Facilitative Domain Total	39.69%	35.31%	Child Engagement Domain Total	67.5%

The videos and graphs were used to encourage the parents to reflect on what they did well and to provide the parents with information to help guide them through three procedural decisions: 1) choice of a facilitative element to target; 2) choice of an evidence-based strategy to learn together; and 3) choice of criterion levels. Ongoing opportunities to make these procedural choices during the training sessions supported the social significance of the goals throughout the intervention, even as changes were made (Schwartz & Baer, 1991). Table 12 provides a summary of the decisions made by the parents during each training session, using training session 1 as an example.

Table 12. *Summary of training session decisions – session 1 example*

Training Session 1	
Identify facilitative elements to target for the first intervention series of the study	• Mother chooses facilitative Element 1 to target (acceptance and warmth, descriptive language, follows lead, or maintains and extends). • Father chooses facilitative Element 1 to target (acceptance and warmth, descriptive language, follows lead, or maintains and extends).
Parents Identify Strategy 1	Same strategy for Mother and Father
Set Criterion Level 1	• Mother sets targeted Criterion Level 1 for Element 1 = Mother Target 1 • Father sets targeted Criterion Level 1 for Element 1 = Father Target 1

Parents choose facilitative elements to target during first intervention series. Each parent identified at least one facilitative behavior they wanted to increase during family interactions (i.e., acceptance and warmth, follows lead, descriptive language, or maintains extends). Both the Mother and the Father chose a facilitative behavior to work on during the upcoming intervention series. After reviewing the videos and graphs, the mother chose to target acceptance and warmth and the father chose to target follows lead as their first facilitative elements.

Activity analysis of routine, part 2. During the second half of the activity analysis the parents were asked what they found challenging about engagement in Mommy/Daddy playtime. The mother said describing what she was doing was hard. The father found knowing when Fezzik wanted to stop activities challenging because "sometimes we assume he wants to stop if he walks away, but that is not always the case." Regarding Fezzik's behavior, his parents said he was resistant if he was tired, but they were "better at getting him

to do things when he is tired than his therapists are. He is more tolerant of us than of his therapists."

Activity analysis: Brainstorming. The parents recognized that certain aspects of toys in the room were age appropriate for Fezzik, while others were not. The RI and parents identified ways some of the activities could be scaffolded to support Fezzik's success. When asked how they incorporated Fezzik into play, the father reported "He leads it. We get him started and let him lead. If he doesn't try what we start, we try something else. If he goes off, sometimes he comes back." The parents set up the activity for Fezzik by bringing him objects or sitting in front of him. The parents said that sometimes they have time to wait for Fezzik to respond or to initiate. For example, with his chip bucket, Fezzik sometimes brought it over and tried to open it himself.

At times during the baseline videos, the parents gave Fezzik hand-over-hand assistance with the chip bucket activity, so the RI offered an alternative option. The RI suggested that the parents hold some of the chips to encourage Fezzik to initiate requests for chips to take a turn, rather than controlling Fezzik's movements. The group brainstormed ways to increase Fezzik's opportunities to socially interact and the parents offered that they could cut back the number of toys in the living room, noting "we already started to cut back." The RI agreed and suggested rotating a portion of the toys out of the space periodically and to involve the other siblings in play with Fezzik.

Parents choose evidence-based strategy 1. During each training session of the study the parents were asked to choose a strategy dimension they wanted to learn during the subsequent intervention series (see Table 13 for behavioral definitions of each strategy dimension). The parents identified which strategy they were most motivated to learn together

at each time point. During the study the parents had the option of focusing on a maximum of three new strategies. The RI and parents discussed the pros and cons of learning the different strategies at each time point based on additional contextual family factors. Together the parents selected the strategy that best fit within the family routines and present temporal context. The first strategy chosen was labeled Evidence-Based Strategy 1.

Table 13. *Behavioral definitions of strategy dimensions*

Strategy Dimensions for parent fidelity of implementation	
Setting up the teachable moment	Setting up the environment for engagement in the activity in the home. With whom, where, when, and what will be used to set up the activity to help embed opportunities for social interaction during the activity. With whom: Preparing to have both parents present and actively engaged. Where: Setting up a consistent physical space in the home with limited distractions to support social engagement during the activity. When: Setting up a consistent time to practice engagement in the activity during family routines. With what: Set up the activity with materials that are of high motivational interest and value to the child. (Watson, Boyd, Baranek, Crais, & Odom, 2011)
Makes activity interactive	Parents set up preferred activity. Parents allow child to choose how they engage with the activity. Parents remain face- to face with the child, join in the child's play/imitate the child, use heightened animation, and wait with anticipation (Ingersoll & Wainer, 2013)
Models and expands language	Parents give meaning to the child's actions, model language/play around the child's focus of interest, use simplified language, and expand on the child's language (Ingersoll & Wainer, 2013)
Provides opportunities for initiation	Parents use playful obstruction, balanced turns, or communicative temptations to create opportunities for the child to initiate (Ingersoll & Wainer, 2013)
Helps increase the complexity of initiations	Parents wait for the child to initiate, use appropriate prompts, provide sufficient response time, follow through after a third

	prompt, provide reinforcement immediately after a correct response, withhold reinforcement for an incorrect response, expand on the child's response, and adjust the support of prompts as needed (Ingersoll & Wainer, 2013)
Paces the interaction	Parents pace the interaction to keep the child engaged and motivated, and take advantage of engagement and motivation to prompt more complex skills (Ingersoll & Wainer, 2013)
	Primary references: Advancing Social Communication and Play (ASAP) manual (Watson, Boyd, Baranek, Crais, & Odom, 2011) Language adapted from Ingersoll & Wainer (2013) to include two parents and only target one preferred activity chosen by parents.

Parents choose evidence-based strategy 1 results. The parents were given a hand out of the behavioral definitions of the six strategy dimensions. After discussion with the RI, the parents selected 'Make the activity interactive' as the first strategy dimension (Ingersoll & Wainer, 2013).

Parents choose criterion level 1. Once a strategy was chosen, the RI presented criterion levels (Richards et al., 2013) to the parents to choose from. The baseline data drove the options presented and was used to guide the decision-making process (Richards et al., 2013). Four common options for determining criterion levels were used: 1) use of the mean; 2) halving the mean; 3) using the baseline lowest and highest data points to determine the range; and 4) seeking professional advice from a person familiar with the participant and the target behavior (Klein et al., 2017). The RI helped the parents choose a feasible Criterion Level goal (1, 2, or 3) for each intervention phase of the study.

Parents choose criterion level 1 results. Each parent was presented with a table with the criterion level 1 goal options for the potential elements to target. Table 14 provides a sample of the information provided in the mother's table. Once the parents identified the facilitative behavior they wanted to target, that behavior element was highlighted on their table. For example, on Table 14 the criterion level 1 options for Acceptance and Warmth were highlighted for the mother.

Table 14. *Mother's criterion level 1 options*

Element	Mean	Halving the mean	Baseline highest	Professional advice
Acceptance Warmth Baseline mean = 43.75 %	+ 43.75 % = 87.5 %	+ 21.88 % = 65.6 %	Lowest = 20 % Highest = 55 % Range = 20-55% 55 % consistency	Halving the mean 65.6 % Or **55 % consistency at highest mean value**
Descriptive Language Baseline mean = 56.25 %	100 %	+ 28.125 % = 84.4 %	Lowest = 30 % Highest = 75 % Range = 30-75% 75 % consistency	**75 % Consistency at highest mean value**
Follows Lead Baseline mean = 41.25 %	+ 41.25 % = 82.5 %	+ 20.63 % = 61.88%	Lowest = 10 % Highest = 65 % Range = 10-65 % 65 % consistency	**Halving the mean 61.88 % or** 65% consistency at highest mean value
Maintains Extends Baseline mean = 10 %	+ 10 % 20 %	+ 5 % = 15 %	Lowest = 0 % Highest = 30 % Range = 0-30%	**15 %**

The mother chose to target acceptance and warmth consistently at her highest mean value of 55% for her criterion level 1 goal. The father chose halving the mean to follow Fezzik's lead 65.6% of the time as his criterion level 1 goal. In summary, Table 15 shows the

criterion level 1 goals each parent chose during training session 1 and the strategy dimension they chose to learn together during the first intervention series.

Table 15. *Training session 1 parents' choices: criterion level 1 goals and strategy dimension 1*

Mother's criterion level 1 goal	Acceptance and warmth to 55%
Father criterion level 1 goal	Follows lead to 65.6%
Strategy dimension 1= make the activity interactive (Ingersoll & Wainer, 2013)	

Once the parents each chose their criterion levels at the first training session, there was not enough time at the end of the session for the RI to demonstrate 'making play interactive' with Fezzik. However, the RI discussed the strategy with the parents, offered a list of ways the parents could practice the strategy with Fezzik over the upcoming week, and the group discussed an action plan for how the family could practice the strategy with Fezzik during their weekly routines. At Training Session 1 the RI gave the family a three-ring binder with tabs to organize resources provided to the family during the training and intervention sessions. The binder helped the family organize resources and have them readily available as a reference throughout the intervention phases, as well as after study completion. For example, at each training session the RI provided the family with a definition hand out of the facilitative behavior they chose to target with examples of the behavior. The RI also followed up a few days later via email with a list of ways the parents could practice the strategy with Fezzik.

Social validity of the training phase. At the end of each training session, the parents were asked to complete a Social Validity Questionnaire for the Training Phase (see Appendix S) to assess their value and satisfaction with the training process. Using a 6-point Likert scale, the parents rated how important they found each of the steps of the training process. The

steps included on the form were proposed active ingredients of the training process. The results of all three Training Phase Social Validity Questionnaires were combined to identify which of the proposed active ingredients of the training sessions were the most important to the parents, individually and collectively (see Table 36, p. 132 in the results section).

The RI closed each training session by answering questions and planning the next session for the forthcoming intervention series.

Methodological requirements and description of intervention series. Each training session was followed by the coaching intervention sessions for that phase. In each intervention phase, the RI coached the parents on their chosen evidence-based strategy. Each intervention phase was associated with a stepwise change in criterion level for quality parent-child interactions. Once the target criterion level was met consistently across at least 3 data points during an intervention phase, the next phase of intervention training was provided. In the next phase, a new criterion level was set until at least two replications of effect of the intervention were established for each parent.

During each intervention phase, formative analysis of the data within the intervention condition and summative analysis of the data between adjacent conditions was completed before the phase was ended. The formative and summative analysis of the level, trend, variability, consistency, overlap, and immediacy of the data were evaluated using the visual analysis worksheet (Appendix Q). Excel spreadsheets with functions to calculate the stability envelopes for the parents' and toddler's data were used to assess the stability of the data within each intervention phase. The consistency, overlap, and immediacy of effect of the data between conditions were used to assess the confidence that a functional relationship was present.

Once parents learned to integrate a social interaction strategy with their child and consistently met their criterion levels for the current phase, that phase acted as the baseline for the subsequent phase. During the next phase, parents chose a new evidence-based strategy to integrate into interactions with their child. When each parent showed consistent improvement in parent-child interaction scores with each stepwise change in criterion, it demonstrated therapeutic change and experimental control was established (Hartmann & Hall, 1976).

Description of intervention sessions. The coaching intervention sessions occurred one to two times per week and lasted 1.5 to 2 hours. The RI accommodated sessions that lasted beyond the 2-hour period if parents wanted to discuss other concerns. The intervention sessions contained the elements outlined in Appendix T like goal review, conversation and information sharing of past and current experiences, reflection, video data collection, demonstration, guided practice, live video feedback, problem solving, and action planning. The RI used a family led approach so the sequence of delivery of elements was fluid and was adjusted during the session to fit the family circumstances, needs, and preferences on a given day. The family led approach allowed the RI to accommodate both the flow and intensity of family life while keeping the intervention research process moving forward, a key ingredient to the completion of this study.

Greeting and data collection. Intervention sessions began with an opening greeting and well-being check-in with the family, review of goals, discussion of daily and weekly successes and challenges, and review of the plan for that day. After the opening greetings, video data collection occurred for 10 minutes, which entailed recording both parents engaged in the activity with the child. Once the video data was collected, the RI provided the parents

with positive feedback on activity participation and engaged in reflection with them on successes and challenges experienced or observed during the data collection period.

Family coaching. Following data collection, the RI joined in the activity with the toddler and parents and began 10-30 minutes of family coaching during the activity in real time, providing reinforcement, guidance, and modeling of social interaction strategies during engagement in the activity together. Depending on the strategy of focus, at least three resources were utilized for parent training materials: 1) parent training materials from Ingersoll and Dvotcsak's (2009) manual for teaching social communication to children with autism; 2) social interaction techniques from the Advancing Social Communication and Play (ASAP) manual (Watson, Boyd, Baranek, Crais, & Odom, 2011); or 3) social communication strategies from the JAML study (Schertz, et al., 2013). The RI and parents discussed how to practice the strategy and the RI answered any questions the parents had about the targeted strategy. Resources were provided to the parents during the family coaching portion of the intervention or during the video feedback portion.

Video feedback. Initially, video review was planned to be an optional component of the intervention sessions, but it became an integral part of most intervention sessions. As previously described, before each session the RI prepared 'highlights' or 'pause points' of videos from the previous session paired with notes about the interactions in the video. During the video feedback portion of the sessions, the parents, toddler, and RI sat together and reviewed the video from the previous week's session. For the first training and intervention session the RI prepared video 'highlights' in which she named and framed parents' strengths and use of evidence-based strategies, and gave them constructive feedback on high quality examples of facilitative behaviors they had demonstrated.

For the second intervention session, the RI used ‘pause points’ and prepared notes about the videos that: 1) provided constructive feedback, naming and framing skills, and strategies the parents had demonstrated well; 2) showed parents examples of the toddler’s emergent skills and facilitative behaviors to look for, to maintain, and to extend during teachable moments (i.e., positive feedback, initiations, vocalizations, gestures, eye contact directed to the caregivers, follow through, and different types of engagement); 3) shared observations and interpretations of the child’s responses to sensory features of the environment (e.g., auditory and visual stimuli); and 4) offered parents ideas for ways to build on implementation of their current strategy.

Action plan. During the last 10 minutes of the session, the RI encouraged the parents to make an action plan for how they could use the new strategies with their child during family routines over the upcoming week. For example, Fezzik loved books so the parents and RI planned how they could set up play time with books to make it more interactive during their weekly routines. They planned to set up the activity with multiple books, to follow Fezzik’s lead to choose his preferred book, sit face to face with him while looking at their own book, share his interest, imitate him, comment on the activity, and model appropriate behaviors. Appropriate behaviors to model included things like pairing pointing gestures with comments and eye contact or showing Fezzik pictures in their book.

Social validity. At the end of selected sessions, the RI asked the parents to complete a social validity questionnaire for the intervention session. The decision to request completion of the social validity questionnaires was based on whether external factors had prolonged the intervention session on a given day. When external factors were present the parents often wanted additional time to talk with the RI about complexities they were facing, thus

extending the length of the intervention session. To accommodate this unanticipated element, the parents were not asked to complete the social validity questionnaires on those days.

The Social Validity of Intervention form (see Appendix U) was designed to assess how much it mattered to the parents to participate in the intervention together, how much individual factors influenced their experience with the intervention on a given day, and which elements of the intervention they thought were most important. The parents rated each question for the session using a 6-point Likert scale. Key questions included whether the parents viewed the session as a positive experience, how well they did that day, how their partner did, how well they worked together, and feedback on the coaching process. After collecting the social validity data, the session ended. The steps on the Social Validity Intervention form were proposed to be active ingredients of the intervention process. The results of the Intervention Social Validity Questionnaires were combined to identify which of the proposed active ingredients of the intervention sessions were the most important to the parents, individually and collectively (see Table 37, p. 133 in the results section).

Following the visit, the RI completed post intervention data recording procedures to document observations and clinical notes about the environment, context, and interactions during the sessions. The RI recorded problem solving and clinical reasoning processes applied during the session including descriptions of contextual factors and forces influencing interactions, decisions, and implementation. Finally, the RI completed a coaching fidelity checklist after at least 30 % of sessions. Since completion of coaching fidelity was only requisite for 30% of sessions to support internal validity (Gast, 2010), this element was occasionally omitted if needed due to time constraints.

Integrated analysis. Following each intervention session, the 10-minute parent child interaction videos were coded and analyzed. Each session's codes were consistently entered on three spreadsheets: 1) a spreadsheet with coding descriptions used for interrater reliability coding; 2) a summary spreadsheet for within phase analysis used to assess the stability of the data and to generate bar graphs tracking each participants' mean progress from session to session during the phase; and 3) a phase spreadsheet for between phase analysis where session means were entered for each behavior to generate line graphs that were visually analyzed across phases. The within-phase analysis spreadsheets were set up with embedded functions to calculate the stability envelope for all behaviors coded for each family member session by session in order to generate line graphs for formative visual analysis during each phase of the intervention.

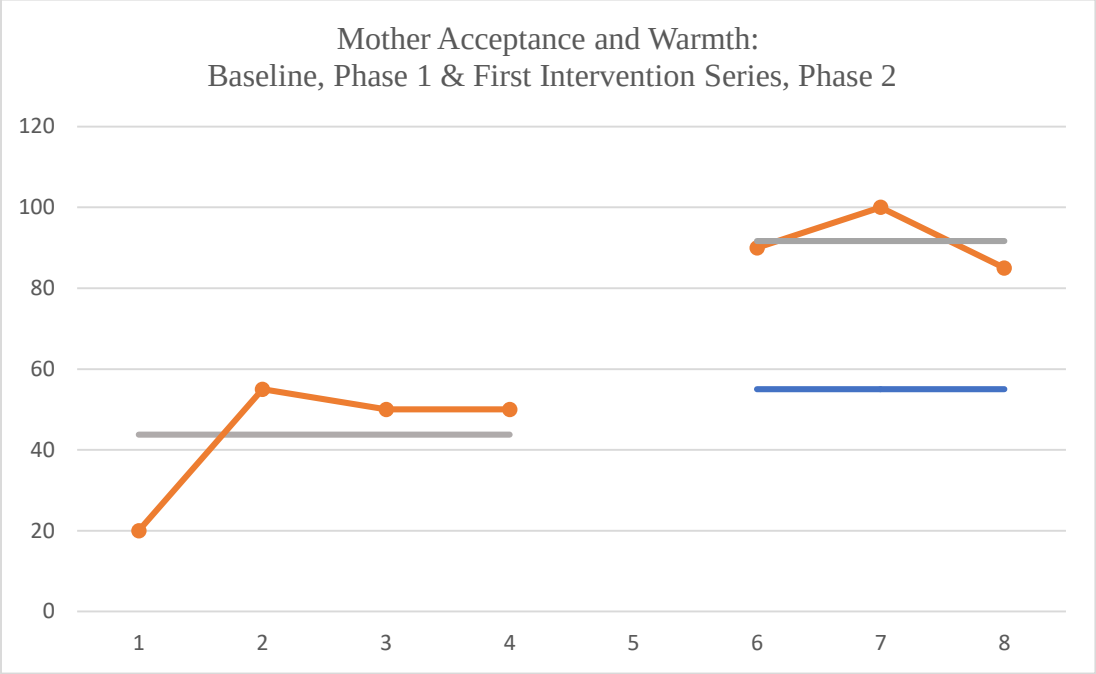
Once three intervention sessions were completed in a phase, the stability envelope and the Visual Analysis Worksheet (Ledford et al., 2018; Appendix Q) were used to evaluate whether each parent demonstrated stable performance at their set criterion level for that phase before a decision was made to move forward with the next training session, introduction of new criterion levels, and the next phase of the intervention. The questions on the Visual Analysis Worksheet were also used at the end of each phase to guide between condition conclusions regarding the presence of a functional relationship between the intervention and quality social interactions. Table 16 provides an example of how the questions on the worksheet were used to analyze the level, trend, variability, consistency, overlap, and immediacy of the data between phases throughout the study. Figures 9 & 10 respectively show the type of line graphs used for visual analysis of the mother's and father's data points for their targeted behavior element during phases. In addition, line graphs were

created and analyzed for each parent and the child for each behavior measured and comprehensive graphs will be provided at the beginning of the results section.

Table 16. *Visual analysis of data characteristics sample: phases 1 and 2*

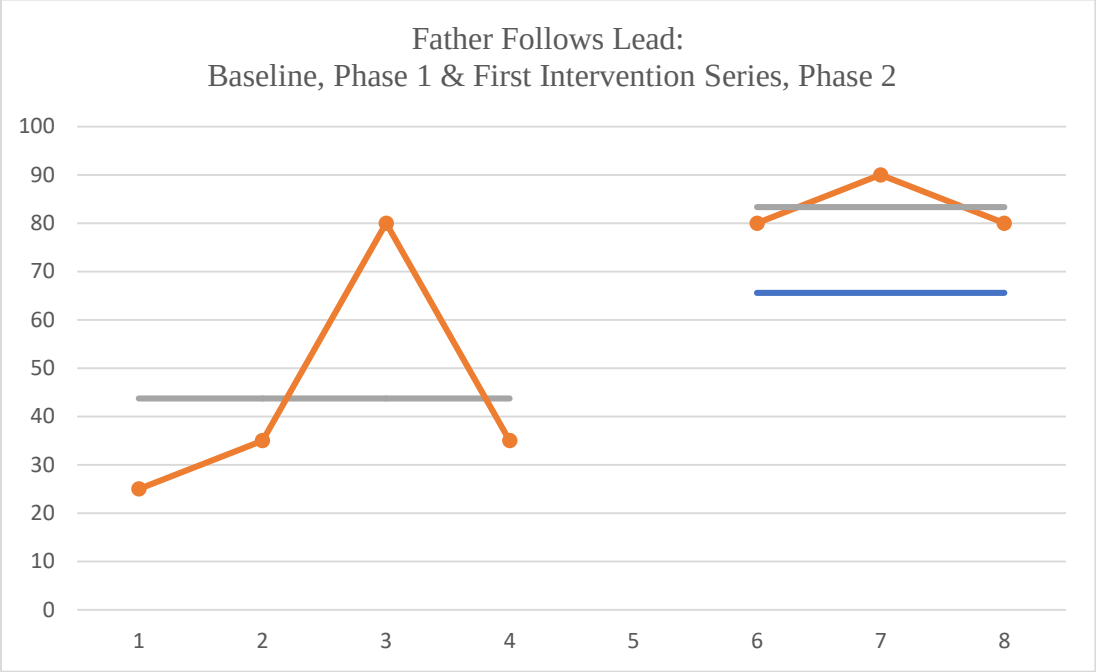
Characteristic	Characteristics of data: Between baseline and first intervention series (Phase 1 to Phase 2)
Level Mother & Father	A consistent level was established in each condition prior to condition change. There was a consistent level change between conditions in the expected direction.
Trend Mother & Father	No unexpected trends were present. There was a consistent change in trend across conditions in the expected direction.
Variability Mother & Father	No unexpected variability existed in either condition. No within-condition variability impeded determinations about level changes between conditions. The father had one data point, for descriptive language, outside of the stability envelope in this phase. The father's decrease in descriptive language can be expected when he was focused on the goal of following the child's lead because the strategy emphasized to watch the child, wait, limit language, play in parallel, then join in play with the child.
Consistency Mother & Father	Data within conditions for the targeted behaviors was consistent and data between conditions was consistent.
Overlap Mother & Father	No data for the mother's targeted behavior overlapped between conditions. Two of the father's data points were the same as one baseline data point, the father's highest performance of the targeted behavior at baseline, that demonstration was an outlier during baseline relative to the other baseline performance.
Immediacy Mother & Father	Changes between tiers are immediate in the intended direction.

Figure 9. *Mother's performance above her criterion level 1 goal during the first intervention series*



In Figure 9 orange data points are the mother's mean performance of acceptance and warmth during each session, gray lines are the mean lines for each phase, and the blue line is the mother's criterion level 1 goal.

Figure 10. *Father's performance above his criterion level 1 goal during the first intervention series*



In Figure 10 orange data points are the father's mean performance of follows lead during each session, gray lines are the mean lines for each phase, and the blue line is the father's criterion level 1 goal.

First Intervention Series (three intervention sessions): Within and between phase analysis after third intervention session. After three intervention sessions, 100% of the mother's data and 94.45% of the father's data for facilitative and interruptive behaviors fell within the stability envelope. Over 80% of each parent's first intervention series data fell within the stability envelope therefore the variability of the intervention phase data was stable enough to progress to the next phase of the study, the second training session and second intervention series, phase 3. After the completion of each intervention phase, the means for each behavior and domain were calculated for each family member as well as domain means for the parents' and family. The parents' domain mean was calculated by adding the mother and father's facilitative domain means together and dividing by two; the

calculation procedure was repeated for their interruptive domains. The family as group domain means were calculated by adding the mother and father's facilitative domain means to the child's engagement domain mean and dividing by three; the same calculation procedure was repeated for the parents' interruptive domain means and the child's reactivity/distressed domain means. Finally, the family's improvements in the quality of social interactions between phases were calculated by adding the improvements in parental facilitative and child engagement behaviors to the reductions in parental interruptive and child reactivity/distressed behaviors.

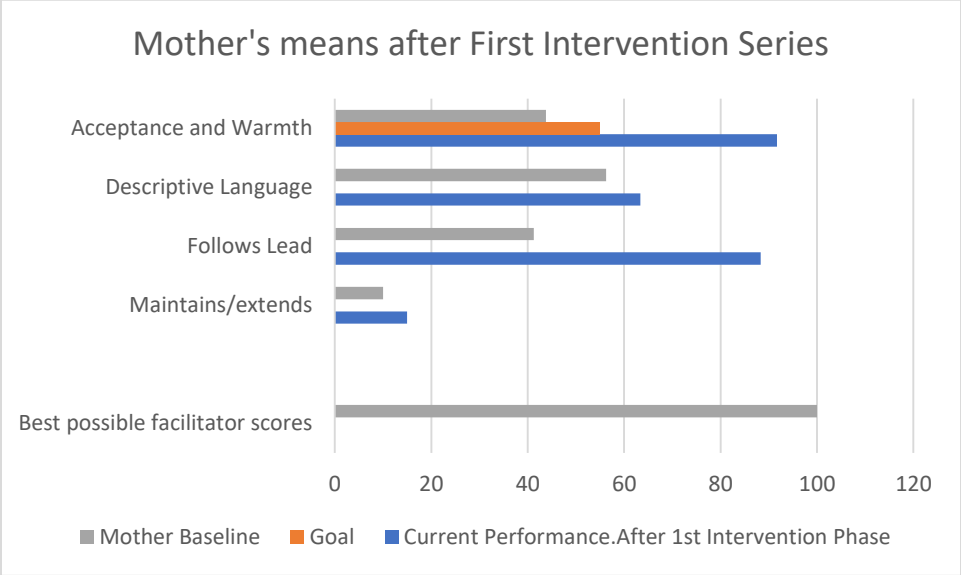
Second Intervention Series: Phase 3 (Training Session 2 & Three Intervention Sessions)

At training session two the next criterion level was introduced. The decision for when to introduce the next criterion level depended on three factors: the length of the phase, the magnitude of the change, and the number of phases or criterion levels (Klein et al., 2017). Each phase served as the baseline for the subsequent phase. A phase continued until stable responding occurred and three data points at the predicted criterion level were demonstrated. Intervention phases continued until both parents demonstrated stable responding at the criterion level they had set for the current phase. Once both parents demonstrated three data points over their set criterion, the next criterion levels could be set at the next training session and the subsequent intervention series began.

Training Session 2. During the second training session, each parent chose a new facilitative behavior to target during the second intervention series. The parents and the RI then set a second criterion level to be their goal for improvement of the new facilitative behavior. The RI also presented options for evidence-based strategy dimensions that the parents could choose to target during the second intervention series.

At training session two, the following figures and tables were presented to the parents: 1) a bar graph of the mother's means during baseline compared to her criterion level 1 goal and her mean performance during the first intervention series (see Figure 11); 2) a bar graph of the father's means during baseline compared to his criterion level 1 goal and his mean performance during the first intervention series; 3) a bar graph of the child's mean performance at baseline compared to his performance during the first intervention series; and 4) a table with a summary of the family's mean facilitative scores.

Figure 11. *Mother's means during baseline compared to her criterion level 1 goal and her mean performance during the first intervention series*



The same training procedures were conducted during training session 2 as described in the training session 1 section using the new phase data. Table 17 shows the criterion level 2 goals each parent chose during training session 2 and the strategy they chose to learn together during the second intervention series.

Table 17. *Training session 2 parents' choices: criterion level 2 goals and strategy dimension 2*

Mother's criterion level 2 goal	Descriptive language consistently at 80%
Father's criterion level 2 goal	Maintains extends at 35%
Strategy dimension 2 = models and expands language (Ingersoll & Wainer, 2013)	

Second Intervention Series (three intervention sessions) within and between phase analysis after third intervention session. After three intervention sessions, 100% of the mother's data and 100% of the father's data for facilitative and interruptive behaviors fell within the stability envelope. Given that over 80% of each parents' second intervention series data fell within the stability envelope, the variability of the intervention phase data was stable enough to progress to the next phase of the study, the third training session and third intervention series, phase 4. Intervention phase means for each behavior and domain were calculated for each family member as well as parent and family mean total percentages for each domain.

Third Intervention Series, Phase 4 (Training Session 3 & Four Intervention Sessions)

Training Session 3. For training session 3 the parents requested the RI bring two additional pieces of data for review: 1) graphs of their session by session progress during the second intervention series (see Figure 12 for a sample), and 2) data on their performance of 'weaknesses' or interruptive behaviors. At training session 3 the following figures and tables were presented to the parents: 1) a bar graph of the mother's facilitative means during the first intervention series compared to her criterion level 2 goal and her mean performance during the second intervention series; 2) a bar graph of the mother's session by session improvements in facilitative behaviors during the second intervention series; 3) a bar graph of the father's facilitative means during the first intervention series compared to his criterion

level 2 goal and his mean performance during the second intervention series; 4) a bar graph of the father's session by session improvement in facilitative behaviors during the second intervention series; 5) a bar graph of the child's means for all behaviors after the second intervention series; and 6) a table with a summary of the family's mean facilitative percentages and percentages for all behaviors during the second intervention series (this information is provided in Table 22, p. 105, and 23, p. 107).

Figure 12. *Father's session by session improvements in facilitative behaviors during the second intervention series*

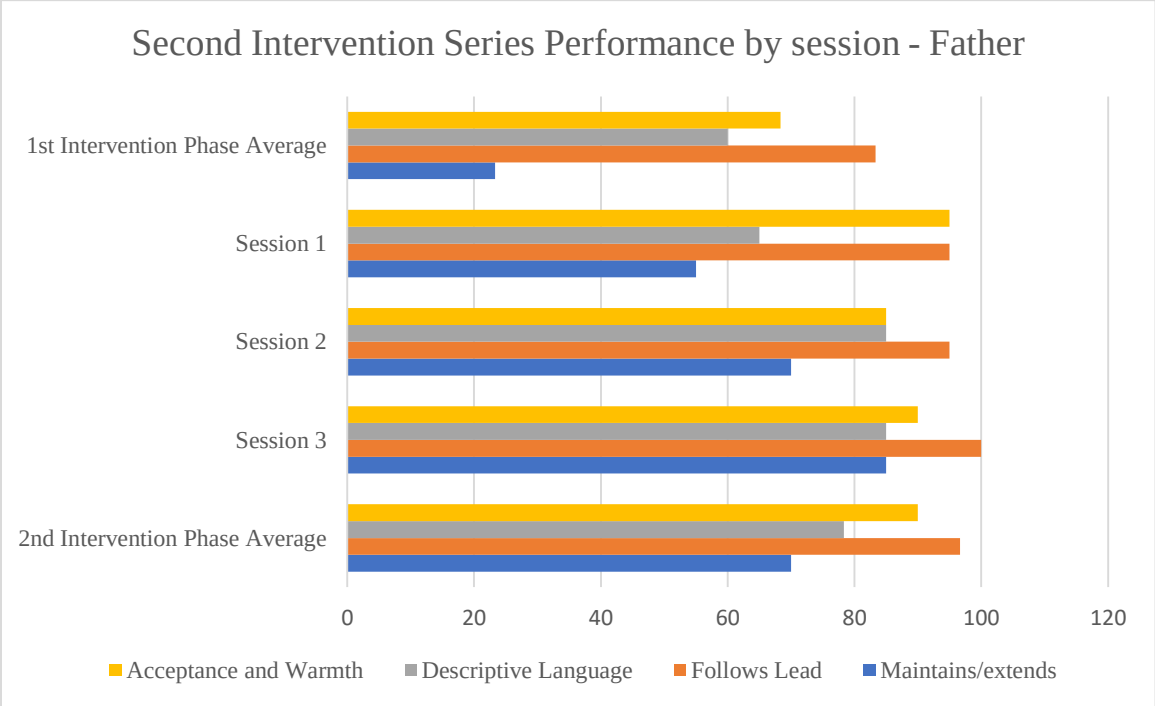


Table 18 shows the criterion level 3 goal the parents chose during training session 3 and the strategy they chose to learn together during the third intervention series. During training session 3 the parents asked to have a shared facilitative domain goal for the third intervention series to consistently demonstrate facilitative social interactions together 85.63% of the time or more, rather than setting individual goals. At training session 3 the family notified the RI that Fezzik's preschool IEP would be in 2 weeks. The family had a lot of

questions that were the focus of conversation during the session. Due to time constraints, the RI was not able to discuss techniques with the parents from the chosen strategy dimension, nor did she and the family discuss an action plan for how the family could practice opportunities for initiation with Fezzik over the upcoming week. Conversation was focused on how to maintain skills they had learned, rather than provision of new information or resources. The absence of these elements of the training session had to be taken into consideration during data interpretation between phases 3 and 4.

Table 18. *Training session 3 parents' choices: criterion level 3 goal and strategy dimension 3*

Mother's criterion level 3 goal	Parents as group facilitative domain goal of consistent quality social interactions with their toddler at or above 85.63% individually and as group
Father's criterion level 3 goal	
Strategy dimension 3 = provides opportunities for initiation (Ingersoll & Wainer, 2013)	

Third Intervention Series (four intervention sessions). Following training session 3 the mother and Fezzik got the flu and the first intervention session was rescheduled to a date when the family was no longer contagious but had not fully recovered. The RI provided a session to keep the intervention process moving, knowing the family would be unable to demonstrate their potential at session 1 of the third intervention series. The missing elements from training session 3 and the family's physical health during session 1 of the third intervention series posed enough threats to the internal validity of the session to consider it an outlier session before data analysis of the session was completed.

After each intervention session in Phase 4 the parent's group domain total scores for facilitative social interactions were calculated until the parents together demonstrated stable performance at their shared criterion level 3 goal for facilitative behaviors. The adjustment made to the methods was a product of the proactive social validation procedures embedded

into the study. Use of CCDs for this study allowed for the accommodation of change based on the family's request during the process, creating a treatment effect that became a part of the study design. The parents' facilitative domain performance data for each session in the third intervention series is provided in Table 19. The first session is included in the table but because it was considered an outlier session, it is not included in any other domain calculations for the third intervention series.

Table 19. *Parents as group facilitative performance data for each session in third intervention series*

Third intervention series	Session 1 (outlier session)	Session 2	Session 3	Session 4	Series Mean with outlier	Series Mean without outlier
Parents' facilitative domain	80%	85.63% Criterion Level 3 goal met	91.88% Criterion Level 3 goal met	93.75% Criterion Level 3 goal met	87.82% Criterion Level 3 goal met	90.42% Criterion Level 3 goal met

Third Intervention Series (4 intervention sessions): Within and between phase analysis after 4th intervention session. After four intervention sessions, 100% of the mother's data and 100% of the father's data for facilitative and interruptive behaviors fell within the stability envelope. Over 80% of each parent's third intervention series data fell within the stability envelope therefore the variability of the intervention phase data was stable enough to end Phase 4 of the study and progress to the post-intervention sessions. Intervention phase means for each behavior and domain were calculated for each family member as well as parent and family mean total percentages for each domain, all calculations excluded the outlier session.

Post-Intervention Data Collection

After completion of the intervention phases of the study, the RI completed one post-intervention visit with the family to complete a semi-structured interview and an assessment with the parents. The RI asked each parent to complete the Life Participation for Parents (Fingerhut, 2013) assessment again and repeated the COPM portion of the occupation-centered interview. These assessments were used to indicate the parents' perceived performance improvements and satisfaction with the priorities they identified at the start of intervention as well as the goal they chose to target during the intervention process. The assessments were also completed to ascertain whether the parents had applied the strategies learned during the intervention to other family activities. At the last session, the RI was able to connect the family with another research study where they could obtain the additional developmental testing they had requested. Finally, the parents were asked to complete Part 2 of the Family Information Form (Appendix V) to obtain additional information on the family's demographics.

Life Participation for Parents post-intervention results. From the pre-intervention session to the post intervention session the mother's life participation scores increased from an initial core of 75 to a final score of 85, a ten point improvement in her participation over the course of the intervention. By the end of the intervention the mother indicated that on a typical day she was able to do what she wanted to get done. The father's participation scores decreased by 17 points from the pre-intervention to the post intervention assessment. Despite the decrease in the father's score, he too indicated that no activities he would like to participate in were affected by having a child with special needs. At pre-intervention there was a 22 point difference between the mother's and father's scores, and at the post-intervention session there was a 3 point difference in the mother and father's total scores on

the Life Participation for Parents Questionnaire. See Appendix W for the parents' pre and post intervention scores on the Life Participation for Parents Questionnaire.

Parents' COPM post-intervention results. During the occupation-centered intervention three of the parents' initial primary areas of concern identified during the COPM were addressed in some capacity during the coaching on 'Mommy Daddy playtime': 1) communication; 2) expand Fezzik's play repertoire; and 3) for Fezzik to consistently respond to social cues in his environment. From pre-intervention to post-intervention the parents reported a 20% performance improvement in Fezzik's communication, a 20 % performance improvement in his play repertoire, and a 20% improvement in his response to social cues in his environment. See Appendix X for the parental performance ratings from pre-intervention to post-intervention on primary areas of concern. The parents also rated their satisfaction with Fezzik's performance in their primary areas of concern. From pre-intervention to post-intervention the parents reported a 10% improvement in their satisfaction with Fezzik's communication, a 40% improvement in their satisfaction with his play repertoire, and a 25% (30% mother, 20% father) improvement in their satisfaction with Fezzik's response to social cues in his environment. Appendix X provides the parent's satisfaction ratings from pre-intervention to post-intervention on primary areas of concern.

Data Analysis of Full Study

After completion of all four study phases and the post intervention session, data analysis was completed to calculate the results of the entire study for each family member and the parents and family as a group. Calculations for the change in each behavior and each domain for each family member from baseline to phase 4 were completed. The mother's individual, father's individual, and parents' as group improvements in the quality of social interactions during each phase of the study were calculated by adding the mean increase in

facilitative domain behaviors to their mean reduction in interruptive domain behaviors. The child's improvements in the quality of social interactions during each phase of the study were calculated by adding his child engagement domain mean improvements to his mean reduction in reactivity/distressed domain behaviors. The family as group's improvements in the quality of social interactions during each phase of the study were calculated by adding the parent's facilitative domain and child engagement domain mean improvements to the reduction in the parent's interruptive and child's reactivity/distress domain behavior totals.

Finally, the magnitude of effect of the intervention, standardized mean differences, were calculated for the mother's and father's facilitative behaviors and for the parents as group facilitative behaviors. This could also be referred to as the index of the magnitude of change for the entire intervention. The standardized mean differences between the baseline phase and the final phase of the study were calculated in the following way, using the mother's facilitative data as an example: the mean difference in the mother's facilitative behaviors from baseline to phase 4 were calculated, the pooled standard deviation of the baseline and phase 4 facilitative data were calculated; and the standardized mean difference was the mean difference/the pooled standard deviation. The same method was used to calculate the magnitude of effect of the intervention for the father and parents as a group. The three indices of the magnitude of change were then compared to consider if it made a difference that the parents participated in the intervention together. Calculation of the indices of the magnitude of change of the intervention provided a measure of whether there may be added quantitative value in the two-parent implemented delivery of the intervention.

CHAPTER 4: RESULTS

In this section, for each series of the intervention, the results of the mother's and father's CCD's are presented separately then together as a parental group, followed by the child's outcomes, and the family as group's outcomes, which includes both parents and the child. The cumulative results of all four phases of the study are then presented which provide answers to the guiding research question and the first of the secondary research aims. The chapter closes with the results on factors that influenced the feasibility of the intervention approach, the fidelity of the coaching procedures, and the social validity of the two parent implemented process.

Guiding Research Question

Can a two-parent implemented family and occupation-centered intervention using a coaching approach improve the quality of social interactions of families with toddlers with ASD?

Secondary Research Aim 1

Determine if a two-parent implemented intervention, embedded in family home routines, improves social interaction outcomes for toddlers with ASD.

Results of the first intervention series, Phase 2. The mother's mean performance of acceptance and warmth improved from 43.75% at baseline to 91.67% during the first intervention series, an improvement of 47.92%. The mother's performance during the first intervention series above her criterion level 1 goal, acceptance and warmth for 55% of the time, was the first demonstration of effect of the intervention for the mother. The father's

mean performance of following the child's lead improved from 43.75% at baseline to 83.33% during the first intervention series, an improvement of 39.58%. The father's performance during the first intervention series above his criterion level 1 goal, following the child's lead for 65.6% of the time, was the first demonstration of effect of the intervention for the father. Figures 9 & 10 (p. 87-88) respectively show line graphs for the mother's and father's performance above their criterion level 1 goals during the first intervention series. The first series of the two-parent implemented family and occupation-centered intervention showed a 38.13% improvement in the quality of the parents' social interactions with their child. See Table 20 for the parent's individual and group outcomes after the first intervention series.

Table 20. *Parental outcomes after first intervention series*

Parental Behaviors	Mother's Baseline	Mother: Goal	Mother's First Intervention Series	Mother's Change	Father's Baseline	Father: Goal	Father's First Intervention Series	Father's Change
Acceptance & Warmth	43.75%	55%	91.67%	+47.92%	45%		68.33%	+23.33%
Descriptive Language	56.25%		63.33%	+7.08%	56.25%		60%	+3.75%
Follows Lead	41.25%		88.33%	+47.08%	43.25%	65.6%	83.33%	+38.58%
Maintains Extends	10%		15%	+5%	8.75%		23.33%	+14.58%
Harsh Critical	3.75%		0%	-3.75%	3.75%		8.33%	-4.58%
Intrusive Restrictive	37.5%		0%	-37.5%	23.75%		3.33%	-20.42%
Facilitative	39.69%		48.44%	+8.75%	35.31%		58.75%	+23.44%
Interruptive	20.63%		0%	-20.63%	13.13%		5.83%	-7.3%
Improvement In Quality				+29.38%				+30.74%
Parents as group domain totals and total improvement in quality for First Intervention Series								
					Parent's Baseline		Parent's First Intervention Series	Parental Change
Parental Facilitative					37.5%		61.67%	+24.17%
Parental Interruptive					16.88%		2.92%	-13.96%
Parental Improvement In Quality								+38.13%

For the child, the first series of the intervention showed a 7.36% improvement in the quality of social interactions. The child's total engagement decreased from 67.5% during the baseline phase to 65% during the first intervention series, an initial decrease of 2.5%, but his total reactivity behaviors decreased from 13.75% during baseline to 3.89% during the first intervention series, a 9.86% improvement. The total improvement in the quality of social interactions for the toddler was calculated by adding his change in engagement behaviors to his reductions in reactivity behaviors. Understanding the relationship between the parental and child behaviors was especially important during the first intervention series to explain the outcomes to the parents. See Table 21 for child and family outcomes after the first intervention series.

The child showed a 15.42% improvement in positive feedback, a 5.62% improvement in sustained engagement, a 27.08% reduction in irritable fuss/cry, and a 2.5% reduction in external distress. The total change in quality seems low because there was a 28.33% reduction in follow through. Follow through is when a parent tries to engage the child or requests action and the child follows through by attempting the task, gesturing, or vocalizing (Baggett et al., 2011). The parents were focused on following the child's lead more so he had less opportunities to demonstrate follow through. Further explanation of the importance of monitoring relational dynamics during the first intervention series are provided in Chapter 5.

The family's total facilitative and engagement performance improved from 47.5 % during the baseline phase to 62.78% during the first intervention series, an improvement of 15.28%. The family's total interruptive and reactivity/distressed performance decreased from 15.83% during the baseline phase to 3.24% during the first intervention series, a 12.59%

improvement. The total improvement in the quality of social interactions for the family was calculated by adding the improvements in parental facilitative and child engagement behaviors to the reductions in parental interruptive and child/reactivity distressed behaviors. The first series of the intervention showed a 27.87% improvement in the quality of social interactions for the family. Table 20 shows each parents' domain totals for facilitative and interruptive behaviors and the parents as a group domain total. Table 21 shows the totals for each of the child's behaviors, the child's domain totals for child engagement and reactivity/distressed behaviors, and the family as a group domain totals for the baseline and first intervention series.

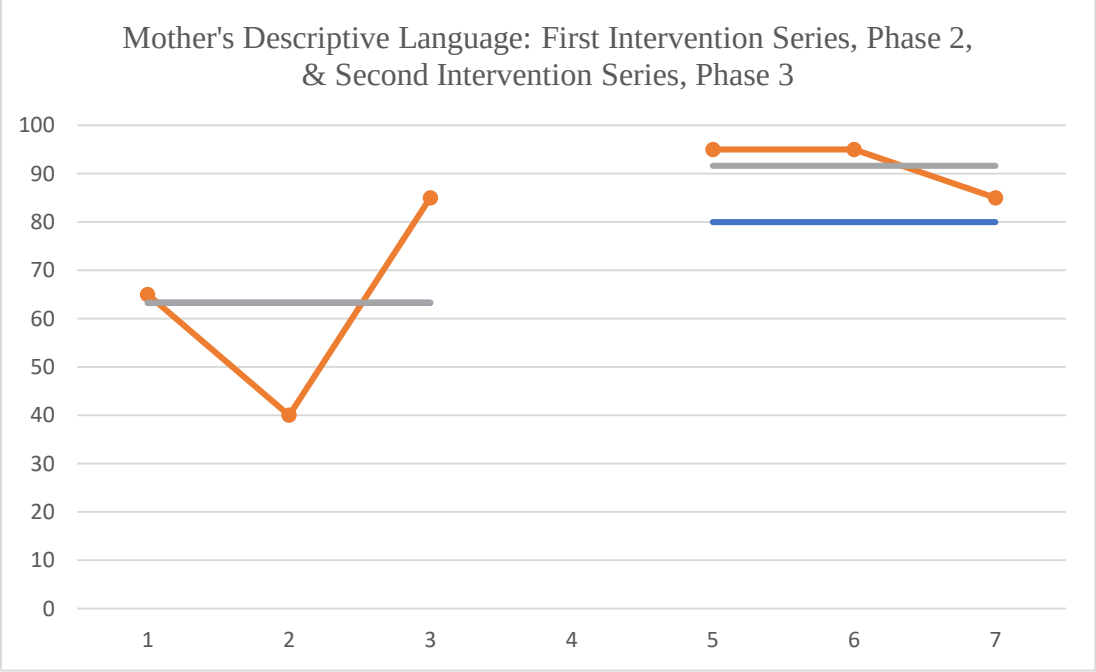
Table 21. *Child and family outcomes after first intervention series*

Child's Behavior	Baseline	First Intervention Series	Child's Change
Positive Feedback	51.25%	66.67%	+15.42%
Sustained Engagement	76.25%	81.87%	+5.62%
Follow Through	75%	46.67%	-28.33%
Irritable Fuss/Cry	38.75	11.67%	-27.08%
External Distress	2.5%	0%	-2.5%
Frozen/Watchful/Withdrawn	0%	0%	No change
Child Engagement	67.5%	65%	-2.5%
Child Reactivity distressed	13.75%	3.89%	-9.86%
Child improvement in Quality			+7.36%
Family as group domain totals and total improvement in quality			
	Family's Baseline	Family's First Intervention Series	Family Change
Facilitative & engagement	47.5%	62.78%	+15.28%
Interruptive & reactivity/distressed	15.83%	3.24%	-12.59%
Improvement in quality			+27.87%

Results of the second intervention series, Phase 3. The mother's mean performance of descriptive language improved from 63.33 % in the first intervention series to 91.67% during the second intervention series, an improvement of 28.34%. The mother's performance at her criterion level 2 goal to use descriptive language consistently 80% of the time or more

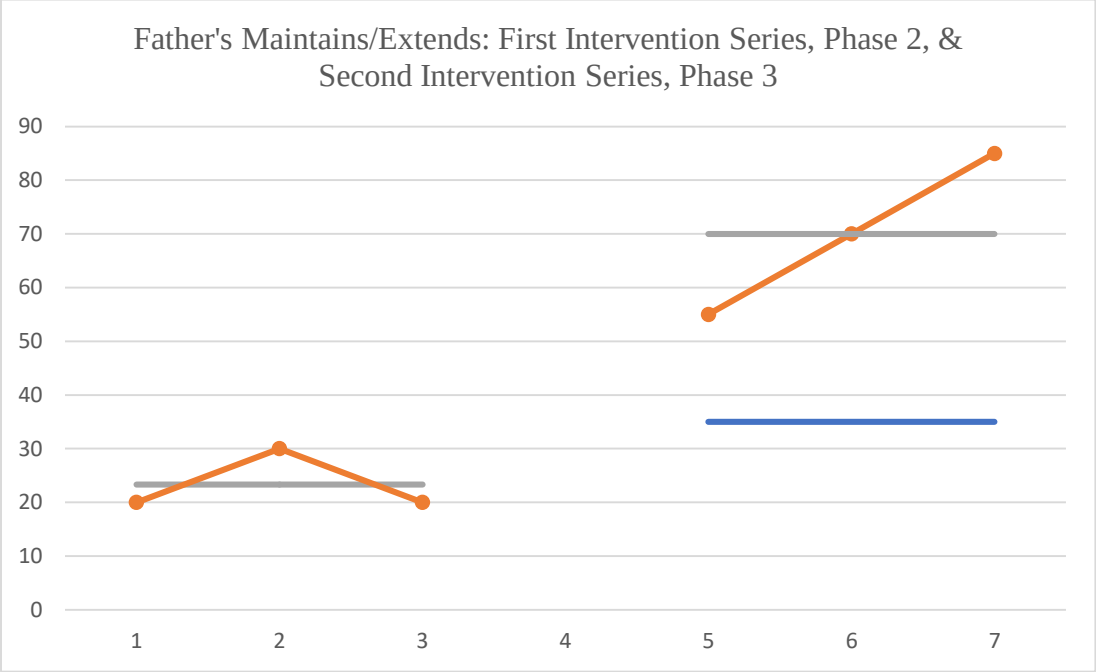
was the second demonstration of effect of the intervention for the mother. The father's mean performance of maintaining and extending the child's focus improved from 23.33% in the first intervention series to maintaining and extending the child's focus 70% of the time during the second intervention series, an improvement of 46.67%. The father's performance at his criterion level 2 goal to maintain and extend the child's focus 35% or more during the second intervention series was the second demonstration of effect of the intervention for the father. Figures 13 and 14 show line graphs for the mother's and father's performance above their criterion level 2 goals during the second intervention series. The second series of the two-parent implemented family and occupation-centered intervention showed a 26.46% improvement in the quality of the parents' social interactions.

Figure 13. *Mother's performance above her criterion level 2 goal during the second intervention series*



In Figure 13 orange data points are the mother's mean performance of descriptive language during each session, gray lines are the mean lines for each phase, and the blue line is the mother's criterion level 2 goal.

Figure 14. *Father's performance above his criterion level 2 goal during the second intervention series*



In Figure 14 orange data points are the father's mean performance of maintains extends during each session, gray lines are the mean lines for each phase, and the blue line is the father's criterion level 2 goal.

Table 22. *Parental outcomes after second intervention series*

Parental Behaviors	Mother's First Intervention Series	Mother: Goal	Mother's Second Intervention Series	Mother's Change	Father's First Intervention Series	Father: Goal	Father's Second Intervention Series	Father's Change
Acceptance & Warmth	91.67%		100%	+8.33%	68.33%		90%	+21.67%
Descriptive Language	63.33%	80%	91.67%	+28.34%	60%		78.33%	+18.33%
Follows Lead	88.33%		100%	+11.67%	83.33%		96.67%	+13.34%
Maintains Extends	15%		61.67%	+46.67%	23.33%	35%	70%	+47.67%
Harsh Critical	0%		0%	No change	8.33%		1.67%	-6.66%
Intrusive Restrictive	0%		0%	No change	3.33%		1.67%	-1.66%
Facilitative	48.44%		88.33%	+39.89%	58.75%		83.75%	+25%
Interruptive	0%		0%	No change	5.83%		1.67%	-4.16%
Improvement In Quality				+39.89%				+29.16%
Parents as group domain totals and total improvement in quality for First Intervention Series								
					Parent's First Intervention Series		Parent's Second Intervention Series	Parental Change
Parental Facilitative					61.67%		86.04%	+24.37%
Parental Interruptive					2.92%		0.83%	-2.09%
Parental Improvement In Quality								+26.46%

The second intervention series showed a 22.22% improvement in the quality of social interactions for the child. The child's total engagement performance improved from 65% during the first intervention series to 86.11% during the second series, an improvement of 21.11%. The child's reactivity/distressed performance decreased from 3.89% during the first intervention series to 2.78% during the second series, a 1.11% improvement. See Table 23 for child and family outcomes after the second intervention series.

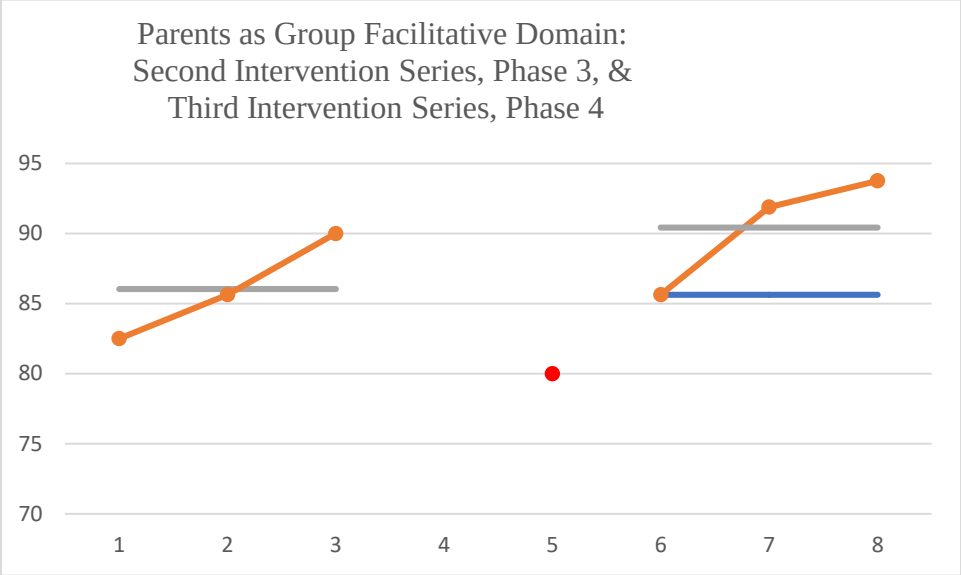
The family's total facilitative and engagement performance improved from 62.78% during the first intervention series to 86.06% during the second intervention series, an improvement of 23.28%. The family's total interruptive and reactivity/distressed performance decreased from 3.24% during the first intervention series to 1.48% during the second intervention series, a 1.76% improvement. The total improvement in the quality of social interactions for the family during the second intervention series was 25%. The second series of the family and occupation-centered intervention showed a 25% improvement in the quality of social interactions for the family with a toddler with ASD. Table 22 shows each parents' domain totals for facilitative and interruptive behaviors and the parents as a group domain total. Table 23 shows the totals for each of the child's behaviors, the child's domain totals for child engagement and reactivity/distressed behaviors, and the family as a group domain totals for the first and second intervention series.

Table 23. *Child and family outcomes after second intervention series*

Child's Behavior	First Intervention Series	Second Intervention Series	Child's Change
Positive Feedback	66.67%	78.33%	+11.55%
Sustained Engagement	81.87%	95%	+13.13%
Follow Through	46.67%	85%	+38.33%
Irritable Fuss/Cry	11.67%	6.67%	-5%
External Distress	0%	1.67%	+1.67%
Frozen/Watchful/Withdrawn	0%	0%	No change
Child Engagement	65%	86.11%	+21.11%
Child Reactivity distressed	3.89%	2.78%	-1.11%
Child improvement in Quality			+22.22%
Family as group domain totals and total improvement in quality			
	Family's First Intervention Series	Family's Second Intervention Series	Family Change
Facilitative & engagement	62.78%	86.06%	+23.28%
Interruptive & reactivity/distressed	3.24%	1.48%	-1.76%
Improvement in quality			+25.04%

Results of the third intervention series, Phase 4. The third intervention series had one outlier session, the first session of Phase 4, that was excluded from the phase mean calculations. The parents' mean facilitative performance improved from 86.04% during the second intervention series to 90.42% during the third intervention series, an improvement of 4.38%. The parents' consistent performance at their criterion level 3 goal of facilitative social interactions with their toddler 85.63% of the time or more was the third demonstration of effect of the intervention for each of the parents' CCD. Figure 15 shows a line graph of the parents' stable performance at or above their criterion level 3 goal during the third intervention series. See Table 24 for the parent's individual and group outcomes after the third intervention series.

Figure 15. *Parents' performance at or above their criterion level 3 goals during the third intervention series*



In Figure 15 orange data points are the parents' mean facilitative domain performance during each session for phase 3 and 4 respectively, gray lines are the mean lines for each phase, the red data point is an outlier session, and the blue line is the parents' criterion level 3 goal.

Table 24. *Parental outcomes after third intervention series*

Parental Behaviors	Mother's Second Inter-vention Series	Mother: Goal	Mother's Third Inter-vention Series	Mother's Change	Father's Second Inter-vention Series	Father: Goal	Father's Third Inter-vention Series	Father's Change
Acceptance & Warmth	100%		95%	-5%	90%		93.33%	+3.33%
Descriptive Language	91.67%		93.33%	+1.66%	78.33%		86.67%	+8.34%
Follows Lead	100%		91.67%	-8.33%	96.67%		96.67%	No change
Maintains Extends	61.67%		83.33%	+21.66%	70%		83.33%	13.33%
Harsh Critical	0%		1.67%	+1.67%	1.67%		5%	+3.33%
Intrusive Restrictive	0%		0%	No change	1.67%		1.67%	No change
Facilitative	88.33%	85.63%	90.83%	+5.2%	83.75%	85.63%	90.42%	+4.79%
Interruptive	0%		2.5%	+2.5%	1.67%		4.17%	+2.5%
Improvement In Quality				+2.7%				+2.29%
Parents as group domain totals and total improvement in quality for First Intervention Series								
					Parent's Second Inter-vention Series	Parent's Goal	Parent's Third Inter-vention Series	Parental Change
Parental Facilitative					86.04%	85.63%	90.42%	+4.38%
Parental Interruptive					0.83%		3.33%	+2.5%
Parental Improvement In Quality								+1.88%

The child showed a 1.11% improvement in the quality of his social interactions during the third intervention series. The child's total engagement performance improved from 86.11% during the second intervention series to 88.89% during the third series, an improvement of 2.78%. The child's reactivity/distressed performance increased from 2.78% during the second intervention series to 4.45% during the third, a decline of 1.67%. Individual and contextual factors influencing the child and family's performance during the third series are discussed in the next paragraph. See Table 25 for child and family outcomes after the third intervention series.

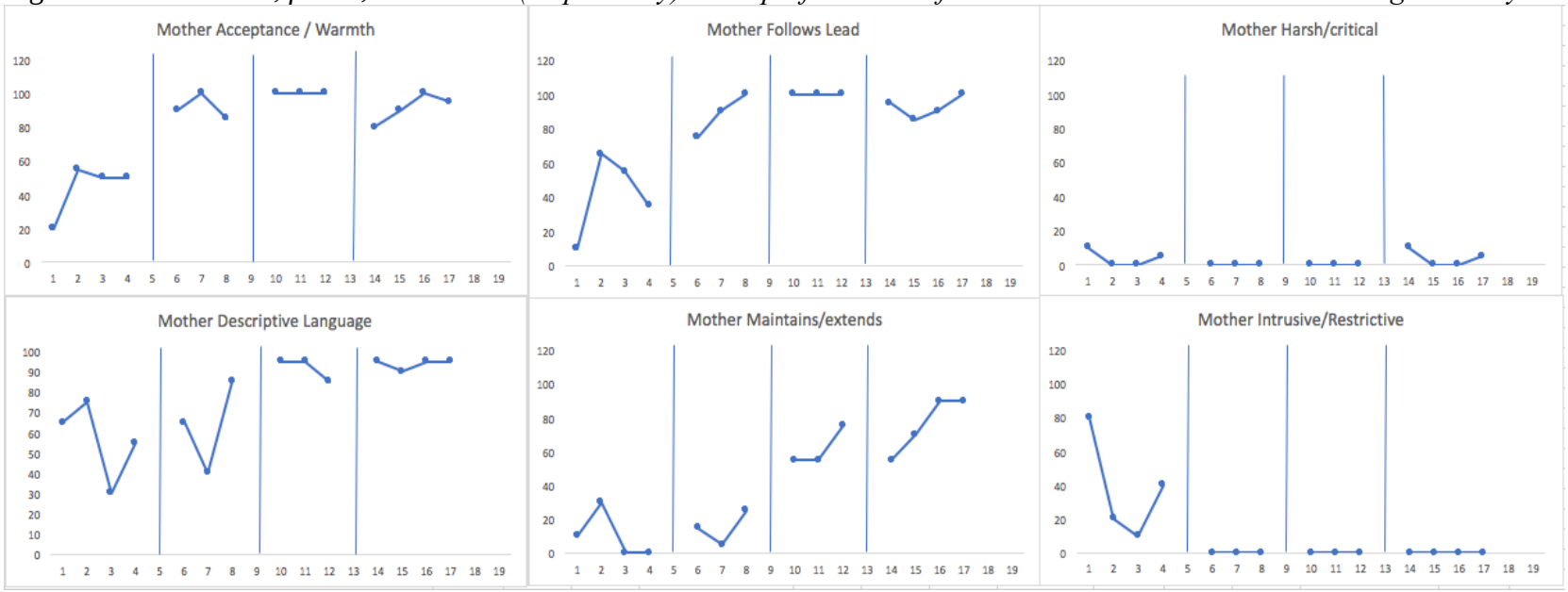
The family's facilitative domain and child engagement performance improved from 86.06% during the second intervention series to 90.05% during the third intervention series, an improvement of 3.99%; however, there was no improvement in interruptive or reactivity/distressed domains. During this phase, the family had multiple external factors adding family stress such as the maternal grandmother going into hospice care, multiple family members having the flu, Fezzik transitioning into preschool, and Fezzik was having some additional health issues. These factors were demonstrated in the data because the family showed a 2.23% increase in interruptive and reactivity/distress domains. Despite the stresses of this time point the family maintained the quality of their social interactions during the intervention series and showed an overall improvement of 1.76% in the quality of social interactions for the family during the third intervention series. Table 24 shows each parents' domain totals for facilitative and interruptive behaviors and the parents as a group domain total. Table 25 shows the totals for each of the child's behaviors, the child's domain totals for child engagement and reactivity/distressed behaviors, and the family as a group domain totals for the second and third intervention series.

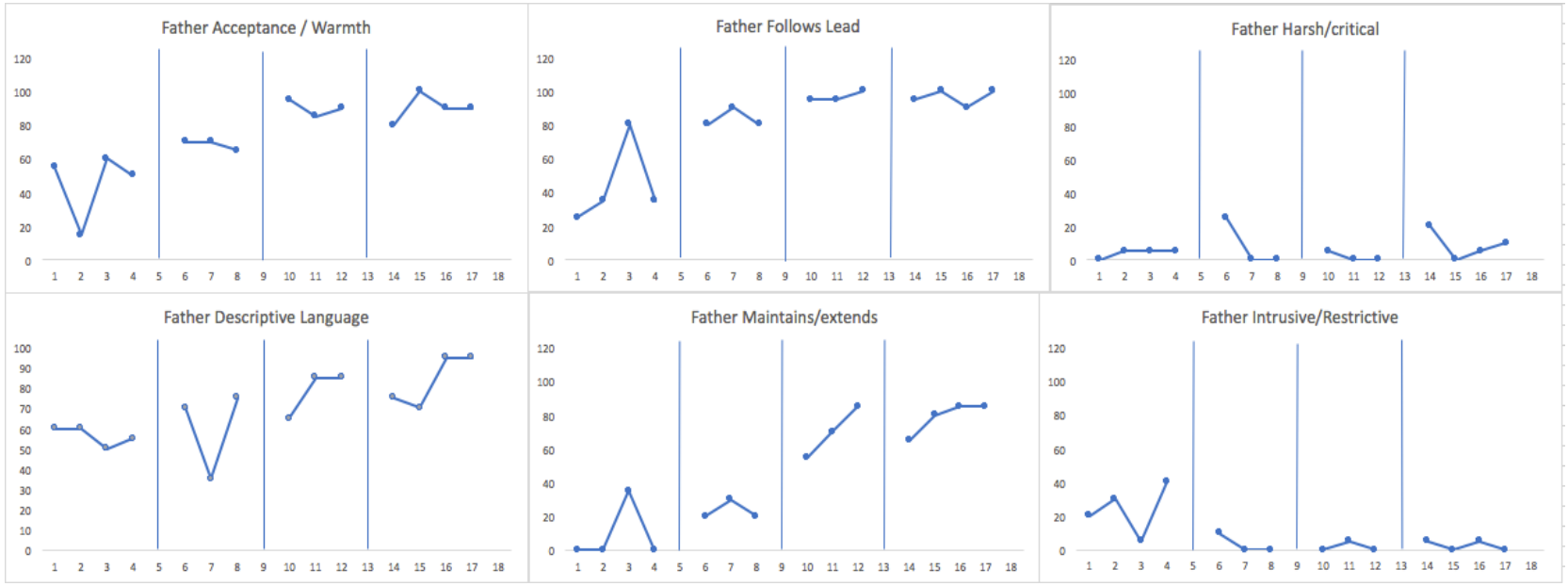
Table 25. *Child and family outcomes after third intervention series*

Child's Behavior	Second Intervention Series	Third Intervention Series	Child's Change
Positive Feedback	78.33%	81.67%	3.34%
Sustained Engagement	95%	96.67%	1.67%
Follow Through	85%	88.33%	3.33%
Irritable Fuss/Cry	6.67%	8.33%	1.66%
External Distress	1.67%	5%	3.33%
Frozen/Watchful/Withdrawn	0%	0%	No change
Child Engagement	86.11%	88.89%	+2.78%
Child Reactivity distressed	2.78%	4.45%	+1.67%
Child improvement in Quality			1.11%
Family as group domain totals and total improvement in quality			
	Family's Second Intervention Series	Family's Third Intervention Series	Family Change
Facilitative & engagement	86.06%	90.05%	+3.99%
Interruptive & reactivity/distressed	1.48%	3.71%	+2.23%
Improvement in quality			+1.76%

Results of all four phases. Line graphs of the mother's, father's, and child's mean individual performance of each behavior at sessions during the study can be seen in Figure 16.

Figure 16. *The mother, father, and child's (respectively) mean performance of each behavior at each session during the study*




Father Acceptance / Warmth
Father Follows Lead
Father Harsh/critical
Father Descriptive Language
Father Maintains/extends
Father Intrusive/Restrictive


Child Positive Feedback
Child Sustained Engagement
Child Frozen Watchful Withdrawn
Child Follow Through
Child Irritable Fuss/Cry
Child External Distress

Parents' individual results and parents as group results for all phases. The intervention in this study improved the quality of social interactions 66.7% for the parents of a toddler with ASD: 1) 69.3% for the mother and 2) 64.1% for the father. Table 26 provides the mother's mean performance of each behavior during each phase and Table 27 provides the father's mean performance of each behavior during each phase. The outlier session, the first session during phase 4, was excluded from the phase 4 mean calculations.

The index of magnitude of change of the intervention for the mother was 5.16, meaning her performance of facilitative behaviors improved over five standard deviations from her initial baseline mean. The index of magnitude of change of the intervention for the father was 4.94, also almost five standard deviations from his initial baseline mean. The index of magnitude of change of the intervention for the parents as a group was 7.17, an improvement of over seven standard deviations from their collective baseline mean. The higher magnitude of change of the intervention for the parents as a group suggests that the child's exposure to facilitative behaviors was less variable when they were participating in play together with their child. Participation in play together made a greater difference in the parents' capacity to provide their child with ASD consistent, stable, and predictable exposure to facilitative social interactions, playing together with both parents mattered.

Three replications of effect of the intervention for both the mother and the father showed there was a functional relationship between the intervention and the quality of parent's social interactions with their toddler. The introduction of three different intervention start points, the three demonstrations of effect of the intervention for the mother and the father, and the overall magnitude of effect allow for confidence in the conclusion that a

functional relationship exists between the intervention and the quality of the parents' social interactions with their toddler.

Table 26. *Mother's mean performance of each behavior during each phase*

Mother's Behavior	Baseline	First Intervention Series	Second Intervention Series	Third Intervention Series	Total Change
Acceptance & Warmth	43.75%	91.67%	100%	95%	+ 51.25%
Descriptive Language	56.25%	63.33%	91.67%	93.33%	+ 37.08%
Follows Lead	41.25%	88.33%	100%	91.67%	+ 50.42%
Maintains Extends	10%	15%	61.67%	83.33%	+ 73.33%
Harsh Critical	3.75%	0%	0%	1.67%	- 2.08%
Intrusive Restrictive	37.5%	0%	0%	0%	-37.5%

Table 27. *Father's mean performance of each behavior during each phase*

Father's Behavior	Baseline	First Intervention Series	Second Intervention Series	Third Intervention Series	Total Change
Acceptance & Warmth	45%	68.33%	90%	93.33%	+ 48.33%
Descriptive Language	56.25%	60%	78.33%	86.67%	+ 30.42%
Follows Lead	43.25%	83.33%	96.67%	96.67%	+ 53.42%
Maintains Extends	8.75%	23.33%	70%	83.33%	+ 74.58%
Harsh Critical	3.75%	8.33%	1.67%	5%	+ 1.25%
Intrusive Restrictive	23.75%	3.33%	1.67%	1.67%	- 22.08%

Table 28 provides the domain totals during each phase of the study and the total changes in the quality of social interactions for the mother, father, and parents as a group.

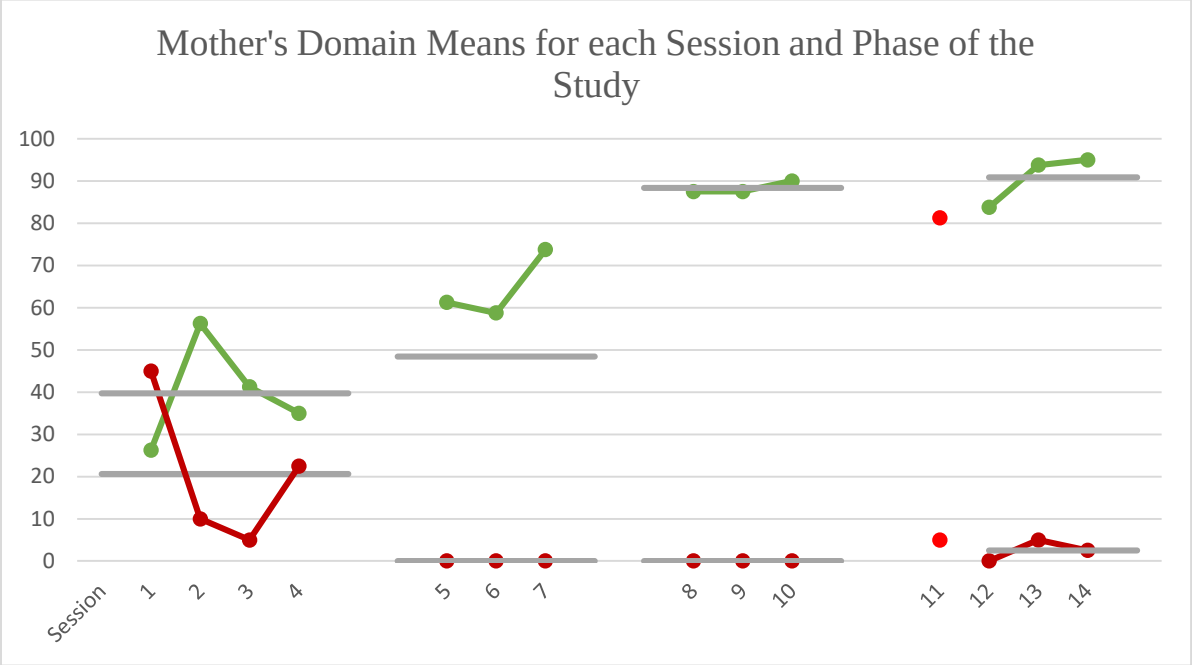
Table 28. *Domain mean totals during each phase of the study and the total changes in the quality of social interactions for the mother, father, and parents as a group*

	Baseline	First Intervention Series	Second Intervention Series	Third Intervention Series	Total Change
Mother's domain totals and total improvement in quality					
Facilitative	39.69%	48.44%	88.33%	90.83%	+ 51.14%
Interruptive	20.63%	0%	0%	2.5%	- 18.13%
Improvement in quality					+ 69.3%
Father's domain totals and total improvement in quality					
Facilitative	35.31%	58.75%	83.75%	90.42%	+ 55.11%
Interruptive	13.13%	5.83%	1.67%	4.17%	- 8.96%
Improvement in quality					+ 64.1%
Parents as group domain totals and total improvement in quality					
Facilitative	37.5%	61.67%	86.04%	90.42%	+ 53.13%
Interruptive	16.88%	2.92%	0.83%	3.33%	- 13.55%
Improvement in quality					+ 66.7%

Figure 17 provides a line graph of the mother's facilitative and interruptive domain means during each session and phase of the study. Figure 18 provides a line graph of the father's facilitative and interruptive domain means during each session and phase of the study, and Figure 19 provides a line graph of the parent's as group facilitative and interruptive domain means during each session and phase of the study.

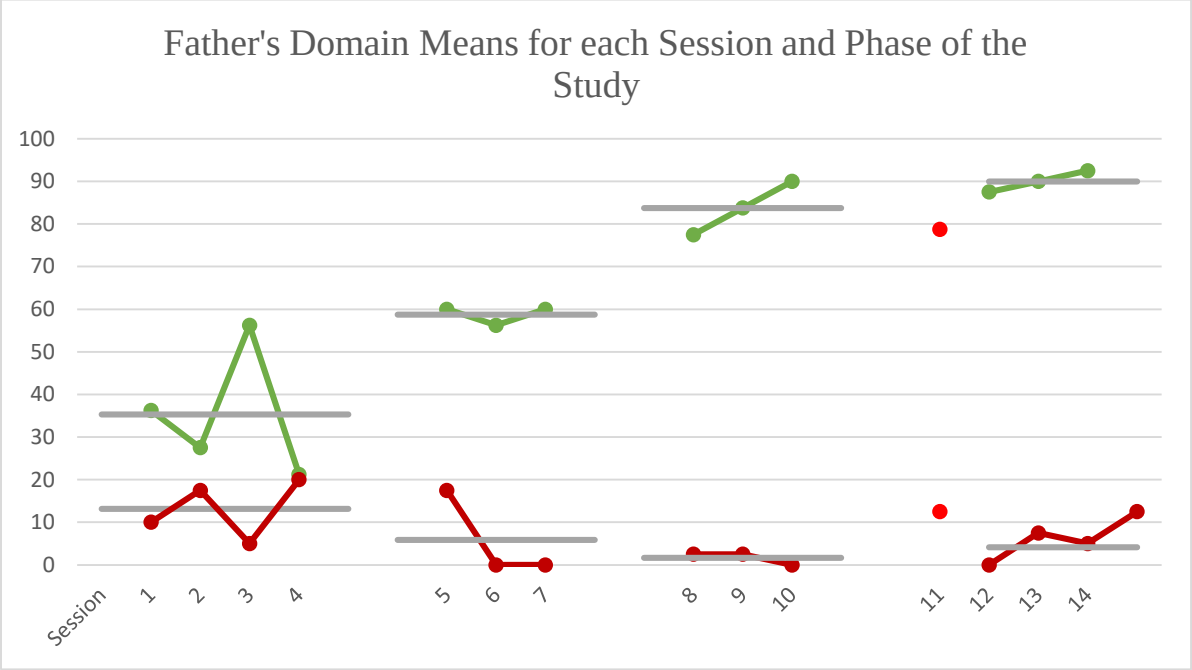
The graphs provide a comprehensive picture of how the social interaction domain means for the parents changed individually and as a parenting team throughout the phases of the study. The line graphs demonstrate how the parents' mean difference (or band of performance) between facilitative domain behaviors and interruptive domain behaviors widened as they learned new evidence-based strategies during the intervention.

Figure 17. *Mother's facilitative and interruptive domain means during each session and phase of the study*



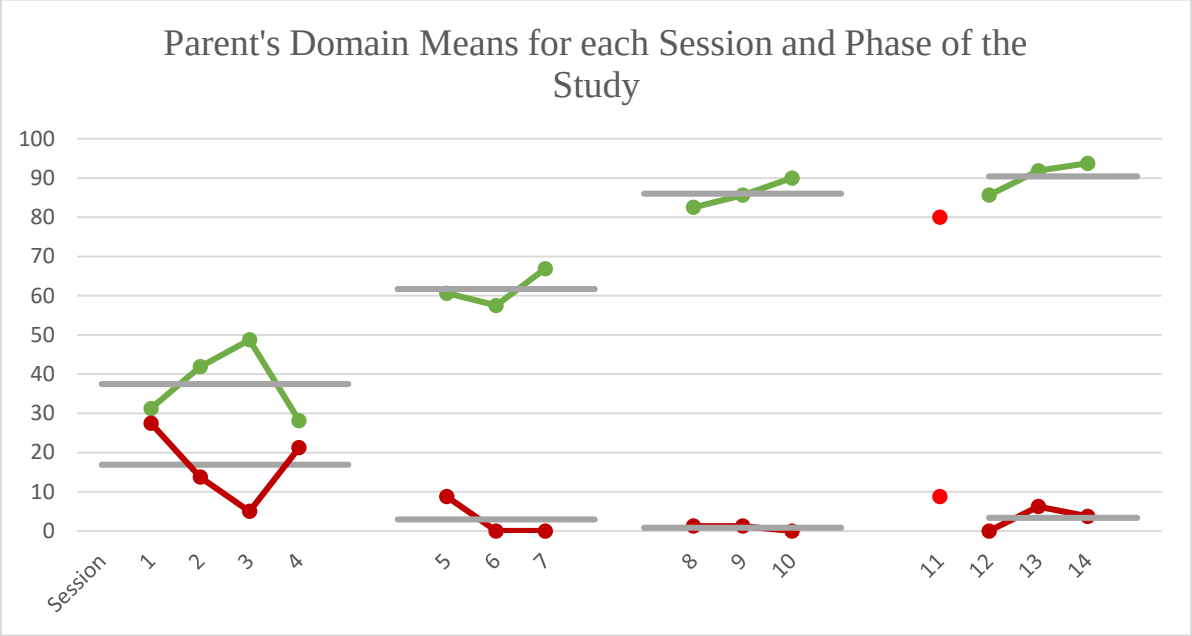
In Figure 17 green data points are the mother's mean facilitative domain performance during each session of the study, dark red data points are the mother's mean interruptive domain performance during each session, gray lines are the domain means for each phase, and the bright red data point at session 11 is the outlier session.

Figure 18. *Father's facilitative and interruptive domain means during each session and phase of the study*



In Figure 18 green data points are the father's mean facilitative domain performance during each session of the study, dark red data points are the father's mean interruptive domain performance during each session, gray lines are the domain means for each phase, and the bright red data point at session 11 is the outlier session.

Figure 19. *Parent's facilitative and interruptive domain means during each session and phase of the study*



In Figure 19 green data points are the parent's mean facilitative domain performance during each session of the study, dark red data points are the parent's mean interruptive domain performance during each session, gray lines are the domain means for each phase, and the bright red data point at session 11 is the outlier session.

Child's individual results for all phases. The two-parent implemented family and occupation-centered intervention using a coaching approach in this study improved the quality of social interactions for the toddler with ASD 30.69% during play interactions with his parents. The child demonstrated a 21.39% mean increase in engagement domain behaviors from baseline to the end of the third intervention series and a 9.3% decrease in reactivity/distressed domain behaviors. See Figure 16 (child's portion repeated again below) for line graphs of the child's mean individual performance of each behavior at sessions during each phase of the study. Table 29 provides the child's mean performance of each

behavior during each phase of the study and the total change in each behavior throughout the course of the study. Table 30 provides the domain totals during each phase of the study and the total changes in the quality of social interactions for the child.

Figure 20. *Figure 16 child's portion repeated: The child's mean performance of each behavior at each session during the study*

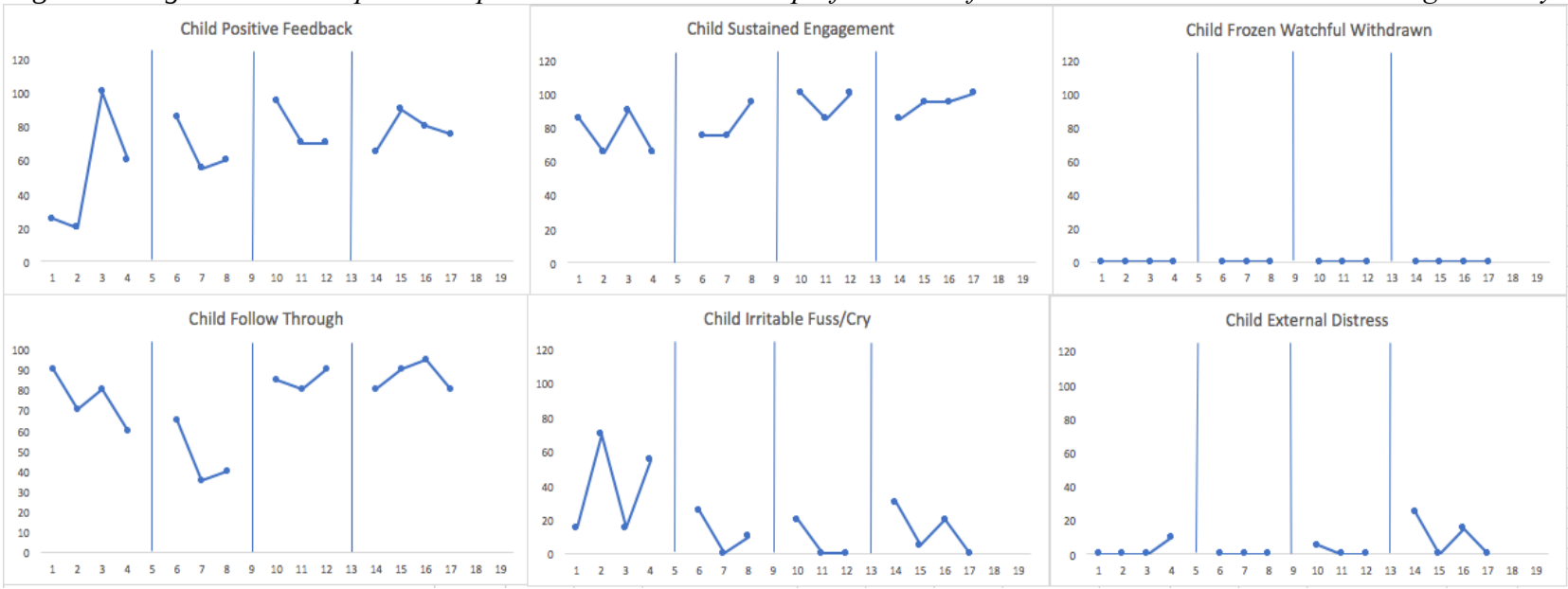


Table 29. *The child's mean performance of each behavior during each phase*

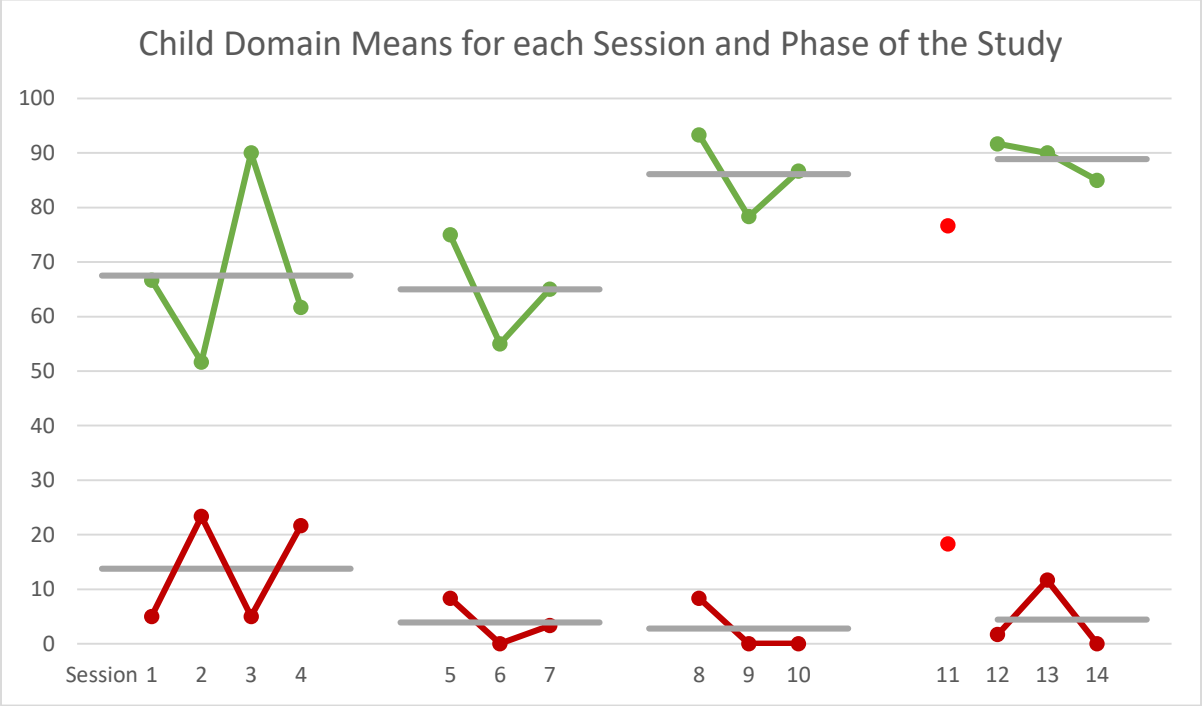
Child's Behavior	Baseline	First Intervention Series	Second Intervention Series	Third Intervention Series	Total Change
Positive Feedback	51.25%	66.67%	78.33%	81.67%	+30.42%
Sustained Engagement	76.25%	81.87%	95%	96.67%	+20.42%
Follow Through	75%	46.67%	85%	88.33%	+13.33%
Irritable Fuss/Cry	38.75	11.67%	6.67%	8.33%	-30.43%
External Distress	2.5%	0%	1.67%	5%	+ 2.5%
Frozen/Watchful/Withdrawn	0%	0%	0%	0%	0%

Table 30. *Child outcomes: child domain totals during each phase of the study and the total changes in the mean quality of his social interactions during the study*

	Baseline	First Intervention Series	Second Intervention Series	Third Intervention Series	Total Change
Child's domain mean totals					
Child engagement	67.5	65	86.11	88.89	+ 21.39
Reactivity/distressed	13.75	3.89	2.78	4.45	- 9.3
Improvement in quality		-2.5 + 9.86 = 7.36	21.11 + 1.11 = 22.22	2.78 – 1.67 = 1.11	+ 30.69

Figure 21 provides a comprehensive picture of how the social interaction domains for the child changed throughout the phases of the study. The gray mean lines on the graph demonstrate how the child's mean difference (or band of performance) between child engagement domain behaviors and reactivity/distressed domain behaviors widened as the parents learned new evidence-based strategies during the intervention. The first session during phase 4 was considered an outlier session and was excluded from the phase 4 mean calculations.

Figure 21. *Social interaction domain means for the child with ASD during each session and phase of the study*



In Figure 21 green data points are the child's mean engagement domain behaviors during each session of the study, dark red data points are the child's mean reactivity/distressed domain behaviors during each session, gray lines are the mean lines for each phase, and the bright red data point at session 11 is the outlier session.

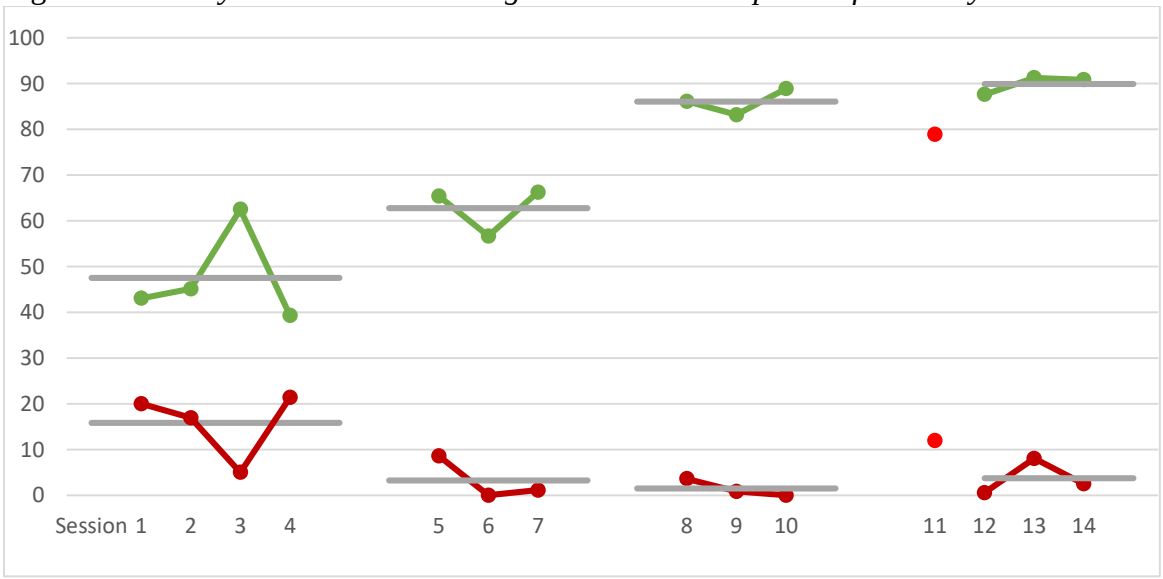
Family as group results for all phases. The two-parent implemented family and occupation-centered intervention using a coaching approach in this study improved the quality of social interactions 55.26% for the family with a toddler with ASD. Table 31 provides the domain totals during each phase of the study and the total changes in the quality of social interactions for the family as a group.

Table 31. *Domain mean totals during each phase of the study and the total changes in the quality of social interactions for the family as group*

	Baseline	First Intervention Series	Second Intervention Series	Third Intervention Series	Total Change
Family as group domain totals and total improvement in quality					
Facilitative & engagement	47.5%	62.78%	86.06%	90.05%	+ 42.55%
Interruptive & reactivity/distressed	15.83%	3.24%	1.48%	3.71%	- 12.71%
Improvement in quality					+ 55.26%

Figure 22 provides a comprehensive picture of how the social interaction domain means for the family changed throughout the phases of the study. The line graph demonstrates how the family's mean difference (or band of performance) between facilitative/engagement domain behaviors and interruptive/reactivity/distressed domain behaviors widened as they learned new evidence-based strategies during the intervention.

Figure 22. *Family domain means during each session and phase of the study*



In Figure 22 green data points are the parent's mean facilitative domain and the child's mean engagement domain performance during each session of the study, dark red data points are the parent's mean interruptive domain and child's mean reactivity/distressed domain performance during each session, gray lines are the mean lines for each phase, and the bright red data point at session 11 is the outlier session.

Secondary Research Aim 2

Feasibility of a Two-Parent Implemented Approach. This study assessed the feasibility of the intervention approach based on the following factors: 1) the duration of the intervention procedures with the family; 2) the amount of flexibility and communication required for the intervention process; 3) the approximate amount of time for the RI and research assistant to complete study tasks and procedures; and 4) the role of contextual factors in the completion of the study.

***Duration of intervention procedures with the family*.** From the time the family was enrolled to the post intervention session, the intervention study took 195 days (six and a half months) to complete. During the study, 20 home visits were completed: two pre-intervention sessions, four baseline visits, three training sessions, 10 intervention sessions, and one post-intervention visit. The pre-intervention process required 25 days, the baseline phase required 23 days, the intervention phases lasted 38, 22, and 38 days respectively, and the post intervention session was completed 25 days after the last intervention session. Twenty-four days (seven, four, and thirteen days respectively) between phases were also needed. One of the intervention sessions was considered an outlier session and is included in the days required but the data was thrown out in the behavioral calculations for that phase.

The family rescheduled six visits and the RI rescheduled one visit. Interspersed between home visits, the RI participated in four additional community visits with or for the family during their study participation: 1) a clinic visit for ADOS assessment to confirm eligibility; 2) a clinic visit around diagnostic assessment, to coordinate chart review with diagnostic clinician; 3) a community visit to attend child's first IEP meeting per mother's request; and 4) a clinic visit to connect the family with further developmental assessment per mother's request.

The number of days between study sessions ranged from four days to 15 days and the length of the phases varied from 22 days to 38 days. The variability of the length of each phase and the number of days between visits and phases throughout the study was graphed and visually analyzed by the RI to monitor for moderating factors. No relationship was apparent between the variations in the length of phases or time between sessions and the magnitude of each criterion change. Adjustments to the schedule the family needed such as a change of day or time were also considered for their potential as moderating factors. In this study, further statistical analysis was not necessary to answer the primary or secondary research questions, however, in future replications additional statistical analyses could be beneficial or necessary to examine potential moderating factors. For example, moderating factors such as time of day, day of week, or the child's disposition on the day (i.e. t-tests and ANOVA) could be examined.

Level of RI flexibility and communication required. The amount of flexibility required by the RI to implement the intervention amidst the family's changing needs was a feasibility consideration. Implementation of the study procedures alongside the additional tasks required of the RI between sessions required ongoing adjustment and communication with the family. Both of these elements would limit the feasibility of delivering this intervention with multiple families simultaneously, especially if the other family(s) required similar levels of flexibility. The more interruptions there were to routine engagement, the more communication was required between the RI and family to coordinate shared participation in intervention implementation.

Through the course of the study the RI and mother communicated via email, text, or phone at least 86 times to coordinate sessions and share additional information: 36 emails

from/to the mother, 18 confirmation emails to the mother, 31 texts from/to the mother, and one phone call to the mother.

Time spent on study tasks. The RI attempted to reflectively quantify the time required to complete tasks to implement this study; some tasks were easier to quantify time than others. To implement this study, the RI spent over 422 hours to complete nine categories of tasks. An additional two task categories, data analysis/management and communication, were difficult to quantify the amount of time spent. The research assistant spent approximately 40 hours on IPCI training, video coding, and in meetings with the RI. The RI's time spent on training the research assistant, collecting, and preparing training materials were not included in the implementation task summary. A list of the categories and approximate number of hours required to complete each category of tasks are provided for the RI in Table 32.

Table 32. *RI task categories and approximate time spent*

RI task	Approximate # hours
Video coding	42 + hours
Data entry	28 + hours
Data back-up	30-40 hours
Creation of 'High light' and 'Pause point' videos	21 + hours
Clinical note documentation	37 + hours
Research review and resource preparation between intervention sessions	20 + hours
Training session preparation (graphs and data to present to family, etc.)	27 + hours
Home visits (proposed time + travel time 2 hours per session + conversation and information sharing)	97 + hours
Data analysis and management	Difficult to quantify
Communication	Difficult to quantify

The role of contextual factors. Through the course of the study the changing demands of family life, contextual factors, and individual family member factors influenced how the intervention process unfolded both within and across sessions. Contextual factors influenced the time of day and the days of the week sessions were held, when sessions had to be rescheduled, and the sequence of the delivery of intervention elements during each session. Eight categories of factors that influenced the intervention process were identified: siblings, health, work, instrumental, pets, toddler, cultural, and environmental factors. Table 33 provides examples of factors in each of these categories that influenced the delivery of the intervention both within and across sessions.

Table 33. *Contextual and individual factors that influenced intervention delivery within and across sessions*

Categories of factors	
Siblings	Session rescheduled because sibling forgot to communicate school projects due the next day, father missed intervention element because he had to leave to take sibling to drop off letters to Santa, siblings school track outs
Health	Parent and/or child sick with a cold or flu, maternal grandmother in hospice, sleep issues/nightmares
Work	Father on call, short staffed at work, new boss
Instrumental	Running late, stuck in traffic, diaper changes, meals, data storage issues with video technology
Pets	Dogs knocking the baby gate down the stairs during sessions
Toddler	Diagnostic assessment, adjustment to diagnosis, first IEP meeting, adjustment to preschool
Cultural	Holidays and vacations
Environmental	Inclement weather: hurricanes, snowstorms.

Fidelity of a Two-Parent Implemented Approach. Coaching fidelity data was collected by the RI for 8 of the 10 intervention sessions. For one session (10% of sessions), a second coder assessed the coaching fidelity from a video-taped recording of the session. While additional sessions were intended to be recorded, this was not done because of data storage limitations of the recording equipment. The second coder and the RI achieved 85%

interassessor agreement or more with 92.31% agreement for adherence and 86.11% agreement for quality. One of the limitations of the study was that more than 10% of sessions could not be recorded and second coded.

The RI's mean adherence to the intervention across participants was 99%. The RI's mean quality of social interactions across participants was 99.5%. Table 34 shows the RI's mean adherence to the intervention and quality of delivery for each participant individually as well as the total means across participants. Deviations from the intervention procedures and quality were often a result of adjustments made due to the external factors described in Table 26. The RI found the 3-point range to rate the quality of delivery too narrow a range to capture potential variations. If the RI replicates the study, the coaching fidelity forms will be revised to use a 6 point Likert scale, instead of a 3-point scale, to measure the quality of social interactions.

Table 34. *RI's mean adherence to the intervention and quality of delivery*

	Mother	Father	Child	Total
Mean Adherence	99.25%	97.75%	100%	99%
Mean Quality	99.5%	99.75%	99.25%	99.50%

Social Validity of a Two-Parent Implemented Approach. The social validity of the pre-training procedures, the training procedures, and the intervention sessions in this study were measured to identify potential active ingredients of each step of the process. The parents' responses to social validity questions for the three training sessions were aggregated to identify the most active ingredients for those procedures. The same was done for the parents' responses to social validity questions about the intervention sessions.

Social validity of Pre-Training procedures. Social validity data about the pre-training procedures was collected once from each parent after the completion of the pre-training procedures**.** The parents as a group found the following three ingredients the most important during the pre-training procedures: 1) the interview process to help them identify and prioritize their goals; 2) choosing their goals; and 3) the joint decision making process to choose a preferred activity. Table 35 provides the rated importance of the proposed active ingredients of the pre-training procedures to the parents. The mother and father each completed a social validity form so the table provides a summary of their individual preferences. The mother and father's scores were also added together and divided by two to provide their mean preferences as a parental group. A #1 rank meant the ingredient was most important and a #3 meant it was least.

Table 35. *Social validity ratings of the parents as group, and mother and father individually of the most important active ingredients of the pre-training sessions*

Question/Ingredient	Parents	Mother	Father
Interview to identify and prioritize goals	# 1 Mean = 5.5	# 1 Rating = 6	# 2 Rating = 5
Choice of goals	# 1 Mean = 5.5	# 2 Rating = 5	# 1 Rating = 6
Joint decision to choose a preferred activity	# 1 Mean = 5.5	# 1 Rating = 6	# 2 Rating = 5
Choice of family routine	# 2 Mean = 5	# 2 Rating = 5	# 2 Rating = 5
Satisfaction with activity choice and procedures	# 2 Mean = 5	# 2 Rating = 5	# 2 Rating = 5
Values and beliefs interview	# 3 Mean = 4	# 2 Rating = 5	# 3 Rating = 3

Social validity of training procedures. Social validity data about the training procedures was collected at 100% of the training sessions from each parent**.** The parents as a group found the following four ingredients the most important to them during the training procedures: 1) review of their child's performance data; 2) review of their personal

performance data; 3) review of their partner's performance data; and 4) review of the performance data together with their partner. The least preferred ingredient of the process was being videotaped, however this step was required to provide the parents with the most preferred ingredient, data review. Table 36 provides the ranked order of importance and mean value of the proposed active ingredients of the training procedures to the group and to the mother and father individually, # 1 being the most and # 9 being the least. The parents ranked some ingredients with equal value.

Table 36. *Social validity ratings of the parents as group, and mother and father individually of the most important active ingredients of the training sessions*

Question/Active Ingredient	Parents	Mother	Father
Child performance data review	#1 (mean = 5.83)	#1 (mean = 5.67)	#1 (mean = 6)
Personal performance data review	#2 (mean = 5.67)	#1 (mean = 5.67)	#2 (mean = 5.67)
Partner's performance data review	#2 (mean = 5.67)	#1 (mean = 5.67)	#2 (mean = 5.67)
Data review together	#3 (mean = 5.34)	#1 (mean = 5.67)	#2 (mean = 5.67)
Viewing graphs of data	#4 (mean = 5.25)	#1 (mean = 5.67)	#4 (mean = 5)
Activity analysis	#5 (mean = 5.17)	#6 (mean = 3.33)	#3 (mean = 5.5)
Choice of strategy	#6 (mean = 5)	#2 (mean = 5.33)	#4 (mean = 5)
Video review with partner	#6 (mean = 5)	#3 (mean = 5)	#4 (mean = 5)
Choice of criterion level	#6 (mean = 5)	#3 (mean = 5)	#4 (mean = 5)
Video review with coach	#6 (mean = 5)	#2 (mean = 5.33)	#5 (mean = 4.67)
Choice of behavior element	#7 (mean = 4.84)	#3 (mean = 5)	#5 (mean = 4.67)
Video to help choose goals	#8 (mean = 3.67)	#4 (mean = 4.67)	#7 (mean =2.67)
Being video taped	#9 (mean = 3.5)	#5 (mean = 3.67)	#6 (mean = 3.33)

Social validity of the intervention procedures. Social validity data about the intervention procedures was collected at 3 of the 10 intervention sessions, 30% of sessions, from each parent or 33.33% of sessions if the outlier session is excluded from the calculations. Social validity of the intervention data was not collected on the date of the outlier session. The parents as a group found the following four ingredients most important during the intervention procedures: 1) participation together with their partner to learn new skills to help navigate decisions together; 2) the coaching approach; 3) the coaching delivery

style; and 4) the live video feedback. The least preferred ingredient of the process to the group was being videotaped, however this step was required to provide the parents with the live video feedback, which was one of their most preferred ingredients. Table 37 provides the ranked order of importance of the proposed active ingredients of the intervention procedures to the group and to the mother and father individually.

Table 37. *Social validity ratings of the parents as group, and mother and father individually of the most important active ingredients of the intervention sessions*

Question/Active Ingredient	Parents	Mother	Father
Participation in the process with their partner together to help them carry the skills forward together to navigate future decisions.	#1 (mean = 6)	#1 (mean = 6)	#1 (mean = 6)
Coaching approach	#2 (mean = 5.5)	#1 (mean = 6)	#4 (mean = 5)
Coaching delivery style	#2 (mean = 5.5)	#1 (mean = 6)	#3 (mean = 5.33)
Live video feedback	#2 (mean = 5.5)	#1 (mean = 6)	#4 (mean = 5)
Observation of partner's practice	#3 (mean = 5.33)	#3 (mean = 5.33)	#3 (mean = 5.33)
Feasibility	#3 (mean = 5.33)	#4 (mean = 5)	#2 (mean = 5.67)
Practicing the strategy during family routines	#3 (mean = 5.33)	#2 (mean = 5.67)	#4 (mean = 5)
Coaching on chosen strategy	#4 (mean = 5.25)	#2 (mean = 5.67)	#4 (mean = 5)
The feel of the process	#5 (mean = 5.2)	#3 (mean = 5.33)	#4 (mean = 5)
Problem-solving with the group	#5 (mean = 5.2)	#4 (mean = 5)	#3 (mean = 5.33)
Performance together	#5 (mean = 5)	#4 (mean = 5)	#4 (mean = 5)
Daily well-being	#5 (mean = 5)	#4 (mean = 5)	#4 (mean = 5)
The opportunity to participate in choices	#5 (mean = 5)	#4 (mean = 5)	#4 (mean = 5)
Amount of sleep on previous night	#6 (mean = 4.83)	#4 (mean = 5)	#5 (mean = 4.67)
Daily performance	#7 (mean = 4.2)	#5 (mean = 4.33)	#6 (mean = 4)
Being video-taped	#8 (mean = 4)	#6 (mean = 4)	#6 (mean = 4)

CHAPTER 5: HOW CAN OCCUPATIONAL SCIENCE INFORM PRACTICE?

Theories are Alive in Practice

The RI began her PhD in occupational science after almost a decade of practicing as an occupational therapist in different settings. The program readings about occupational science theories and constructs both validated and explained many of the often unspoken experiences she had had as a clinician. These experiences made it clear to her that evidence for theory was already alive in practice. Therefore, one of the tertiary contributions of this study was to offer a translation of occupational science theory and evidence-based research to intervention research design.

This section is hopefully the first of many dialogs to flesh out why the details of research with a family unit working together through occupation may have broad implications for translational research in occupational science as well as the potential to offer linkages to the health of populations. This study was one exploration of how the field of occupational science could apply the transaction meta-theoretical perspective to research and intervention. In addition to the perspectives of transaction, the design and elements of the study were informed by the developmental niche framework, the organism-environment system theoretical foundation, and the enactive approach. There are few examples of the transactional perspective informing intervention research (Fritz & Cutchin, 2017). This study aimed to demonstrate one example of its translation into practice and how intervention research grounded in this perspective can support knowledge generation. Occupation was put at the center of the intervention while contextual factors that influenced participants'

engagement were observed and documented throughout the process. Examples of individual factors include biological, sensory, motor, motivation, attention, anxiety, and executive functions (Bagatell, 2019). Examples of contextual factors include social, cultural, geographical, temporal, environmental, historical, and service delivery.

Theoretical and Clinical Reflections

Strengths and contributions of the theories are summarized. Theoretical and clinical reflections on the data are shared to provide evidence of how the theories played out during intervention. What the findings tell us about the translation of occupation-centered intervention are discussed.

Strengths and Contributions of Theories

Just as the family and the RI worked together as a team toward shared goals to enact the intervention process, the theoretical perspectives guiding the study worked similar when applied in tandem. When the limitations of viewing the situation from one theoretical lens posed barriers, the utility of another illuminated itself to support the group's understanding of what could be done to continue progress. The use of the lenses together opened communication, awareness, and conscious change amongst group members. Through sharing of past and current experiences, alongside video feedback to capture the child's responses, the perspectives of each participant informed how contextual factors influenced the family circumstances and group's experience during engagement in a learning process of social improvement together.

Value of the developmental niche framework. Use of the developmental niche framework provided a means to promptly gain an understanding of the family's situation, context, and habits at the beginning of the study and to identify a time to work with the family. The data gathered using the framework informed how to embed the intervention into

the family's home routines where practices could influence their toddler's skill development amidst their highly complex schedule. The framework also provided a means for monitoring how the choices and changes the parents made to the child's settings supported the skills he acquired and directly influenced parent child interactions.

Value of the transactional perspective. From a transactional view, the components of actions, especially in the form of habits, are seen as essential parts of understanding the human experience in a fluctuating world (Dickie et al., 2006). The family in this study had a schedule so complex they used a google calendar to keep it organized. The use of the transactional perspective dovetailed with this complexity and the use of the CCD methodology provided a way to monitor change with intricacy.

The transactional view reinforced understanding of the many contextual factors influencing the situation and opened channels of communication between participants. The mere sharing and processing of complications became an essential part of the intervention. The perspective aided the group's understanding of how individual and contextual factors influenced behaviors and decisions of participants during the intervention. The addition of technological mediation to visibly share data through video feedback, graphs, and tables, further supported the family's awareness of the relationship between contextual factors and behaviors. The supplemental mediums brought the relationships to a conscious level and encouraged reflection on what could be changed within the immediate social and physical contexts and why.

Communication between the family and RI further improved the group's understanding of the situation to support identification of changes within the group's control. This method of inquiry allowed the RI to introduce intervention concepts and strategies to the

parents and analyze the parents' interpretation of concepts as they translated them into action. Observation and analysis to monitor the effect of the parent's actions on child engagement supported the RI's ability to make coaching adjustments that helped the family yield better outcomes.

The transactional perspective harvested a deeper understanding of how to enact positive social change for the family with a toddler with ASD through the occupation of play. For example, the father said, "everyday can be therapy for Fezzik regardless of whether there is a therapist here; you gave us the tools" and the child demonstrated substantial expansion of his play repertoire. For the RI, the transactional lens alongside the methods and practice were what strengthened the understanding of the occupation of play. The use of this view and the study's focus on one family occupation with specific parameters made measureable change, learning, and growth possible.

Value of the organism environment system. The organism environment system lens helped explain the role of emotion in learning processes. It framed the value in expression of emotions with both a positive and negative valence to catalyze reorganizational processes. Life reorganizational processes can open new channels and pathways for learning, offer the opportunity for cascading of skills and development, and lead to optimal family outcomes. The lens provided an approach to consideration of the elements of occupations helpful to elicit change amongst groups and broader social systems.

Value of the enactive approach. Use of the enactive approach and requisite use of an occupation that elicited inter-individual enjoyment provided an opportunity to witness the embodied experience of group participation and its relationship to learning. The approach offered a means to coach each family member on their contributions to the coregulation of

the group to support reorganization and learning. The flexible and mutual reorganization of interactions resulted in constitution of an autonomous self-sustaining organization in the domain of relational dynamics that supported growth of all participants during the intervention process.

How the Theories Played out in Intervention

Examples from interview, video, and reflective memo data from the study were used "as a guiding force" (DeJaegher, 2013, p.6) in this reflective dialogue to provide empirical evidence for how the theories played out as the intervention process unfurled. In this "dialogue between phenomenology and science" there will be "ongoing pragmatic circulation" (DeJaegher, 2013, p.6) between examples in the data and explanation of how they provide evidence of the validity of different theories. The discourse offers one answer to the call by Schreibman and colleagues (2015) for research with toddlers with ASD that is theoretically grounded.

To begin to convey this iterative process, the first data used is a short narrative segment from the initial intervention session, in the second phase of this study. The narrative is used to demonstrate examples of the different theories in action as learning and growth unfolded for each group member and the group as a whole within and across time during the study.

Narrative from intervention session 1 begins. The RI left early to drive to the first intervention session because the roads were icy from a recent snow storm. She arrived at the family's home 15 minutes early and waited in her car outside to review notes before the session. As she waited, the father arrived home and entered the house ten minutes before the session was scheduled to begin.

Wellbeing check in: The influence of outside social contexts and forces. When the RI entered the home at the scheduled time, she did the well-being check in with the family and the father reported his boss was in town so he had had a stressful week: "The boss talked for a long time at the end of the day, that's why I'm running late." Later in the session, the father excused himself to tend to their daughter. While the father stepped out, the mother shared that the father "had hardly been sleeping that week because he gets stressed when this boss is in town" and he felt concerned about his job, especially before the holidays.

Sharing successes: Changes to the developmental niche and 'the grasp,' an expansive process of learning begins. The RI continued the well-being check in with the rest of the family as she entered the dining room area. Fezzik sat at the dining room table eating pizza and the father stood in the kitchen eating a slice as well. The RI offered to go back and wait in her car for a while so everyone could get settled, but the mother encouraged her to come into the dining room area.

The mother was eager to share photos of Fezzik and his sister with Santa. She also shared home videos recorded on her phone of Fezzik's successes since the first training session. During the first training session, the RI and parents discussed how sometimes 'less is more' when it came to toys because it can help make play more interactive. The mother shared that she had started clearing some of the extra toys in Fezzik's room, and showed the RI a video of Fezzik sitting on the floor of his room stacking with blocks. The parents were excited and said that he had started stacking blocks up to six blocks high. The family began to transition into the living room for video data collection and the mother said, "See how I've had to stack things to keep Fezzik in this area."

Evidence of transaction. At the core of Dewey's concept of transaction is the idea that living creatures are engaged in a circuit of coordination of ongoing adjustment with their environment in which stimulus and response emerge as phases of divisions of labor (Alexander, 2009). In one description of Dewey's concept of transaction he provided an example of a child (Alexander, 2009). The child is a center of activity who focuses on an object of interest and reaches toward it in a gesture of grasping. The child's felt experience when he reaches for the object influences the meaning for the child and what learning takes place. Dewey (cited in Alexander, 2009) suggested that the child's sensori-motor coordination between what he sees and reaches for occurs in a mutually influencing continuous pattern that results in "an expanding process of learning and refinement of meaning" replacing the discrete actions (Cutchin & Dickie, 2013, p.3). The changes made to the physical and social settings in the developmental niche began to support Fezzik's ability to focus on objects of interest, such as the blocks. The parent's adjustments helped Fezzik see, reach, and grasp what he could do as the center of activity with the objects, learning through experience in new ways.

The transactional view calls for understanding relations of person and world (situation) including social contexts, thus also shifts the analysis beyond the individual. Social contexts include relations with other people involved in situations. On this day, the social context included the father's boss.

The developmental niche. The developmental niche framework was used during the pre-intervention procedures to gather information on the family context and situation, 'the precursors' to engagement in this intervention study, to help inform what outside forces influenced the families' situation and the structure of their routines. Throughout the study the

parents expressed that outside forces affected their family routines because time was "structured for them due to work and school activities." The father's work as an outside force, exemplified as stressful in this case, was one of many times work or school emerged as an influence on the family's routines and the group's capacity to enact a social learning process during the intervention.

Changes in the developmental niche. The pre-intervention developmental niche interviews, baseline data collection parameters, and the first training session seemed to trigger parental adjustments to the developmental niche to support Fezzik's skill development. For example, the research design required use of a consistent setting so during the pre-intervention interviews the RI asked the parents to choose one physical setting in their home to consistently use for play during intervention sessions. Initially, Fezzik did laps around the first floor but by the first intervention session the parents implemented change to keep Fezzik in one room to practice social skill development. They set up a definable play space with a large baby gate in the living room to encourage Fezzik to stay in one place during sessions.

The parents also started to limit distractions in the play area by clearing out extra toys and auditory distractions (turned off the television and removed auditory toys). They constructed a somewhat predictable routine time each week to play with Fezzik during intervention sessions. Changes were also reflected in the number of toys out in Fezzik's bedroom. The intervention aimed to empower parents to shape family contexts in ways that could provide Fezzik an appropriate amount of physical and social stimulation to support his opportunities for routine practice. After the first training session, it was already apparent that the family had begun to make simple changes to the physical settings.

Narrative continues: goal and strategy review. At this point of the intervention the father was working on a goal to follow Fezzik's lead and the mother was working on a goal to be more accepting and warm. Together they were practicing the strategy to 'make play interactive' with Fezzik.

Video data collection begins. The video began with Buttercup (Mommy), Westley (Daddy), and Fezzik in the living room to start Mommy/Daddy playtime. Fezzik sat in a laundry basket facing Mommy. Daddy sat on the opposite side of Mommy, on the floor behind Fezzik. Fezzik looked up at Mommy, smiled, and let out a strained laugh.

"One, two, threeeee, boooom . . ." Mommy counted, then dumped Fezzik out of the laundry basket onto the tan carpet floor.

"Woooow," said Daddy as he smiled at Fezzik and clapped loudly. Mommy clapped too. "Yay," said Daddy cheerfully.

Fezzik crawled out of the basket onto his feet, looked to the left toward Daddy as Daddy clapped loudly, turned his head to the opposite side to glance at Mommy, then turned away.

Daddy reached his hand out to Fezzik and said, "High Five!"

Fezzik ran across the room as Daddy said, "Come here, high five."

Fezzik climbed onto the couch and the parents said, "Uh oh" in synchrony.

"Whatcha got now?" said Daddy, as Fezzik grabbed a foam sword and looked away from his parents over the back of the couch. Fezzik turned again and sat on the couch to watch Mommy and Daddy as he mouthed and chewed on the handle of the sword.

Daddy crawled over to Fezzik on the couch and immediately reached out his hand to him and said, "Can I see your sword?"

As Daddy approached, Fezzik turned his back to him and started to jump on the couch with the foam sword in his mouth.

"You're not allowed to jump on the couch, you know that, no sir," said Daddy to Fezzik. "Sorry, I'm gonna get no points for this, but you can't jump on the couch," said Daddy as he picked up Fezzik around the waist and lifted him off the couch and onto the floor. Daddy, Mommy, and the RI all laughed.

"Come here, come ride with me," said Mommy as she tapped the laundry basket.

Fezzik walked across the room toward Mommy and climbed back into the basket.

"Will you sit?" said Mommy. Fezzik sat in the laundry basket with his back to Mommy, facing the opposite direction.

As soon as Fezzik sat, Daddy said, "Oh, Daddy's turn," as he rushed over and sat on the opposite side of the basket from Mommy in front of Fezzik, facing both Fezzik and Mommy. He quickly said, "You want to go?" as he signed "Go" with his hands.

Daddy looked at Fezzik, placed his hands on the laundry basket, and said "hey" as Fezzik looked up at him. Fezzik turned his gaze away from Daddy momentarily, looked up at him, then turned his body toward Mommy as he vocalized, "Uh,uh."

"Hold on," said Mommy.

"Did you change your? Oh," said Daddy as he laughed and smiled.

"Say, just kidding," said Mommy laughing as Fezzik turned to face her instead of Daddy while seated in the basket. Fezzik raised his eye brows as if amused, chewed on the foam sword, and held a crinkly soft book.

"I've never seen him do that before," said Daddy.

"One, two, threeaaaeeeee," said Mommy as she pushed the basket back and forth.

"Wooooo," said Daddy.

Mommy and Fezzik made eye contact as she said "Boom," and turned the basket on its side so Fezzik could crawl out onto the floor.

"Yay," said Daddy as he clapped loudly and Mommy joined in to clap too.

Fezzik climbed out of the basket onto the floor and immediately ran across the room toward the coach holding his book. He climbed onto the couch, and sat to watch Mommy and Daddy, as he flipped pages in his book back and forth and hummed.

Enactive account of autism: Evidence of a different embodiment in ASD. In this segment, Fezzik's mother and father were seated with Fezzik between them. In DeJaegher's (2013) enactive account of autism he discussed the different embodied experience of individuals with ASD, and the importance of studying their social interaction processes to understand the connection between motoric/perception differences and social/emotional aspects. Neurological and sensorimotor differences may underlie the social interaction difficulties and differences in participatory sense-making for individuals with ASD (DeJaegher, 2013). Differences in eye tracking and attention to social stimuli (Klin et al., 2003; Shic, et al., 2011) as well as decreased attention to the motion of other humans (Blake et al., 2003) are found in children with ASD. In this case, the position of both parents in relation to Fezzik's movement allowed him to maintain awareness of position with greater ease.

The connections between Fezzik's sensori-motor differences, such as eye tracking, and the relationship to moving and positioning of social agents within his natural social environment were observed and investigated as points of intervention in this study. To do so, in this session, the RI coached the parents to position themselves side by side so they could

both be in Fezzik's line of sight. When the parents were positioned beside each other to model social interactions, it was easier for Fezzik to shift his gaze to watch their interactions as they modeled them. This largely removed Fezzik's need to disengage to sit across the room so he could see both of their social cues as they engaged with each other.

Embodied learning and intersubjectivity. In Hass's book on the philosophy of Merleau Ponty he discussed how "the more one focuses on some perceptual figure, the less aware one becomes of the field or background" (Hass, 2008, p. 31). Merleau Ponty (as cited in Hass, 2008) wrote:

> To see an object is. . . (to) become anchored in it, but this coming to rest of the gaze is merely a modality of its movement. . . I close up the landscape and open the object. I continue inside one object the exploration which earlier hovered over them all, and in one movement I close up the landscape and open the object (p. 31).

To do this "it is necessary to put the surroundings in abeyance the better to see the object, and to lose in background what one gains in focal figure" (Hass, 2008, p. 31). Consider application of this quote to what was happening in the last descriptive segment of Fezzik sitting in the basket looking at his mother, her facial expressions, gestures, and motor movements as she speaks and communicates during their play sequence. In this example, the 'object' Fezzik is opening awareness to is his mother and her subjective state.

The enactive account suggests that we develop a conceptual grasp of the nature of minds and intersubjectivity through affectively patterned experiences, and coordinated relations with other people (DeJaegher, 2013). Intersubjectivity and meaningful engagement between subjects is thought to be born from awareness of the subjective states of other people and the ability to be an active participant in the engagement with another. In this segment, Fezzik realized he had an opportunity to face his mother, to fix his gaze on her, anchor his attention to connect, understand and find meaning. In this situation, to see his

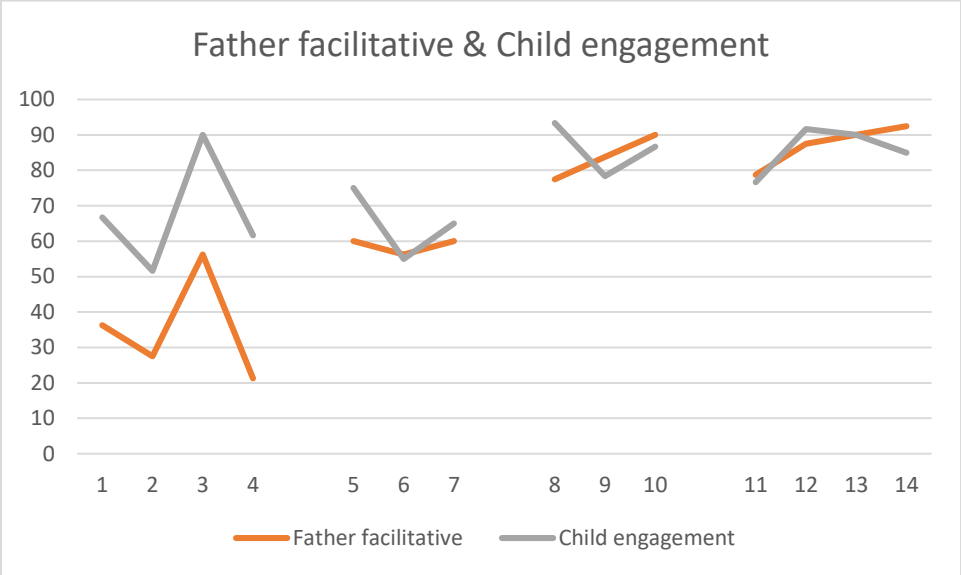
mother better, the surroundings Fezzik had to put in abeyance included his father. However, with two simple adjustments, the organism-environment system (the parents and RI) could simplify the complexity of the figure-background for Fezzik and foreground his perception of the social interaction processes between his parents.

In this session, the RI emphasized coaching Fezzik's parents on how attention to positioning can open opportunities for Fezzik to observe and focus on the coordinated subjective states of multiple meaningful social agents - both parents. The parents' initial positioning on opposite sides of Fezzik forced him to drastically shift his gaze, sometimes 180 degrees, to anchor his eye contact on either of them to share positive feedback. However, if his parents positioned themselves beside each other, Fezzik could give them both positive feedback without disengaging from either one of them.

Evidence of transaction and learning through occupation. From the transactional perspective, important parts of occupation are meaning, learning, growth, morals, and social improvement (Cutchin & Dickie, 2013). Since deficits in social interaction are one of the core features of ASD, the transactional perspective was intentionally chosen to demonstrate the potential of occupation to position families with children with ASD as capable of resilience, adaptation, and growth through shared engagement in occupation. This segment demonstrates an example of growth for Fezzik. Dewey suggested that knowing different ways of responding to a situation, this is growth and growth is a deepening of meaning and a knowing of different alternatives of action (Fesmire, 2003). As Fezzik looked at the option to face his father and choose that direction to continue the play scheme, he demonstrated learning as he acknowledged the alternative, and instead, chose to turn and face his mother. Based on how closely related Fezzik's engagement was with his father's facilitative

behaviors during the baseline session (see Figure 23), this subtle change in direction for Fezzik demonstrated a deepening of meaning for him and choice of alternative action, an expansion of his play repertoire.

Figure 23. *Father's facilitative behaviors and child's engagement behaviors*



Video data collection continues. Daddy immediately crawled over to Fezzik and said, "I'm" then paused his language as he kept crawling closer to Fezzik.

Fezzik turned away onto his knees, his back to Daddy, and looked over the back of the couch as he covered his ears.

"Gooonnnaa getchyou getchyou," said Daddy as he tickled Fezzik on the couch.

Fezzik turned to face Daddy, flopped his back onto the couch, and turned his body to slide off the couch onto the floor.

Daddy looked at Fezzik, put his hands out to him, and said, "want up?"

Fezzik walked away.

"No, ok, where are you going? Are you gonna get up and go for a ride again?"

Fezzik held his book and ran across the room to the trampoline that was in the farthest corner away from Daddy and Mommy.

Daddy turned to Mommy and said, “You know what he is doing, what he always does.”

Fezzik jumped on the trampoline and turned his back to Mommy and Daddy.

Mommy and Daddy both walked over to the trampoline.

“What are you doing?” said Mommy.

Fezzik dropped to his knees, the book still in his hands, and turned the pages of the book as he let out a fussy cry.

“Hey, you want to look at the animals?” said Mommy to Fezzik as she squatted down beside the trampoline, pointed at the picture in the book, and said “you see the monkey, and the elephant, and the puppy, woof woof?”

Fezzik listened as she said monkey, but with each animal Mommy named he turned his body farther and farther away from her.

“And the frog?” said Mommy? “Ribbit Ribbit Ribbit.” Mommy pushed on the trampoline and made Fezzik bounce up and down on his knees. “Are you a frog?” she said as he bounced facing away from her and quickly crawled off of the trampoline.

“What are you doing?” said Mommy.

“Where are you going now?” said Daddy.

Fezzik walked across the room to the couch. Daddy followed him, but Fezzik quickly turned and ran back to the trampoline to bounce on his knees.

Timing of actions matter, foci for intervention. The transactional lens focuses on more than action because the qualities and context of actions, like timing and place, matter tremendously in the process (Dickie et al., 2006). During this session the importance of timing, place, and positioning were key points of coaching to help the parents understand Fezzik's behaviors, such as when he turned or walked away from them. The first video narrative above exemplified how Fezzik often watched his parents' interactions when he disengaged. During analysis of the baseline sessions, the RI noted that Fezzik often walked away from engagement to self-organize or self-regulate and then sometimes came back. She coached the parents to give Fezzik a little time, to perhaps, count to ten in their head and continue to have fun with each other. She suggested that the parents model social interaction for Fezzik while he self-regulated and watched how they engaged together. For example, modeling two to three repetitions of engagement in interactive play sequences as Fezzik watched, to see if he would come back to the interaction on his own. If he didn't, then they could transition to follow his lead to the new activity he chose. The RI also coached the parents on adjusting how animated they were to help Fezzik remain regulated and engaged in their interaction. Using the volume amplitude tool on the video feedback, the RI was able to show the parents how Fezzik often disengaged to self-regulate if they were both too highly animated at the same time, such as clapping loudly.

Place of action matters, foci for intervention. At this session, the RI modeled and demonstrated how Fezzik's behavior changed when she sat across from him looking at books rather than side-by-side. When the RI *quietly* sat face to face with Fezzik, he could easily make eye contact with her and see what she was doing. When she did so he spontaneously traded books with her and shared his toy. The parents commented, "I'm surprised he is

letting you sit there, and that he gave you his book." The RI explained that positioning of social agents, combined with watching and waiting, could encourage spontaneous communications and bids for attention from Fezzik. The RI elucidated that waiting for Fezzik to engage or communicate, and smiling when he looked at her, gave him a chance to initiate engagement. Furthermore, giving him a choice increased both his motivation and attention given to her. The parents again reported "they were surprised Fezzik did not move away."

Family reorganization as organism environment system. In the organism-environment theory, the organism and environment belong together, forming a unity that cannot be studied separately in respect to psychological processes (Jarvilehto, 2000). The key concept of analysis in this system is the result produced by behavior (Jarvilehto, 2000). From this point of view, behavior is not in the organism: it is a process involving the whole organism-environment system. Through analysis of the system of experience in segments such as this one, the relationships between the behaviors were analyzed and reorganized to produce different results. As the RI analyzed the video observations of interactions, she observed changes in how the organism acted (movements, changes in body positioning). Through careful analysis of videos, it was clear they were indicators of what direction the whole system could take during intervention to achieve the results of interest. During the intervention process the RI consciously observed the relationships of the organism-environment system together to let them guide the direction of her intervention coaching.

The importance of monitoring emotions during learning processes. In the video segment, the father's comment, "Where are you going now?" was a sign that he was getting slightly frustrated with Fezzik's disengagement. After the first intervention session, the RI analyzed the data and it validated the father's frustration that Fezzik's sustained engagement

had slightly decreased by 1.3 %. The data also revealed that the parents each met their first criterion level goals at the first intervention session. The father's baseline mean was 43.75%, his criterion level goal was 65.6%, and he followed Fezzik's lead 80% during the first intervention session. This looked promising at first glance but analysis of the relationship between the behaviors showed that the increase in the father following Fezzik's lead may have been initially too much for Fezzik. So, instead of Fezzik showing improvement, he showed mild regression in engagement.

This seemed frustrating to the parents and some of this frustration was reflected in the data. The data revealed increased harsh critical comments from the father during the first intervention session. Outside forces, such as the father's report of a very stressful week at work, could have been a factor, as well as frustration with Fezzik's disengagement or lack of eye contact when he tried to follow his lead. The father's maximum for harsh/critical comments during baseline was 5 % and his percentage during the first intervention session was 25%. By studying the social interactions with the parents, the RI was able to guide the parents on how to subtly change their behaviors to deliver the strategy in a way that would help Fezzik maintain his engagement and 'repair' without withdrawal or disengagement. At the next sessions, the RI coached the parents on strategies to elicit different responses from Fezzik. The RI reframed her language and description of what it meant to follow Fezzik's lead and encouraged the parents to pause, watch and wait, and then join in Fezzik's play within his view to follow his lead. In many ways, this reorganization of the task/social environment into an organism environment system opened positive channels for learning.

The RI's opportunity to explain this to the parents and point out examples on the videos helped them maintain the emotional quality of their social interactions with Fezzik

and reduce their frustration. The timing of this feedback to the parents was critical to their interpretation and successful delivery of the evidence-based strategy to elicit Fezzik's sustained engagement. The RI also changed how she delivered the video feedback and at the next two sessions, the father's harsh critical comments decreased to 0% and Fezzik's sustained engagement reached 95% by the third intervention session in that series.

Example of translation of transaction in intervention research: Placement of feedback. After the first intervention session, the RI realized she had to find a way to address increases in interruptive behaviors, while maintaining a strength-based approach. The RI decided the relationship between the parents' behaviors and the child's responses, and vice versa, merited a modification to the delivery of the video feedback to give the parents the opportunity to see those relationships play out. For this reason, the RI changed the format of the video feedback from 'Highlights' to 'Pause points.' The 'Pause points' approach allowed the parents to view their own interruptive behaviors even if the RI did not directly point them out. For the second intervention session and all sessions thereafter, the RI played the full video and paused it periodically to discuss the relationship between behaviors with the parents as well as the influence of positioning and space.

Further Examples of Theory Translated to Practice Throughout the Study

The examples of theory and clinical reflections provided thus far were a description of the intervention process around a brief three-minute piece of narrative data. Provision of a full narrative of the process for all 20 home visits during the intervention was not possible. However, this section provides additional examples of theory from the remainder of the intervention period. Through use of the transactional perspectives, study of the complexity of change during intervention amidst multiple life narratives was possible. To enact group change, the participants functioned as a center of action together to decide on what steps each

member could take to achieve the shared goal. Some of the more salient reflections from the process offer a broader understanding of the historical context, conditions, and elements of the intervention that imparted change and social development for the group.

Transaction embedded in research design: Connections between procedural choice-making, habitus, deliberation, and growth. This study was designed to engage group members in deliberation at decision-making time points to discuss potential courses of action, to make decisions together, and then test the actions. These steps were embedded into the design to support the social validity of the intervention and the potential to realize optimal family outcomes. Fesmire (2003) quoted Dewey's definition of deliberation as "a dramatic rehearsal (in imagination) of various competing possible lines of action… [It] is an experiment in finding out what the various lines of possible action are really like" (p. 69). Shared responsibility to look at the alternative options in a situation and to choose a direction that helped the majority to have opportunities for growth and to reach their potentials proved highly beneficial in this study.

Growth does not necessarily increase capabilities, but it leads to acknowledgement of alternatives. From a Deweyan perspective, we develop an imagination to anticipate the effects to help and use moral deliberation as a measurement of the alternatives of action. The choice of the alternative is about enhancing capacities. As we continue to deliberate, we become better and better at looking at our options in a situation and making a choice that will result in the best outcome (Fesmire, 2003). The intervention engaged the parents in this shared decision making process to help them practice this skill together in hopes it would help them navigate future decisions and transitions for their toddler with ASD.

Through deliberation through parental choice making together, learning, growth, and exploration of alternative lines of action to change their developmental niche occurred beyond the goals of the study for the family. Through methodological rigor, measurement, and documentation of the relationship between changes, the family's growth could be more deeply examined. The family grew to acknowledge another option to pursue a diagnosis, accessed preschool as a supportive learning environment for Fezzik, and accepted more support from extended family members. The benefits of the contextual changes to support growth for Fezzik may be best viewed by sharing a temporal perspective on the combined influence of these factors on Fezzik's broader development.

Prior to the study, when Fezzik was 18 months old, Fezzik had a developmental screening, which included the Mullen Scales of Early Learning (Mullen) and an ADOS. Fezzik was delayed on the fine motor, expressive and receptive domains of the Mullen (See Table 38). He was also suspected to have ASD and the parents were put on a waiting list for a diagnostic assessment. The family pursued services while waiting on the diagnostic assessment from the referred provider. Due to insurance coverage limitations service provision was delayed, but at 24 months they obtained consistent services for Fezzik. He received feeding therapy, speech therapy, and occupational therapy in his home for eight months while they continued to wait on a diagnostic assessment. At 30 months Fezzik was enrolled in this study. An ADOS assessment was completed with him and he was suspected to have ASD. During the baseline phase of the study, the family was introduced to alternative means to pursue a diagnostic assessment.

Through awareness of alternative lines of action for pursuing a diagnosis, the family was able to obtain testing for Fezzik at 32 months old, prior to the first intervention sessions

of the study. Following the diagnostic assessment, the family provided the RI with Fezzik's assessment reports to offer a temporal picture of his development the year before the intervention study. Fezzik and his parents participated in the intervention portion of this study for four months; the day following study completion, the parents volunteered for more developmental testing through a different research study. The Mullen was completed with Fezzik, now 37 months old, and the parents shared the assessment reports with the RI to examine Fezzik's changes in broader developmental domains during study participation.

The combination of the intervention and the adjustments the parents made to their developmental niche, the physical and social settings, parenting practices, and social interactions resulted in a shift in Fezzik's developmental trajectory from non-development and regression of skills prior to this intervention to development in visual reception, fine motor, receptive language, and expressive language skills. Table 38 provides a temporal view of Fezzik's change in trajectory. Fezzik appeared to show regression of skills during the year prior to enrollment, but after four months of his family's added participation in the study and the parents' adjustments, Fezzik began to show developmental gains in several areas again.

Table 38. *Temporal information on child's development*

Timeline of child's age, level of services, developmental assessments, and age equivalents indicating periods of nondevelopment, regression, and development						
Child's age at time of assessment	18 months	18-24 months	24 months	32 months	32-36 months	37 months and 9 days old
Level of services child received at each time point	2 SLP sessions, services stopped due to denied insurance	No services due to lack of insurance coverage	OT, SLP, and feeding therapy, each one time a week in the home			
					Caregiving teams and toddlers study – 5 months	
Child's developmental age equivalent on Mullen developmental assessment domains at two time points before the study and the day after study completion						
Visual Reception	20 months			14 months	Family participates in intervention portion of study for 4 months	15 months
Fine motor	17 months			17 months		26 months
Receptive language	11 months			8 months		11 months
Expressive language	8 months			7 months		12 months

Additional contextual considerations. After each session the RI documented individual and contextual factors in her clinical notes that influenced parental behaviors during sessions. When present in the video data, they were easier to address with the parents during the next session using the observable data. The IPCI coding framework and data analysis process were especially valuable at times when there were stressors from outside contextual factors. The video feedback supported reflection on how these forces influenced family members' facilitative and interruptive behaviors during interactions. The intervention was strength based so the goals targeted helping the parents improve facilitative skills. However, in the coding framework, some facilitative behaviors were not counted if they occurred in the same thirty-second-time segment as an interruptive behavior. Therefore, the RI coached the parents on how to practice their facilitative behavior goals while simultaneously removing or decreasing interruptive behaviors triggered by contextual factors.

Providing the parents with an understanding of the relationship between facilitative and interruptive behaviors was critical to their understanding of how to optimize Fezzik's opportunities to freely participate in the learning process and in inter-individual coordination. The parents' removal of intrusive/restrictive teaching strategies provided Fezzik with increased opportunities to be an active participant in learning, increased his engagement with toys, and provided him with more opportunities to learn from his parents' social interactions. The parents simultaneous use of acceptance and warmth, animation, and encouragement as Fezzik engaged with toys supported the development of positive social feedback loops for Fezzik.

After the RI analyzed each session's video, she utilized the time between sessions to review research on infants and toddlers with ASD and identify language that might resonate more clearly with the parents' adult learning styles. At times, simple means of reframing the language or the resources chosen provided the parents with a richer understanding of how they could modify their actions together to yield better family outcomes. The use of videos gave parents repeatable opportunities to observe how their first approach to action influenced Fezzik's behavior. Use of video data during coaching provided the parents with a visual tool to support reflection and understanding of the relationship between their actions and family members' behaviors. For example, the mother said, "it helped us be more receptive and to recognize certain behaviors and respond without the negative reaction from Fezzik." Taken together, the parents' reflection, the RI's adjustments to feedback, and subtle changes in the parents' practices supported habit changes for the group toward quality family interactions.

The monitoring of family members' behaviors and emotional tone paired with active feedback to the parents on their delivery of the strategies within their natural home context were key to yielding positive parent and child social outcomes.

Occupation and the role of emotion: An opportunity for reorganization and learning. From the organism environment system view, emotion was generally defined as "a process of reorganization (integration-disintegration) of the organism-environment system expressed most clearly in relation to the realization of the expected behavioral result" (Jarvilehto, 2000, p. 56). One of the greatest points of learning for the group was the value of emotion to provide information on where to focus reorganization. An emphasis on understanding which contextual factors impressed enough stress to influence the quality of family interactions at each time point was often the focus of conversation and problem solving. When negative emotions and coping strategies were visible to the parents or RI during this intervention process, they presented opportunities for successful reorganization (integration-disintegration) (Jarvilehto, 2000). Reorganization manifested through communication of stresses and contributing factors, integration of new strategies and approaches to engagement with Fezzik, and awareness of behavioral habits to change. The use of video data as a visual support made this learning process possible for all group members and presented opportunities for awareness of relational dynamics. Shared observation of relational dynamics during engagement encouraged conscious habit change of behaviors for group members as we worked to realize and manifest the group goals together.

The use of video data collection also helped capture Fezzik's perspective and emotional responses in the study. There were several sessions when the parents said they had almost cancelled because Fezzik seemed tired before the RI arrived at the home. However,

when the RI walked up to the door for the intervention, Fezzik seemed to perk up. The RI observed that during sessions the video equipment acted as a cue to Fezzik that he would get his parents' undivided attention to play with him for at least ten minutes or more. The methods were designed to capture the child's perspective but in the process, they became a tool to support his understanding, development, and expression of interest in playing with his parents.

Fezzik's emotional responses were one demonstration of the utility of using the organism environment as system theoretical approach with children with ASD. Fezzik's excitement to play with his parents and the RI's role as a cue or catalyst to encourage the play time were important for the maintenance of the cooperative system, the family and RI, to facilitate Fezzik's practice of social interaction skills. Initially, the father indicated that Fezzik "was the one who needed to learn, not them," but on a social validity form he later commented that "all parents should learn to play well with their kids" with ASD.

Occupation, the Role of Emotion, and Power Forces and Structures

The opportunity for reorganization and learning was more challenging during the intervention process when the source of negative emotions was a power structure or force outside of the group's direct control. The most striking example of this was how a political contextual factor, health insurance coverage, posed enough frustrations and barriers to the family that they considered large scale reorganization. The family was interested in ABA services for their son and in the state where they lived, insurance companies were mandated to cover ABA services for children with ASD. The company for which the father worked was based in another state, a state that did not require health insurance companies to cover ABA. Therefore, ABA for Fezzik was not covered by the family's health insurance plan. When the family learned this, they considered alternative lines of action to obtain more services for

Fezzik. At one point the father said, “what should I do, get another job?” Health insurance coverage posed barriers to service provision and added parental stress.

Discussion about larger political and contextual factors such as health insurance took substantial time and dialog to understand and navigate. Fortunately, the parents discussed these issues towards the end of intervention sessions, rather than when we were focused on interacting with Fezzik. The role of these forces were not only out of Fezzik’s control but beyond his cognitive developmental level. Communication about contextual factors of this nature that influenced the family’s situation, emotional tone, focus, and engagement during social interactions were evidence of the transactional perspective during the intervention process.

Occupation, Stress, Sleep, and Rhythm Capacity for Social Interaction

When the parents were influenced by stressful circumstances, at times it affected both their sleep and their ability to regulate their rhythm capacity during social interactions (DeJaegher, 2013). The intervention social validity forms asked the parents about their sleep. The parental responses did not offer much fruitful information, however the parents’ comments during conversations informed when their sleep was interrupted by stressful circumstances. For example, the mother shared that the father had not been sleeping due to stress at work. When Fezzik’s maternal grandmother went into hospice care, the mother shared that she was having trouble sleeping and “had a nightmare that it was Fezzik who had cancer” instead of her mother. The influence of stress on sleep and its relationship to rhythm capacity during social interactions may be important points for future investigation.

Use of the enactive approach. The RI used the enactive approach and figures, graphs, and videos to show the parents the relationship between Fezzik’s engagement behaviors and their facilitative behaviors to help them understand how their own level of

self-awareness and self-regulation was often related to that of their toddler's, and vice versa. The information provided the parents with concrete examples of how coregulation occurred and was demonstrated in the behaviors between family members.

When there were fewer stressors from outside factors during the intervention process, facilitative learning was more observable because it was easier for the parents to coordinate their behaviors to sustain coupling with each other and Fezzik. What resulted was a sort of relational autonomy amongst group members. When each social agent in the group could maintain their regulation and autonomy during relations facilitative behaviors were maintained and the group's scope for sharing quality interactions expanded (see Figure 22, p. 125).

Figures 23 (p. 147) & 24 (p. 162) show the father's and mother's facilitative behaviors graphed with the child's engagement behaviors and Figure 25 (p. 162) shows the parents' facilitative behaviors graphed with the child's engagement behaviors. The graphs show the level of variability in the parents' performance during the baseline phase and how that performance stabilized individually and together through the phases of the intervention. The graphs also show the difference in how the child's behaviors were correlated with each of the parents' facilitative behaviors. For example, Figure 23 (p. 147) shows how closely Fezzik's engagement behaviors were related to his father's facilitative behaviors during the baseline phase.

Figure 24. *Mother's facilitative and child's engagment behaviors*

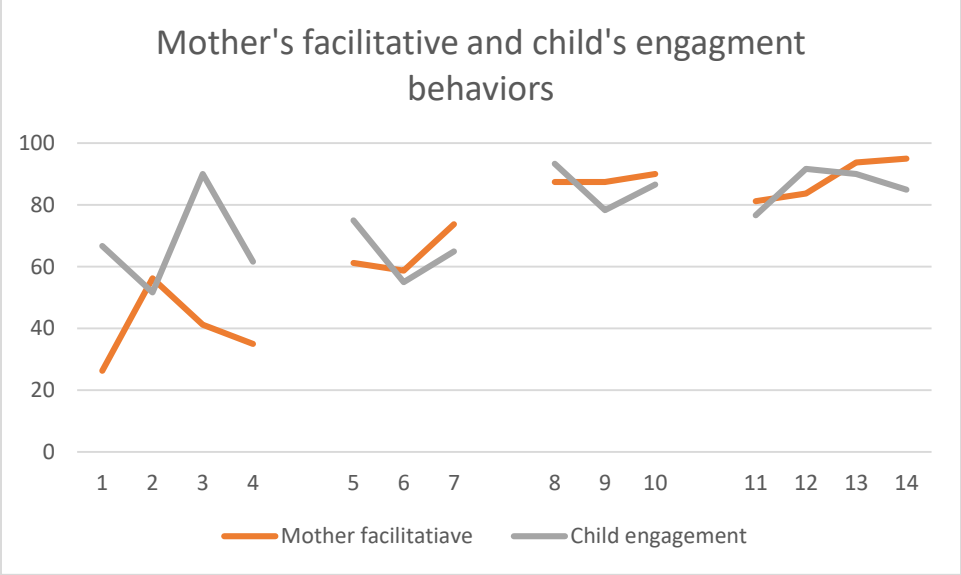
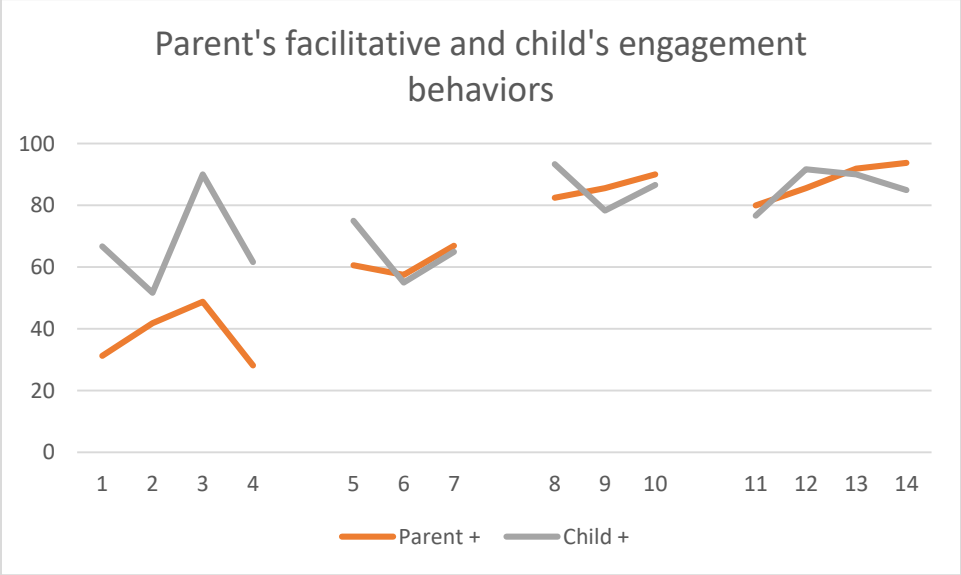


Figure 25. *Parent's facilitative and child's engagement behaviors*



What do the Findings Tell Us About Occupation and Translating it to Practice?

Occupation and Generalization

For the same reason intervention yields better outcomes when delivered within natural contexts, such as family home routines, intervention translates to better outcomes when delivered within the natural context of an occupation. Occupation-centered intervention

encourages contextualized practice to support stabilization of skills, mastery, and eventual adaptability. This is one reason why in this study generalization of skills occurred in certain contexts but not others. For example, generalization of skills occurred in the context of the relational dynamics/social setting of the mother, father, child triad as well as physical settings/contexts. By nature, social skills are an adaptive skill so they are more difficult to generalize. Where Fezzik was able to demonstrate generalization was in the context of the same relationships he had practiced the skills during the intervention process, with his mother, father, and occasionally his sister. The social setting and social dynamics of the relationships were generalized to different physical settings where the same social support was embedded in the interactions. The way the parents learned to modify and set up the physical settings of daily life also generalized to some of the different physical settings within the home, such as Fezzik's bedroom, where the parents shaped the physical and social settings inhabited to influence the skills Fezzik acquired.

Limitations to generalization due to the complexity of occupation. Despite Fezzik's improvements in play skills and multiple developmental domains during this study, he did not show improvements in some other areas of occupation, such as feeding or bowel management. These occupations were complex and influenced by too many factors for the family to translate skills to manifest change and improvement without more support. The RI was not able to offer careful analysis, and the same type of action, practice, and intervention with these occupations to enact positive change with the group. Communication about the issues, discussion about the complexity of potential factors involved and potential strategies were offered for the different occupations. However, without use of the same methods and

practice with the family, results that were quantifiable, observable, and consistent were not yielded in the same way that change in the occupation of focus, play, was made possible.

Occupations with Certain Elements for Target Populations

The enactive approach for families with toddlers with ASD, demonstrated the value of selecting occupations with certain elements as a central medium for change with target populations. In this study, from an enactive approach, if the child with ASD was going to learn social skills, the occupation centered in the intervention had to be one in which Fezzik could observe his parents engaged in inter-individual enjoyment. Family engagement in the occupation also had to offer opportunities for Fezzik to experience observational social understanding of meaningful social agents, in this case parents, enjoying and modeling interactions. The occupation had to invite the parents to demonstrate their interactional coordination, rhythmic capacity and enjoyment in participatory sense-making to encourage ongoing motivation for shared engagement (DeJaegher, 3013) of both parents and the child.

Organism Environment System, Occupations with Certain Elements

From the organism in environment view, activity is the most basic characteristic of any system (Jarvilehto, 2000). Therefore, to begin change of the family system in this study, the family had to start intervention with the most basic activity possible, an occupation like play that Fezzik could 'grasp'. To be a medium for change, the occupation also had to yield positive emotions between family members during engagement. This was a key starting point for a group intervention within a family system if the intervention was to have the capacity to lead to further family reorganization and development (Jarvilehto, 2000; Spinoza, 1677).

Participant Choice of Occupation with Specific Qualities and Elements

To support group motivation and skill development in target populations, participants may benefit from socially valid steps in intervention to identify occupations with certain

elements as the medium for change. Choice of meaningful occupations with certain emotional qualities and contextual elements can be key ingredients to the success of intervention. When carefully monitored, the emotional tone during the embodied experience of group participation can support reorganization, the magnitude of outcomes, and the development of all group members. In this study, the magnitude of outcomes for the parenting group were larger through participation together than for each individual parent. Intervention focused on family participation together in an occupation with positive affective qualities and shared social elements offered more predictability, less variability, and more stable development of social capacities for the group members through practice together.

CHAPTER 6: DISCUSSION

This study examined whether a two-parent implemented family and occupation-centered intervention using a coaching approach improved the quality of social interactions of a family with a toddler with ASD. Overall, the results of the study indicate that the intervention yielded positive social interaction outcomes for the family in this study. Both the parents and the toddler demonstrated improvements in the quality of their social interactions together while engaged in a preferred family occupation.

The first part of this discussion considers why the two-parent implemented approach supported optimal family outcomes through review of examples from the data. The feasibility, fidelity, and social-validity of intervention from this approach are considered. Suggestions are provided for study modifications that could enhance replication. Future directions and contemplations on variations of replication are discussed. In closing, final conclusions are offered about the contributions of the study, potential implications, and next steps.

Benefits of a Two-Parent Implemented Approach

Optimal Family Outcomes for Four Reasons and More

This study proposed that the two-caregiver implemented approach could yield optimal family outcomes for four reasons: 1) multiple skilled social models for positive affect sharing; 2) social support for stress reduction and skill acquisition; 3) increased dosage of intervention through routine family practice; and 4) generalization. The analysis of both quantitative and qualitative data showed that doing the intervention together offered

advantages for these reasons and more. Participation in the intervention experience and the study data reflected the value of an intervention approach with social support embedded into the design. In addition to the hypothesized benefits, the study revealed that for this family, a multiple caregiver approach also decreased the variability and increased the stability of facilitative interactions the parents provided to their child. This meant increased predictability of engagement in quality social interactions for the child with ASD. Given that ASD is considered a disorder of prediction (Sinha, et al., 2014), this unexpected finding of the study reinforced why making routine family participation in preferred occupations together may be a key ingredient of interventions targeting expansion of social skills for toddlers with ASD.

Multiple skilled social models for positive affect sharing. Thelen (2000) explained that social skills are largely learned by watching multiple social actors transact in the environment. Collection of videos of Fezzik during playtime with his parents provided many examples of him learning from his parents in this way. Fezzik repeatedly embraced opportunities to watch his parents engage in positive affect sharing, even when only observing them and not engaged in the direct interaction. As described in Chapter 5, initially, Fezzik often disengaged from play interactions to walk across the room and sit on the couch to watch his mother and father interact. Over time his parents learned strategies for modeling their interactional coordination for Fezzik that also sustained his social engagement with them as he watched and learned from their social interactions.

The use of video data in this study provided the RI and family with repeatable opportunities to observe Fezzik's patterns of interaction and learn how to work together to reposition social agents to help Fezzik engage with his parents in positive affect sharing.

Through establishment of predictable play routines, Fezzik learned from his parents' communication as they engaged in intersubjective affect sharing. The parents also learned to attend to Fezzik's responses and vocalizations and notice the subtle ways he was already communicating with them. Fezzik began to initiate clear communication with his parents to request that play sequences continue by signing more or offering them toys. The parent's priorities at the start of the study included "to be able to communicate with Fezzik and for Fezzik to be able to communicate with them and understand them." They also wanted "Fezzik to come to them to communicate his wants and needs." By the end of the intervention the parents reported they thought Fezzik understood most of what they said to him and that they had "seen him begin to communicate his wants and needs in clear ways by requesting with objects or gestures and some vocalizations." Through opportunities to practice with both parents, Fezzik began to share and express his own affective experiences and preferences in new ways.

Social/spousal support. Throughout the study the parents offered support to one another and the social validity questionnaires provided a measureable way to capture the importance of this to the parents. The questionnaires asked the parents if they thought participation in the process together would help them carry the skills forward to navigate future decisions. The father and mother gave this question the highest rating and the father added the following quote on the form: "Together forces us to continue. We would not at all be nearly as successful without each other to lean on, encourage each other, and develop little moments to share to continuously remind us" to keep practicing the strategies.

Social/spousal support for stress reduction. During the intervention process, spousal support seemed key to stress reduction, understanding, and new meaning making. Social support from the RI was also helpful. Through review of clinical notes from sessions alongside coded data, a pattern emerged that when the parents were stressed, it seemed to limit their rhythm capacity (DeJaegher, 2006) and their ability to flexibly integrate new evidence-based strategies into practice. At stressful times their habituated patterns of interacting sometimes took over and they had more difficulty following Fezzik's lead, encouraging his autonomy, and recognizing facilitative teaching opportunities during interactions. It was at those times that the parents were more likely to engage in interruptive parental behaviors such as harsh/critical comments or restrictive behaviors and to become frustrated if Fezzik did not respond to their initial bids for engagement. Interruptive parental behaviors limited Fezzik's autonomy, and according to DeJaegher (2013), the autonomy of social agents must not be destroyed during social interactions for the expansion of rhythm capacity in social skills to occur. The additional social support from the spouse and RI at stressful times offered facilitative ideas from multiple social agents of actions the parents could take to encourage positive feedback from Fezzik, sustain his engagement, and connection with them.

Sometimes one parent had to momentarily excuse themselves from the intervention session to deal with a family situation. The parent remaining with the RI often offered an explanation of what had drawn their partner's attention away from the session. The parents' communications of this nature presented a means of spousal support to one another that provided the RI with a better understanding of the family context at sensitive, stressful, or complicated times. Spousal support and participation together buffered the impact of stressful

factors to help the parents maintain facilitative interaction rhythms with Fezzik and each other. The data on the magnitude of effect of the intervention for the parents' facilitative behavior domains individually and together demonstrated this. As the quality of their family interactions improved, they showed less interactional problems, even when contextual stressors were present.

Social or spousal support to expand rhythm capacity. The enactive approach suggests that people with ASD do not fully lack flexibility, but its scope is reduced (DeJaegher, 2013). One of the reasons interpersonal engagement is challenging for individuals with ASD is because they have less flexibility in interactional rhythmic capacity due to motor and timing differences (DeJaegher, 2013) or a narrower band of optimal engagement due to sensory aversion or orientation thresholds (Baranek, 1998; Field, 1982). A multiple caregiver approach for stress reduction may help broaden this scope. Studies like this one of the social interaction processes in families with children with ASD may show one way this band of flexibility can broaden for children during development. Figures 17 (p. 118), 18 (p.119), 19 (p.120), 21 (p.124), and 22 (p.125) showed that as the parents learned strategies to increase facilitative behaviors and reduce interruptive ones, each family member's band of quality interactions widened, indicating increased rhythmic capacity.

Spousal/social support for less variability in the quality of interactions. The unexpected benefit of doing the intervention together for this family was less variability of facilitative behaviors and more predictable quality interactions. The difference in the index of the magnitude of change of the intervention for the mother's (5.16) and father's (4.94) improvements in facilitative behaviors compared to the index of the magnitude of change of the intervention for the parents' improvements together (7.17) suggested that doing the

intervention together provided less variability in Fezzik's receipt of facilitative interactions from his parents when they engaged together. The parents' delivery of facilitative behaviors was more stable through participation together, regardless of Fezzik's behavioral responses. By doing the intervention together and learning strategies for engagement in playtime together with Fezzik, the parents provided him with more predictable facilitative interactions. Given that ASD is often viewed as a disorder of prediction (Sinha, et al., 2014), this may be a valuable ingredient of early interventions with this population. The finding demonstrates the importance of studying the social learning processes in families with toddlers with ASD and the potential value of a multiple caregiver approach with families.

Family occupation-centered intervention for children with ASD focused on routine practice of quality interactions with multiple skilled facilitative social agents may help broaden children's interactional rhythmic capacity and band of flexibility. The findings of this study show that intervention that prioritizes family values and decision-making processes can support change in family health routines (Fiese, 2007) even when the family's developmental niche and schedule is highly complex. Intervention with this focus can help families provide their toddler with ASD more opportunities to be an active participant in observable routines to support development of social interaction skills.

Social/spousal support for skill acquisition. Throughout the intervention process the parents learned skills side by side. The most salient example of how joint participation influenced their skill acquisition occurred during the second training session. During this session, the RI reviewed the data from the first intervention series with the parents, and the data showed that when the parents focused on different goals, each targeting a different facilitative behavior, they also made progress on their partner's goals. They noticed that a

division of labor while engaged in the same occupation helped them realize their result of interest faster, high quality family interactions. So during this training session, the parents intentionally decided to target different behaviors so they could make progress on multiple facilitative skills. Clear identification, goal setting, and work toward their individual goals through shared engagement in occupation together improved their performance of their own facilitative goals, their partner's facilitative goals, and the groups' shared goal to support Fezzik's engagement.

Dialog and data to drive knowledge translation: Routine family practice to increase dosage in natural settings. The methodological approach in this study offered careful contextualization of intervention to match child and family characteristics. The methods supported translation of evidence-based practices into family routines to meet targeted needs. The theoretical reflections section provided examples of the importance of delivering intervention within family routines to ensure information was translated as intended. Delivery in natural contexts paired with observable video data helped make Fezzik's behavioral responses transparent to the parents. It also aided the parent's awareness of how their behaviors affected Fezzik's responses and improved translation of research knowledge to practice. The observable data illuminated whether the parent's translation of strategies into action was understood or misunderstood. Slight misinterpretations by parents made a big difference in the toddler's behavioral responses.

The ongoing data collection and analysis requisite of the methodology in this study supported a bidirectional relationship of learning for the family and RI during intervention in the natural family context. The data driven approach allowed the RI and family to engage in ongoing "communal dialogue between diverse perspectives" in order "to develop flexible,

well-tested points of view" (Fesmire, 2003, p. 49) of which strategies and modes of delivery resulted in the best outcomes for their family.

Dosage. The dosage of parent implemented interventions can be difficult to measure because as parents learn new strategies, the hope is that the parents will practice what they learn throughout their daily routines. The methods in this study provided evidence that even a small frequency and duration of professional intervention time using these methods can support positive family outcomes. Many elements of the intervention processes in this study that supported family capacity building depended more on professional time commitment to the analysis and preparation for active parent learning in natural contexts than on high frequency of professional intervention sessions. The methods in this study offer one approach for encouraging caregivers to increase dosage through routine family practice to improve family outcomes.

Generalization. Opportunities to practice play sequences with both parents supported Fezzik's generalization of expressive communication skills such as using objects to make requests to both parents and his female sibling. Fezzik also learned to use this skill in other settings with both of his parents. Although some generalization occurred, the family found it difficult to apply what they learned during play to different occupations, such as feeding or elimination. With another occupation, like family mealtime for example, the situation is different and the child's physiology, GI issues, sensory processing issues, oral motor skills, and emotional factors related to social meal time habits would have to be considered. In order to generalize the skills to a new occupation, thoughtful observation, analysis, occupation-centered intervention, and practice would be required to support generalization of skills.

Feasibility, Fidelity, and Social Validity Considerations

Feasibility: Part C Services

One of the secondary aims of the study was to assess the feasibility of this intervention approach to fit into current funding frameworks. As it was implemented, the intervention remains a feasible research approach but not a feasible intervention approach for clinicians within Part C funding in the present form. For example, prior to the recruitment of families, the RI had to have multiple skills outside of a typical interventionist's scope such as: 1) familiarity will all intervention procedures, protocols, and documentation requirements; 2) training on the IPCI coding framework; 3) video editing skills and materials; 4) statistical proficiency in Excel, 'R', or another software program for graph generation, visual analysis, and assessment of outcomes; 5) IT skills or supports for data back-up and management; and 6) extensive experience with research and practice with infants and toddlers with ASD and their families. With continued education and training, these skills could be accessible to practitioners. With further research and replication, statistical supports could be added to streamline the process. Research supports could enhance the feasibility of delivering this approach within current funding frameworks.

Fidelity

In this study there was limited variability in the coaching fidelity because there was only one interventionist. The study met internal validity standards for the percentage of sessions second coded for coaching fidelity, however the second coding of more sessions could further strengthen the internal validity of the study. In addition, use of a more sensitive, six-point, scale to capture potential variations in the quality of interactions during intervention delivery could improve the sensitivity of coaching fidelity measurement in future replications.

The coach in this study trained the parents to deliver the intervention, therefore the coaching fidelity forms were more of a quality check on the coach's delivery of the proposed active ingredients of the coaching approach. Thus, a limitation of the study was measurement of fidelity data on the parent's implementation of the strategies they chose beyond their influence on their performance of the dependent variable and on the child's behavior. The progressive and interconnected nature of social interaction strategies learned by the parents made isolated measurement of each strategy during delivery difficult to quantify since they were interwoven in practice. Further inquiry into methods for measurement of parent fidelity of implementation could strengthen future replications.

Social Validity and Procedural Choice Making

Social validity steps and measures were embedded into this intervention to examine their potential to support motivation and conscious habit change during intervention. Provision of choice making procedures at multiple time points were proposed to be an active ingredient of the intervention to support identification of socially significant goals, socially appropriate procedures, and socially significant effects (Wolf, 1978) for the participants. Bourdieu (cited in Swartz, 1997) suggested that researchers must attempt to grasp a "field as a whole rather than from the stand point of just one position within it" (p. 221). The use of video data to capture the child's affective responses alongside the parental social validity measures provided a means to assess the importance of different aspects of the approach to each family member.

The proposed importance and value of choice making was true for the family in this study. During the pretraining phase the parents rated choice of their family goals and choice of a preferred activity to be the most valued ingredients of that step of the study. The pre-intervention process that guided the parents in joining their intentions to select a preferred

activity supported the process of conscious habit change for the family because, as suggested by Reddy (2015), people's intentions are a mental state that precedes actions. Supporting the parents shared decision-making process to choose a preferred activity was a valuable step in the parent's collective action to support their child's development of social interaction capacities. Through engagement in an activity intentionally chosen and shaped by the caregivers based on their shared values, beliefs, and enjoyment, they modeled positive social interaction processes for their toddler. The parents' enactment of family values, modeled through quality interactions during participation in a valued activity supported family well-being and outcomes.

Choices were also provided at three additional decision making time points, the three training sessions. On the social validity forms for the training sessions the parents identified review of their child's performance data as the most important ingredient to them at that point in the process. The parents' choice of goals to follow Fezzik's lead supported Fezzik's opportunities for choice during the intervention and the use of video data facilitated the capture and interpretation of Fezzik's perspective through joint video review and shared observation of his behavioral responses. Procedural choice making in this study supported the social validity of the goals, procedures, and outcomes, as well as something more - habit change and growth for the family. This intervention approach may improve quality of life of families with children with ASD, improve child development, limit stress on caregivers, and improve long-term outcomes and potentials, all of which reduce medical and intervention costs if findings are translated to larger scale studies, research, and intervention approaches.

Changes in Future Replication

Based on this study, several minor changes to the procedures could strengthen the potential for positive family outcomes. The addition of advanced statistical analyses to future

replications such as correlation analyses of phase data could more precisely identify which caregiver behaviors are most highly correlated with child engagement behaviors. This data could be shared with the parents at training sessions to support their understanding of the relationship between parent and child behaviors. The information could help parents prioritize goals that could yield child outcomes faster.

During the pre-intervention phase of the study, the questionnaires about the psychology of the caregivers could be moved to baseline sessions. After each of the baseline sessions, parents could complete one questionnaire instead receiving all of them during a pre-intervention session. Inclusion of an assessment of parental learning styles to the psychology of the caregivers' assessments would aid RI planning and coaching delivery. A child developmental measure could be added after the baseline sessions and after the intervention series to offer a deeper understanding of the relationship between this approach and its impact on overall developmental domains for children with ASD. A broader developmental view was possible and obtained in this study only through chart review and fortunate timing. In future replications, the addition of a developmental measure to the protocol would be necessary to ensure that perspective be captured again.

Modifications to the coding procedures may also be beneficial in future replications. The IPCI coding framework discussed parents' use of stress reducing strategies as a facilitative behavior (Baggett et al., 2010). However, the 2011 IPCI coding manual used in this study did not define or give examples/nonexamples of that behavior element, therefore it was not coded as a parental facilitative behavior. Further investigation into how these facilitative parental behaviors could be included, coded, and measured may be a valuable addition in the future.

Child behaviors could also be coded using a framework designed for children with ASD specifically, such as the Brief Observation of Social Communication Change (BOSCC) (Kim, Grzadzinski, Martinez, & Lord, 2018). The BOSCC coding framework for parent child interactions was developed for children with ASD, therefore it could offer more sensitive measurement of intervention effects for children with ASD. Use of a framework with greater sensitivity to changes in children with ASD could offer better measurement of child improvements in specific aspects of language and communication such as child initiations. Finally, a follow-up assessment three and six months after the intervention to collect video data of the family engaged in the preferred occupation could offer information about whether the approach yields sustainable improvements in the quality of interactions for the family.

Future Directions

Due to the contextualized nature of this study and design, future replications could take on a variety of forms. Replication of the study with additional families could further assess the efficacy and feasibility of both the intervention and the methodology. Replication with the same family could focus on teaching the parents evidence-based strategies during a different occupation such as mealtime or could expand teaching strategies to additional family members such as siblings or the paternal grandmother. Replications of this nature hold the potential to build our understanding of how contextualized family occupation-centered intervention can be delivered and researched with methodological rigor. Replication of this research with additional family occupations could also expand our understanding of the embodied experience of group participation and learning during engagement in occupations with different elements.

Another offshoot of this study would be replication with a family whose child demonstrates rapid deterioration of social or language skills. In this situation, however, analysis of the occupation where the family sees a pause or regression in the child's development may be the most important starting point for intervention. With ASD being a neurodevelopmental disorder, conceptual analysis of the child's behavior at the first sign of change could make problems related to neurophysiological substrates more tractable (Jarvilehto, 2000).

Furthermore, qualitative analysis of the RI's clinical notes from intervention sessions from this study and in future replications could allow for categorization, identification, and summarization of active ingredients of the intervention that would support future replicability of the approach used in this study.

Final Conclusions

This study applied research in occupational science and therapy to the design and evaluation of an intervention process capable of identifying the most effective practices for a family based on their values, routines, and family characteristics. Overall, the study showed that a family occupation-centered coaching intervention delivered within home routines to two caregivers and their toddler with ASD can yield positive social interaction outcomes for a family. The two caregiver approach enhanced the social learning outcomes for the family through participation together. Changing criterion designs proved to be one methodology capable of systematically studying change across multiple interconnected family members. The use of procedural choice making also showed how individualization, motivation, and social validity can be integrated into intervention research. Hopefully, these findings will launch further research to prioritize multiple caregiver participation in the intervention process for families with toddlers with ASD.

A viable next step in this line of research is replication with more families. Further research with this approach could facilitate group family participation in the intervention process and inform what family supports are needed to facilitate group participation. Requisite of such changes are examination of service provision frameworks and eventually exploration of how social interaction processes can be targeted earlier in development for infants and toddlers at risk of ASD. The findings have potential implications for early intervention research, service delivery, and policy.

The study was an exploration of how theories in occupational science, specifically the transactional perspective, can be used to design intervention, inform practice, and generate knowledge. The use of a preferred occupation within a family routine as the point of entry in research (Humphry, 2016) demonstrated how family engagement in an occupation with certain elements can support improved family outcomes for target populations. The findings offer a translation of occupational science to practice and demonstrate the value in a contextualized and occupation-centered approach to intervention research.

APPENDIX A: KEY INGREDIENTS

Child characteristics
• The younger children are at the time of intervention, the greater their developmental gains and symptom reduction (Dawson et al., 2010).
• Social orienting and affect sharing have been shown to lead to socially engaged imitation and learning (Landa et al., 2011).
• Social orienting is shown to predict reduction in autism symptoms and restrictive repetitive behaviors (Landa et al., 2011).
Family characteristics
• Parental sensitivity and responsivity are shown to be predictors of child language outcomes (Rogers et al., 2012).
Instructional strategies
• Naturalistic Developmental Behavioral Interventions have shown improvements in multiple areas: IQ, verbal and language gains, joint attention, joint engagement, social and functional communication, initiation, language expression, language comprehension or receptive language, parent-child interaction or synchrony, adaptive behavior, restricted repetitive behaviors/autism symptoms, positive affect sharing or social smiling, socially engaged imitation, and social orienting (see Table 1 in text for references for each outcome).
• Collaborative identification of target behaviors influences parent participation (Stahmer et al., 2011).
• Involvement of fathers in treatment decreases child maladaptive behaviors (Stahmer et al., 2011).
• A key ingredient to intervention success is the ability to make data driven adjustments to intervention during the process. A process facilitated by frequent monitoring of progress through data collection systems to support data driven decision-making processes (Buzhardt et al., 2010).
• Choosing evidence-based interventions individualized for the child and families' needs (Buzhardt et al., 2010).
Nature of Targets
• Interventions targeting interpersonal synchrony can be a key ingredient to development of socially engaged imitation in toddlers (Landa et al., 2011).

• Intervention focused on ABA, parent responsiveness, and positive affect sharing to facilitate learning through positive emotion is shown to be a key ingredient to improving child initiations (Brian et al., 2015).
Delivery of Contexts
• Intervention utilizing natural parental relationships (like parent-mediated interventions) lead to positive changes in child interaction, comprehension, parent synchrony with their child, child communication with their parents, shared/joint attention, and reduction of severity of autism symptoms (Oono et al., 2013).
• Group parent education components in intervention decrease stress (Kasari et al., 2015; Turner-Brown et al., 2016). Parent stress seems to be improved when parents have social support and education alongside peer relationships.
• Wetherby et al. (2014) showed that an intervention delivered in the home environment within daily routines resulted in improved outcomes.
• What type of social competence children learn is largely predicted by the amount of time they spend in culturally organized activity settings participating with companions and learning particular behaviors they can generalize to other contexts (Harkness et al., 2011).
• The quality of family life and parental well-being coupled with the amount of time children spend in activities are important predictors of child outcomes (Harkness et al., 2011).

APPENDIX B: PARENT-CHILD INTERACTION CODING FORM

ID:_____ Coder Name:_____

Ex: 2103. T1 . IPCI .03-26-15.CG1 Code Date:_____

IPCI Observation Tracking Form

Instructions: Initiate a stopwatch with 30-second count down and press video play. Watch the parent and child interaction for 30 seconds. After 30 seconds have elapsed, pause the video, record the video time for the next interval in the respective column, and go through each of the caregiver items and record whether or not that item occurred (0= No occurrence; 1= Occurrence) in the 30 second interval that you observed. If you did not observe Distraction, circle N/A and do not record anything in the cells under Distraction Task. When marking your response, draw a clean line through '0' or '1', staying within the cell. At the end of the entire observation, for each item, count each occurrence entered across the item row and enter the score under the Total Score column to the far right for that item.

Caregiver	Free Play																				TOTAL OCCURRENCE
Time																					
Accept Warm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Acceptance Warmth Total Occurance
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	_____
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Descrip Lang	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Descriptive Language Total Occurrence
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	_____
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Follows Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Follows Child's Lead Total Occurrence
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	_____
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Maint Extend	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Maintains or Extends Total Occurrence _____
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Harsh Critical	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Harsh Critical Total Occurrence _____
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Intrus Restrict	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Intrusions / Restrictions Total Occurrence _____
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

APPENDIX C: CHILD-PARENT INTERACTION CODING FORM

Child	Free Play																				TOTAL SCORE
Time																					
Positive Feedback	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Positive Feedback Total Occurrence _____
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Sustained Engage-ment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Sustained Engagement Total Occurrence _____
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Follow Through	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Follow Through Total Occurrence _____
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Irritable/ Fuss/Cry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Irritable/Fuss/Cry Total Occurrence _____
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
External Distress	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	External Distress Total Occurrence _____
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Frozen/ Watchful/ Withdrawn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Frozen/Watchful/Withdrawn Total Occurance _____
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

APPENDIX D: COACHING INTERVENTION FIDELITY CHECKLIST

Intervention/Coaching Fidelity Checklist
Interventionist initials: _____ Session Date: _____
Length of Session: _____ Child ID: _____
Rater: _____ Date: _____

Quality of Social Interaction Scale: Rating Prompts
Modified from: Dean, Proudfoot, & Lindesay (1993). The quality of interactions schedule (QUIS)

Score and Type	Description	Examples
3 = Positive social interactions	These interactions: • Show warmth, are respectful and enabling • Provide family member with a feeling of safety and significance • Are sensitive and assist individuals to make choices and be in control	• Giving encouragement during activities and recognizing achievements. • Giving options and respecting choice. • Actively seeking engagement and participation – giving the opportunity to ask questions. • Explaining and tailoring information to the family member to check their understanding • Checking proactively to see if anything is needed (and responding accordingly). • Smiling, laughing together – the human touch. • Showing interest in and knowledge of the family member as a person. • Having caring 'conversations' • Recognizing and responding to family member's emotions.
2 = Neutral interactions	These interactions: • Neither undermine nor enhance a family member • Are either part of carrying out activities adequately to get job done • Involve a request, suggestion or information	• Perfunctory completion of activities • Offering brief verbal explanations and some encouragement, but only that necessary to complete the task. • Speaking to someone in a manner that lacks empathy but is not necessarily rude or disrespectful. • Telling someone what is going to happen without offering choice or the opportunity to ask questions. • Not showing interest in what the family member is saying. • Actively avoiding conversation.

	exchange without any of the features of positive social interactions	• Indifference to family member's emotions. • Giving minimal responses to family member's questions.
1 = Negative interactions	These interactions: • Lack warmth or respect • Undermine feelings of safety and significance • Are insensitive and can be disempowering	• Ignoring or talking over a family member during conversations. • Telling someone to wait for something without any explanation or comfort. • Telling someone they can't have something without a good reason or explanation. • Telling or instructing a family member to do something without discussion or offering assistance. • Treating a parent in a childlike or disapproving way • Not allowing a family member to use their abilities or make choices (even if said with 'kindness') • Seeking choice but then ignoring or over ruling it. • Being rude, short or unfriendly to family members. • Being angry with or scolding family members.

Group Totals: Mother, Father, and Child

Total score =	3	4	5	6	7	8	9
Percentile Values	Negative inter-actions with all 3 family members -100%	Negative inter-actions with 2 out of 3 family members -66%	Negative inter-actions with 1 out of 3 family members -33%	Neutral inter-action with at least 1 family member. Mean score is neutral. 0%	Positive inter-actions with 1 out of 3 family members + 33%	Positive inter-actions with 2 out of 3 family members + 66%	Positive inter-actions with 3 out of 3 family members + 100%

Group Totals: Mother & Father

Total score =	2	3	4	5	6
Percentile Values	Negative interactions with 2 out of 2 parents -100%	Negative interactions with 1 out of 2 parents -50%	Neutral interaction with both parents. Mean score is neutral. 0%	Positive interactions with 1 out of 2 parents +50%	Positive interactions with 2 out of 2 parents +100%

PROCEDURE	COMPLETED YES NO	QUALITY
Opening		
Wellbeing check in (see rationale at end for including each member + group)		
• Mother	YES NO	1 2 3
• Father	YES NO	1 2 3
• Child	YES NO	1 2 3
• Group Total		
Review family goals	YES NO	
Review plan for today's session and answers questions as needed		
Mother	YES NO	1 2 3
Father	YES NO	1 2 3
Group Total		
Reflection		
Review videos (optional) Note: Previous or Today's	YES NO	
Facilitate discussion of progress – celebrate successes today and since last meeting - engages team in identifying strengths		
• Mother	YES NO	1 2 3
• Father	YES NO	1 2 3
• Child	YES NO	1 2 3
• Group Total		
Facilitate discussion of challenges – engages team in identifying difficulties today and since last meeting - Coach listens and acknowledges challenges		
• Mother	YES NO	1 2 3
• Father	YES NO	1 2 3
• Child	YES NO	1 2 3
• Group Total		
Positive and Constructive Feedback		
Coach identifies at least one skill, strategy, or activity that was used well by team members /Clear targeted feedback, adding to team's reflections pointing out specific successes and newly acquired skills		
• Mother	YES NO	1 2 3
• Father	YES NO	1 2 3
• Group Total		
Coach offers at least one idea to caregivers for building on the current implementation strategy.		
• Mother	YES NO	1 2 3
• Father	YES NO	1 2 3
• Group Total		
Action Plan		
Facilitates team brainstorming with parents for ideas for addressing challenges identified during meeting		
• Mother	YES NO	1 2 3

• Father	YES NO	1 2 3
• Group Total		
Coach offers at least one resource, strategy from evidence-based strategies to affirm or supplement team's ideas for addressing challenges.		
• Mother	YES NO	1 2 3
• Father	YES NO	1 2 3
• Group Total		
Coach speaks in a way parents can understand (i.e., doesn't use professional jargon)		
• Mother	YES NO	1 2 3
• Father	YES NO	1 2 3
• Group Total		
Coach assesses parents understanding of information		
• Mother	YES NO	1 2 3
• Father	YES NO	1 2 3
• Group Total		
Family Coaching /Practice		
Coach is attentive to both parents and child, encourages a group environment		
• Mother	YES NO	1 2 3
• Father	YES NO	1 2 3
• Child	YES NO	1 2 3
• Group Total		
Coach models imitation strategies that are the focus of today's session		
• Mother	YES NO	1 2 3
• Father	YES NO	1 2 3
• Child	YES NO	1 2 3
• Group Total		
Coach explains strategy during and after it is modeled		
• Mother	YES NO	1 2 3
• Father	YES NO	1 2 3

• Group Total		
Coach models positive social interaction using strategy with child – responding to child's needs and emotions		
• Child		1 2 3
Parents provide feedback regarding use of strategy		
• Mother	YES NO	1 2 3
• Father	YES NO	1 2 3
• Group Total		
Planning		
Facilitated team action plan for how parents plan to integrate strategy into routines during upcoming week		
• Mother	YES NO	1 2 3
• Father	YES NO	1 2 3
• Group Total		

APPENDIX E: PHONE SCREENING AND ELIGIBILITY INTERVIEW

- 'Thank you for your interest in the study (insert study title).
  May I ask who I am speaking with?
  _____
- Hi, _____how did you hear about us?
  _____
- Can I get a call back number just in case one of us loses our connection during the call?
  _____
- This intervention study is designed to use a coaching model with 2 parents to teach social interaction skills to toddlers at risk of ASD or with autism. We call it a two-parent implemented intervention. We will refer to the toddler and parents as a team or a family, whichever the group prefers.
- At this time, we are recruiting 1 team/family with a toddler at risk of autism or diagnosed with autism spectrum disorder between 12 and 36 months old.
- Over time we hope to repeat this study with families who may be similar to yours. To ensure that, we need to ask the families who are interested a few questions over the phone before scheduling the first home visit. Please feel free to stop me at any time to ask questions you have during the phone screening process.

1. What is the toddler's birth date?		
2. Do you have two caregivers who would be available and interested in participating in an intervention with the toddler once or twice a week for a few months? (3-6)	Yes	No
3. What is each caregiver's relationship to the toddler?		
4. Can caregivers converse in English?		
5. Does the toddler have a diagnosis of autism spectrum disorder? If no, skip to 5:d		
5: a. When did your child receive an autism diagnosis?		
5: b. Where did the toddler receive the diagnosis?		
5: c. Who made the diagnosis? (Pediatrician, neurologist, psychologist, etc.)		
5: d. Do you know if an Autism Diagnostic Observation Schedule (ADOS) has ever been completed with your child? If so, do you have a copy of it that you would be willing to share with us? This can provide us with information on the child's characteristics.		

If not, we would want to repeat that assessment during one of the first visits to gather information on the child's characteristics. The child can be eligible for full participation in the study if they fall in the autism spectrum cut off range on the ADOS or if they qualify as 'at risk' by one of the other criterion I will discuss in the next questions.	
If the answer to #5 is no, also ask the following: Do you have concerns that your child may have autism? If so, what concerns do you have in sensory or communication areas? Have any clinicians ever documented sensory or communication concerns/behaviors for your child? Do you know if you have completed any of the following questionnaires about your child? 1. The First Year Inventory 2. The Ages and Stages questionnaires: Social Emotional (ASQ: SE). 3. The Modified Checklist for Autism in Toddlers, also referred to as an M-CHAT	
Does the toddler have any additional diagnoses at this time?	
Can you estimate how many functional words the toddler has at this time?	
IMITATION SCREENING QUESTIONS	
Will the child imitate words you say, sounds or vocalizations you make?	
Will the child imitate your actions? For example, if you clap will they clap? If you march will they march?	
If you point to an object, will they look toward where you are pointing?	
BEHAVIOR SCREENING QUESTIONS	
Does the child demonstrate any behaviors that really concern you?	
How many times a day/week does the child do that? (Repeat this question for each response of yes to the questions below)	
For example:	YES

• Does he or she have temper tantrums?	NO	
• Is he or she physically aggressive towards themselves or others?	YES NO	
• Does he or she ever harm them self?	YES NO	
• Does he or she run away from caregivers without regard for safety?	YES NO	
• Does he or she control their anger when unexpected events disrupt what they are doing?	YES NO	
• Does he or she control their anger when not getting their way?	YES NO	

- Great! You meet our first round of study inclusion requirements! What we would like to do next is schedule a time when the toddler and both caregivers can all be present to do a home visit. The first home visit is also a part of our screening process and after that time we can confirm your eligibility for this intervention opportunity for you and your toddler.
- The first home visit will take about 1.5 to 2 hours
- During that time, we will …
    - Complete the study consent forms
    - Complete a demographics form
    - Take a few short video recordings
        - One of the 2 caregivers playing as they normally would with the toddler to assess what social interaction skills are in the caregiver's and child's repertoire
        - Brief caregiver interview of whether you have received any previous training and what intervention services the toddler may be currently receiving.
- Are there particular days and times that may work best for you?

  _____
  _____
  _____
  _____

- What address will our intervention team be driving to?

  _____
  _____
  _____
  _____

- What I would like to do is email you a copy of the consent forms in advance so both of the caregivers can review them before the first home visit. At the home visit, I will have each of you sign a consent form if you're still interested in participating in the study. Is there an email address or a mailing address you would like me to send those to? At the home visit, I will also ask you to complete a demographics form. If you'd like I could also send that to you to review and fill out in advance if you'd like.

  _____
  _____
  _____
  _____

- Do you have any questions?

  _____
  _____
  _____
  _____

APPENDIX F: PRE-INTERVENTION VISIT 1

Goals

- Get consent from caregivers
- Complete demographic form
- Take a video sample - what skills are in the child and caregiver's repertoire
- If the child does not have a current diagnosis and ADOS-T, schedule ADOS to confirm child diagnosis and eligibility.
- Leave the Personality/Psychology of the Caregivers evaluations with the parents for them to complete before Pre-Intervention Visit 2.
    - Life Participation for Parents (LPP) (2)
    - Brief COPE assessments (2)
- Answer questions, Plan next visit

Outline of session

- Introduce self
- Explain what will happen during the visit
    - Complete consent forms
    - Demographics paperwork
    - Videotape caregivers playing with their child for 10 minutes.
    - If the child does not have a current diagnosis and ADOS-T, schedule ADOS to confirm child diagnosis and eligibility.
    - Leave the Personality/Psychology of the Caregivers evaluations with the parents for them to complete before Pre-intervention visit 2.
    - Life Participation for Parents (LPP) (2)
    - Brief COPE assessments (2)
    - Answer questions and be available until paperwork is complete
    - Plan next visit – Home visit 2
- Obtain Consent
    - If it has not been signed offer to go over it with them
    - Once caregivers sign, take the signed portion and leave them the content of the consents
- Complete demographic form
- Take video sample of caregivers playing with their toddler
- If the child does not have a current diagnosis and ADOS-T, schedule ADOS to confirm child diagnosis and eligibility.
- Leave the Personality/Psychology of the Caregivers evaluations with the parents for them to complete before Pre-Intervention Visit 2.
    - Life Participation for Parents (LPP) (2)
    - Brief COPE assessments (2)
- Plan next visit if eligibility is apparent
- Thank family- tell them you are looking forward to their next home visit
    - Provide a handout with an outline of plan for home visit 2

APPENDIX G: TEAM/FAMILY INFORMATION FORM: PART 1- PREINTERVENTION VISIT 1

Date: _____
Please complete the following information together.
Parent or Caregiver 1 name:
_____
Parent or Caregiver 2 name:
_____

1. Child Gender: Male Female

2. Does your child take any medications, vitamin supplements or alternative homeopathic treatments? If so, please list them including dosage and frequency.
   _____
   _____

	Parent 1	Parent 2
3. Marital status Please check one Or Provide description	□ Married □ Living with partner, not married □ Widowed □ Divorced □ Separated □ Never married □ _____	□ Married □ Living with partner, not married □ Widowed □ Divorced □ Separated □ Never married □ _____
4. Highest level of education completed Please circle one Or Provide description	□ 6th grade or lower □ Middle school/Junior high □ Some high school □ High school/GED □ Some college/special training after high school □ College □ Graduate/professional training □ _____	□ 6th grade or lower □ Middle school/Junior high □ Some high school □ High school/GED □ Some college/special training after high school □ College □ Graduate/professional training □ _____
5. Employ-ment status Please circle one	□ Not employed (stay –at – home parent or retired) □ Unemployed (looking for work) □ Employed part-time, less	□ Not employed (stay –at – home parent or retired) □ Unemployed (looking for work) □ Employed part-time, less

Or Provide description	than 20 hours/week □ Employed part-time, more than 20 hours/week □ Employed full-time □ Employed full-time + Second job □ _____	than 20 hours/week □ Employed part-time, more than 20 hours/week □ Employed full-time □ Employed full-time + Second job _____
6. Occupation	_____ _____	_____ _____ ____

7. Please list program(s) and/or services(s) that your child has been and/or is currently involved in over the last two months:

What kind of program/service? (child care/daycare, playgroup, Mommy & Me, developmental therapy, play therapy, early intervention, special educations, speech therapy, occupational therapy, physical therapy, etc.	How old was your child? Start	End	Where? (Home, center, clinic, etc.)	How often? (hours/week or hours/month)	Who pays for it? (Parent, insurance, Regional Center, Early Head Start, etc.)	Satisfaction Not satisfied =1 Very satisfied =5
						1 2 3 4 5
						1 2 3 4 5
						1 2 3 4 5
						1 2 3 4 5
						1 2 3 4 5

8. What previous training in interventions designed to help children on the autism spectrum has Mother received? Please describe

_____
_____
_____
_____

9. What previous training in interventions designed to help children on the autism spectrum has Father received? Please describe

_____
_____
_____
_____

Child	Mother	Father
10. In general, would you say your/their health is?		
Excellent Good Fair Poor	Excellent Good Fair Poor	Excellent Good Fair Poor
11. Do you/they have any allergies?		
No Yes _____ _____	No Yes _____ _____	No Yes _____ _____
12. Any special or restricted diet?		
No Yes _____ _____	No Yes _____ _____	No Yes _____ _____
13. Are immunizations up to date? (May delete this question)		
No Yes _____ _____	No Yes _____ _____	No Yes _____ _____

APPENDIX H: LIFE PARTICIPATION FOR PARENTS (LPP)

Life Participation for Parents (LPP) ® (2005)

***Parent's Name*_____**

***Child's Name*_____**

Quality therapy needs to be family-centered. Raising children with special needs affects all family members. This questionnaire addresses many activities of a parent/caregiver that may be affected by raising a child with special needs.

Instructions: Read the questions and think how this aspect of your life is affected by raising a child with special needs. Circle the response that most closely describes how you feel about the statement. Explain how these activities are difficult on the lines labeled comments below. If the question does not apply to you, circle not applicable.

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

1. I spend more of my time caring for my child's physical and personal hygiene needs than I would like. (e.g. feeding, bathing, toileting, dressing, safety, moving them around, etc.)

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

2. I am able to manage my child's physical and personal hygiene needs.

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

3. I spend more of my parenting time doing things a teacher/therapist would do with my child than I would like. (e.g. homework, therapy home programs etc.)

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

4. I feel I do a good job when I do the things a teacher/therapist might do for my child.

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

5. My child's need for emotional support is wearing me out. (e.g. not able to entertain themselves, upset easily, cannot manage change in routine etc.)

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

6. I am able to meet my child's emotional needs.

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

7. I spend more time arranging services for my child than I would like. (e.g. appointments with health professionals, school services etc.)

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

8. I am good at getting services for my child.

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

9. I spend more of my time arranging and providing social activities for my child, than I would like. (e.g. things to do, people to play with etc.)

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____

_____

10. I am good at providing for my child's social activities.

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

11. I am able to manage household chores while caring for my child. (e.g. paying bills, cleaning, making meals, doing laundry etc.)

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

12. I am able to effectively do errands with my child. (e.g. shopping, banking, deliveries)

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

13. Having a child with special needs has interfered with my ability to hold a job or pursue education.

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

14. Financial issues related to my child's special needs are a source of stress for our family.

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

15. Having a child with special needs has restricted my ability to spend time with my friends and family as often as I would like to.

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

16. Spending time with my friends and family with my child present is stressful.

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

17. Having a child with special needs restricts the time I would like to spend with my spouse / significant other.

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

18. Having a child with special needs restricts the time I would like to spend with my other children.

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

19. Having a child with special needs affects my ability to be involved in community activities as often as I would like. (e.g. religious services, charitable organizations, political or community organizations)

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

20. Having a child with special needs has affected my health.

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

21. Having a child with special needs has affected my sleep.

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

22. Having a child with special needs affects my opportunities to engage in personal activities. (e.g. hobbies, sports, leisure activities)

Strongly Agree, Agree, Both Agree & Disagree, Disagree, Strongly Disagree, NA

Comments: _____
_____

23. Thinking back on a typical day, are there other activities that you would like to participate in? How are these affected by having a child with special needs?

Comments: _____
_____

APPENDIX I: THE BRIEF COPE

Brief COPE (Carver, 1997) from psy.miami.edu

Language slightly modified using Hastings et al., 2005 reference to fit parental coping in autism

These items deal with ways you cope to deal with the difficulties associated with raising your child at risk of ASD. There are many ways to try to deal with problems. These items ask what you do to cope with this one. Obviously, different people deal with things in different ways, but I'm interested in how you've tried to deal with the challenges associated with raising your child. Each item says something about a particular way of coping. I want to know to what extent you've been doing what the item says. How much or how frequently. Don't answer on the basis of whether it seems to be working or not—just whether or not you're doing it. Use these response choices. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

1 = I haven't been doing this at all
2 = I've been doing this a little bit
3 = I've been doing this a medium amount
4 = I've been doing this a lot

Questions	Rating			
	1	2	3	4
1. I've been turning to work or other activities to take my mind off things.				
2. I've been concentrating my efforts on doing something about the situation I'm in.				
3. I've been saying to myself "this isn't real.".				
4. I've been using alcohol or other drugs to make myself feel better.				
5. I've been getting emotional support from others.				
6. I've been giving up trying to deal with it.				
7. I've been taking action to try to make the situation better.				
8. I've been refusing to believe that it has happened.				
9. I've been saying things to let my unpleasant feelings escape.				
10. I've been getting help and advice from other people.				
11. I've been using alcohol or other drugs to help me get through it.				
12. I've been trying to see it in a different light, to make it seem more positive.				
13. I've been criticizing myself.				
14. I've been trying to come up with a strategy about what to do.				
15. I've been getting comfort and understanding from someone.				
16. I've been giving up the attempt to cope.				
17. I've been looking for something good in what is happening.				
18. I've been making jokes about it.				
19. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.				
20. I've been accepting the reality of the fact that it has happened.				

21. I've been expressing my negative feelings.				
22. I've been trying to find comfort in my religion or spiritual beliefs.				
23. I've been trying to get advice or help from other people about what to do.				
24. I've been learning to live with it.				
25. I've been thinking hard about what steps to take.				
26. I've been blaming myself for things that happened.				
27. I've been praying or meditating.				
28. I've been making fun of the situation.				

The BRIEF COPE Rationale and Scales

Rationale from Hastings et al. (2005):

> 'Parents' strategies for coping with stresses associated with raising a child with autism were measured using Carver's (1997) brief situational format of the COPE inventory (Carver et al., 1989). Carver and colleagues developed the COPE as a flexible multidimensional coping inventory for a broad range of applications in applied psychology. In the Brief COPE, 28 items are presented in the form of a coping statement and respondents are asked to rate whether they have or have not been using each way of coping on a fully anchored four-point scale ranging from 'I haven't been doing this at all' to 'I've been doing this a lot'. Parents were asked to consider the extent to which they used each coping strategy to deal with the difficulties associated with raising their child with autism.'
>
> 'The Brief COPE has 14 subscales representing a broad range of coping strategies (see Table below for abbreviated items). The Brief COPE was chosen in preference to other coping questionnaires for three main reasons: (1) it encompasses a broad range of coping strategies; (2) it can be presented in a situational rather than a trait format and thus we could explore coping specifically associated with the demands of a child with autism; and (3) it is shorter and therefore quicker to administer than the full version of the COPE.'

Scales From Carver (1997): psy.miami.edu

Scales are computed as follows (with no reversals of coding):
Self-distraction, items 1 and 19
Active coping, items 2 and 7
Denial, items 3 and 8
Substance use, items 4 and 11
Use of emotional support, items 5 and 15
Use of instrumental support, items 10 and 23
Behavioral disengagement, items 6 and 16
Venting, items 9 and 21

Positive reframing, items 12 and 17
Planning, items 14 and 25
Humor, items 18 and 28
Acceptance, items 20 and 24
Religion, items 22 and 27
Self-blame, items 13 and 26

APPENDIX J: PRE-INTERVENTION VISIT 2

Goals

- Developmental Niche Interview/Assessments
    - Gather the following Personality/Psychology of the Caregivers assessments from the parents, ensure they are complete, and answer any questions.
        - Life Participation for Parents (LPP) (2)
        - Brief COPE (2)
    - Physical and social settings
        - Environmental assessment alongside Blended Routines Based Interview and Canadian Occupational Performance Measure see physical environments in home where routines take place that the family wants to share. Interventionist will take clinical notes.
    - Values that influence customs and practices of care
        - Complete brief interview-current and embedded cultural context together
- Joint Decision Making Process to select preferred activity together

Outline of session

- Greet family and check in - childcare will be provided if needed
- Explain what will happen during the visit
    - Gather the following Personality/Psychology of the Caregivers assessments from the parents, ensure they are complete, and answer any questions.
        - Personality/Psychology of Caregivers – each caregiver completes
            - Life Participation for Parents (LPP) (2)
            - Brief COPE (2)
    - Complete blended Routines Based Interview, COPM, and Environmental assessment –video record
    - Complete caregiver interview on values, customs, and practices of care together – video record
    - Complete Joint Decision Making Process to choose a preferred activity together – video record
- Complete Environmental assessment, RBI, and COPM together –**video** record
    - Tour of area where family intervention will occur and any additional areas they wish to share to facilitate understanding of context of household routines
    - Blended Routines Based Interview and COPM
- Complete cultural questions caregiver interview on values, customs, and practices of care together – **video** record
- Complete Joint Decision Making Process to Choose a Preferred Activity together – **video** record
- Explain baseline data collection process & plan baseline data collection dates
- Thank family and tell them we are looking forward to their next home visits.

APPENDIX K: OCCUPATION-CENTERED INTERVIEW: BLENDED RBI & COPM

"Next we are going to complete an interview together to help me get an idea of your family's daily schedules and routines."

1. ***"This part of the assessment may last 2 hours. As mentioned during our last visit.***

    - ***"It's an intense discussion about your day-to-day living or as much of it as you want to tell us;***
    - ***"The main purpose is to help you identify your priorities to go on the intervention plan we'll be developing;***
    - ***"The meeting works best if there aren't too many distractions, so will it be best for someone to watch the child(ren)? If not, it's OK. We can manage."***
    - **Name of parents present:**
      _____
      _____
    - **Child's name:**
      _____
    - **Child's age: _____ Date & Time of interview:**
      _____
    - **Place of interview:**
      _____
    - **Primary interviewer:**
      _____
    - **Secondary interviewer: (optional)**
      _____

Set Up

1. Seat primary interviewee (e.g., mother) at 45 degrees to primary interviewer.
2. Seat family members together and secondary interviewer next to primary.
3. If given a choice, a kitchen or dining room table is slightly better than living room furniture, but it's not worth insisting.
4. Introductions: Make sure everyone knows who everyone is and why he or she is there.

Present for Interview

Name	**Role**

Introduction to Interview

1) "***The purpose of today's meeting is to go through your day-to-day activities with your family to find out what you really want and need from early intervention. This is the best way of organizing our thoughts. Is that OK? Anything you don't want to say, don't say! You can end this at any time. OK? At the end, we'll have a list of items that you would like the team to work on. OK? If we don't finish today, we'll find another time, but we should try to finish today so we can get started on interventions as quickly as possible.***

2) "Let me begin by asking who lives in the house with your child."

Who Lives in the House	**Ages of Children**

a) "Why is [your child] in [or referred for] early intervention?"

3) "Before we get into the day, can you please tell me what your main concerns for your child and family are?"

. a) [Show interest and write these down but do not seek much elaboration.]

. b) [At any time in the interview, if the parent mentions something that is a problem, a desire, or otherwise a likely candidate for an outcome, mark it for easy retrieval. I **draw a star next to it.]**

. ***c) "I will ask you more about these things as we go through the day."***

. "Tell me about a typical day, starting with when _____(child) wakes up in the morning."
. Key words: communication, equipment, adaptations, interactions with others, safety, special toys/activities.

Parts 1 &2
Part 1: Identification of Functional Performance Issues: For all portions, interviewer should encourage the parent or caregiver to provide narrative information about the routine and what role the child plays in the routine. The interviewer should ask questions or ask for elaboration when particular areas are reported to be strengths or needs of the child/family, and should attend to areas of communication/socialization, mobility/positioning, equipment, motor abilities, likes/dislikes of the child (preferences), cognitive abilities, play behaviors, safety concerns, and level of independence.

Part 2: Establishing Importance of Routines/Performance: The parent should be asked to assign a rating for each of the areas of given routines, rating the importance of the child's participation in the routine on a scale of 1 to 10. (Each item receives its own rating- do not prioritize them from 1 to 10).

Routines **(Early morning)**	**Current Participation** What the child does, likes/dislikes, communication, toys, interactions with others, what others are doing, environment, response to activity, transitions	**Parent Strategies**	**Rate Importance** of child participation in routine on scale from 1 - 10
Waking up			
Cleaning up, toileting			
Dressing			
Breakfast			
Concerns? _____ No (go on to next routine) _____ Yes (identify below)			
1.			
2.			

3.	

Routines **(Afternoon)**	**Current Participation** What the child does, likes/dislikes, communication, toys, interactions with others, what others are doing, environment, response to activity, transitions	**Parent Strategies**	**Rate Importance** of child participation in routine on scale from 1 - 10
Play			
Outings **Getting to/in car** **Riding** **Getting out of car**			
Lunch			
Diaper			
Nap			
Concerns? _____ No (go on to next routine) _____ Yes (identify below)			
1.			
2.			
3.			

Routines **(Evening)**	**Current Participation** What the child does, likes/dislikes,	**Parent Strategies**	**Rate Importance** of child

	communication, toys, interactions with others, what others are doing, environment, response to activity, transitions		participation in routine on scale from 1 - 10
Hanging out time/play time/outdoor play			
Meal preparation			
Dinner meal			
After dinner, hanging out time			
Concerns? _____ No (go on to next routine) _____ Yes (identify below)			
1.			
2.			
3.			

Routines **(Bedtime and through the night)**	**Current Participation** What the child does, likes/dislikes, communication, toys, interactions with others, what others are doing, environment, response to activity, transitions	**Parent Strategies**	**Rate Importance** of child participation in routine on scale from 1 - 10
Bathing			
Undressing/dressing			
Bedtime			

Sleeping through the night			
Concerns? _____ No (go on to next routine) _____ Yes (identify below)			
1.			
2.			
3.			

Routines **(Weekends)**	**Current Participation** What the child does, likes/dislikes, communication, toys, interactions with others, what others are doing, environment, response to activity, transitions	**Parent Strategies**	**Rate Importance** of child participation in routine on scale from 1 - 10
Waking up			
Meals			
Play/Hanging out time			
Outdoor play			
Trips			
Bedtime			
Other			
Concerns? _____ No (go on to next routine) _____ Yes (identify below)			
1.			

2.	
3.	

Are there concerns you have about your child's overall behavior, learning, etc., that have not been addressed in our conversation so far?

1. **_____**
2. **_____**
3. **_____**

Have you noticed progress or changes in your child recently?

Are there particular things that your child is good at or needs help with that you would like us to know?

What are the questions you would like answered during the rest of the evaluation process?

Establishing Primary Areas of Concern: The five areas with the highest importance ratings are listed below. The parent is asked to rate both their child current ability to perform this routine or task, and their satisfaction with that performance, again on a scale of 1 to 10. (If satisfaction levels are relatively high, regardless of performance ratings, further discussion should occur to determine other possible areas of concern that may be addressed.)

	Performance	Satisfaction
1.		
2.		
3.		
4.		
5.		

APPENDIX L: CULTURAL QUESTIONS

(Myers, Case-Smith, & Cason, 2014)

To be completed after RBI/COPM Interview

- 1. What are your expectations for participation in the study?

_____
_____

- 2. What outcomes are you looking for?

_____
_____

- 3. If you were to identify your greatest value, what would that be?

_____
_____

- 4. Do you and your family affiliate with a specific cultural group?

_____
_____

- 5. How do these beliefs influence your family practices, routines, values, and choices?

_____
_____

- 6. Are there ways you think these beliefs influence how you care for your child? Why?

_____
_____

- 7. Do you have particular beliefs about health and what constitutes healthy child development?

_____
_____

- 8. What did receiving an autism diagnosis for _____ mean for each of you? Your family?

_____
_____

- 9. Our next step will be to select a preferred daily routine/activity. We need to make sure we choose a routine/activity and strategy aligned with what is important to you.

_____
_____

- 10. We want to honor your family priorities and provide services aligned with your cultural values, strengths, and supports.

_____
_____

- 11. We would NOT want to choose an intervention that puts your family in any risk of losing supports you have.

_____
_____

- 12. At this point interventionist may use and document clinical reasoning to apply what was learned during the routines based interview to ask caregivers additional questions about their rationale behind current practices/priorities
    - Maintaining ones that may not be working well/smoothly for them.

APPENDIX M: JOINT DECISION MAKING PROCESS TO SELECT PREFERRED ACTIVITY

(Modified STEP 2 from Cripe and Venn and baseline considerations)

- During the family routines interview we gathered some great information about your weekly routines and activities.
- Based on the information we gather now and the information from earlier, we will try to identify one preferred activity to focus on during our intervention sessions.
- **What are some of the activities that the two of you enjoy doing together the most?** We are looking for activities that are the most meaningful to you and bring you the most positive feelings, happiness, health, well-being, and personal satisfaction.

  _____
  _____
  _____

- How often do you have the opportunity to do those activities individually or together?

  _____
  _____
  _____

- Are there activities you would do more together if you had the time and energy? Or activities the two of you wish you could do together more often?

  _____
  _____
  _____

We want to choose a routine activity you would like your child to engage in with you, to follow your lead, to socially imitate or interact with you both.

- From the routines interview we also identified a few routine activities that are consistently challenging and result in negative feelings, frustrations, or hassles. Review. Is there anything you'd like to add to that list since we first discussed it? Or any changes since then?

  _____
  _____

- Knowing and observing these times may provide some insight into what types of support may be most beneficial at difficult times.
- Let's review routine activities that go very well that you both enjoy doing with your child.
- Let's name a few:

  _____
  _____
  _____

- How often do you get to do each of these together on a weekly basis?

(Write frequency beside each activity)

- Which of these routines/ activities has the most flexibility and time to integrate learning strategies?
  (Rank flexibility, 1st, 2nd, 3rd)
- Are there other activities the two of you wish you could do together with your child?

  _____
  _____
  _____
- Based on your responses to these questions, if you could choose one activity to focus on, what would it be and why?

  _____
  _____
  _____
- What is each of your and your child's familiarity and history with this routine activity? We need this information as part of our baseline data.

  _____
  _____
  _____
- How long have you been completing this activity in your home here?

  _____
  _____
  _____
- How many years have you been in your home?

  _____
  _____
- How long has this activity been a part of your weekly routines? Or family participation?

  _____
  _____
- Ok. Let's see if the activity we chose meets all of our baseline criteria to meet the studies methodological requirements.
  - Is the activity something that can be extended for 10 minutes?
  - Is the activity something you can do with 2 additional people present (interventionist and video assistant) and you still engage similarly to how you typically would?
  - Can you stay in 1 area of the home so your participation can be fully recoded on the video?
  - Are any needed materials ones that can be consistently available?
- Next we will schedule baseline sessions when we can record your family engaged in this routine/activity within the home. This will allow me to observe your natural use of interaction strategies with your child (as well as assess the environment where you engage in this activity.) Baseline.

- Let’s plan when we can complete our first baseline sessions. During baseline we will need to record you engaged in the activity for 10 minutes 1-3 times a week until we have enough data (generally 2-4 weeks).
- BASELINE dates

  _____

  _____

APPENDIX N: CAREGIVERS SOCIAL VALIDITY QUESTIONNAIRE FOR PRE-TRAINING PHASE

Caregiver Name: _____
Date: _____

1	2	3	4	5	6
Not at all Never Not important	A little Occasionally Less important	Undecided No opinion Neutral	Rather Sometimes So So	Much Often Important	Very much Always Very important
Less than 15%	16-32%	33-49%	50-66%	67 -83%	84%-100%

Pretraining Phase							
Question	Rating						Comments
1. Did the interview process help you identify and prioritize your goals?	1	2	3	4	5	6	
2. Did you like choosing the family routine you would target?	1	2	3	4	5	6	
3. Did you like choosing your own goals?	1	2	3	4	5	6	
4. Did you find the joint decision - making process to choose a preferred activity helpful?	1	2	3	4	5	6	
5. Were you pleased with the activity chosen and procedures?	1	2	3	4	5	6	
6. Did you find the values and beliefs interview helpful?	1	2	3	4	5	6	

APPENDIX O: PRE-INTERVENTION VISIT 2 PROCEDURES CHECKLIST

Interventionist initials: _____ Session Date: _____
Length of Session: _____ Child ID: _____
Rater: _____ Date: _____
Choose scale and directions

PROCEDURE	**COMPLETED** YES NO	**COMMENTS**
Wellbeing check in		
• Mother, Father, Child, Group	YES NO	
Childcare provided	YES NO	Whom:
Developmental Niche Interview/Assessments		
RBI and COPM blended interview	YES NO	
• Video record	YES NO	
Values/Cultural questions interview	YES NO	
• Video record	YES NO	
Collect Personality/Psychology of Caregivers Assessments		
Life Participation for Parents		
• Mother	YES NO	
• Father	YES NO	
Brief COPE		
• Mother	YES NO	
• Father	YES NO	
Joint Decision Making Process to Choose a Preferred Activity together		
Complete Joint Decision Making Process to Choose a Preferred Activity together		
• Mother participation	YES NO	
• Father participation	YES NO	
• Video record	YES NO	
Social Validity Scale for Pretraining Phase		
• Mother completed	YES NO	
• Father completed	YES NO	
Explain baseline data collection process		
• Mother	YES NO	
• Father	YES NO	
Answers questions		
• Mother	YES NO	
• Father	YES NO	
Plan baseline data collection dates		
Plan baseline data collection dates	YES NO	
CLOSING		
Thank family	YES NO	

APPENDIX P: BASELINE CONDITIONS RECORDING FORM AND SCRIPT

(Lane et al., 2007)

Date:
Day of week:
Time of day:

Participants
Interventionist: Name:
_____

- Role and preparation relative to role:
  _____
- Personal training (training relative to study):
  _____
- Level of formal education:
  _____
- Professional experience:
  _____

Relationship to family (now and before study)	Familiarity with family	Roles/Unique factors relevant to their involvement

Additional research staff:
Name:
_____

- Role and preparation relative to role:
  _____
- Personal training (training relative to study):
  _____
- Level of formal education:
  _____

- Professional experience:
  _____

Relationship to family (now and before study)	Familiarity with family	Roles/Unique factors relevant to their involvement

Name:
_____

- Role and preparation relative to role:
  _____

- Personal training (training relative to study): _____
- Level of formal education: _____
- Professional experience: _____

Relationship to family (now and before study)	Familiarity with family	Roles/Unique factors relevant to their involvement

Who is present today aside from research staff?

	Yes	No	Notes
Mother			
Father			
Toddler			
Other	Relationship to family (now and before study)	Familiarity with family	Roles/Unique factors relevant to their involvement

Baseline script
"Thank you for having us today and ensuring that Mother, Father, and toddler (insert names):

_____ are all present for the baseline procedures."
"Are there any family members or friends who would typically be here at this time and are influenced by your participation in the baseline procedures?"

_____

Baseline data collection procedures need to provide knowledge and report adequate awareness of the conditions within the situation. **Contextual information is included in order to adequately describe baseline conditions.**

Prior to activity: Video of the room, size, and arrangement of furnishings where family will engage in the activity.

<u>'Rules': Who did what to whom?</u>

"The last time I was here we went through a preferred activity planning process to identify an activity that would be the focus of engagement during social interactions and data collection in the study."
"What do you call this activity, how do you identify it or refer to it when discussing it with your child?"

"I want to share a few reminders with you that the activity needs to be extended for 10-minutes."

"Please identify and use materials (types of materials) that can be consistently available and used during engagement in this activity during study participation."

"I am going to make a list of the materials you identify."
Materials:

"This may be easier to answer and discuss after we take some baseline recordings... but is the activity something you can do with 2 additional people present (interventionist and video assistant) and still engage similarly to how you typically would?"

"I will start videotaping you two engaged with your child in the activity as you typically would. I will stay in the room while I videotape and may have to move around to ensure that I get a good angle and video of your facial expressions, words, and actions. I will set a timer for 10 minutes once we start the video tape. When it goes off you will know that the 10-minute baseline video recording is completed for today. You are welcome to take a few moments after the timer goes off to transition from the activity, then we will make a plan for our next visit. What questions do you have for me? Do you have any before we begin?"

"**Please engage in the activity how you typically would, however please try to stay in one area so your participation can be fully recorded on the video.**"

Videotaping will be completed by the interventionist using an iPad.

<u>Debriefing with Parent after the session</u>
"Thank you so much for having me today and for your engagement! The videotaping went well and we will review and code that before the next visit. When this week or next are you able to meet again for the next baseline session? The procedures will be the same as today."

"Do you have any questions for me before I leave for the day?"

APPENDIX Q: VISUAL ANALYSIS

(Ledford et. al., 2018)

Part 1: Characteristics of Data			
Characteristic	Questions	+	-
Level	Is a consistent level established in each condition prior to condition change?	Yes	No
	Is there a consistent level change between conditions, in the expected direction?	Yes	No
Trend	Are unexpected trends present thtat make determination of behavior change difficult?	Yes	No
	Is there a consistent change in trend across conditions, in the expected direction?	Yes	No
Variability	Does unexpected variability exist in one or more conditions?	Yes	No
	Does within-condition variability impede determinations about level changes between conditions?	Yes	No
Consistency	Are data within conditions and changes between conditions consistent?	Yes	No
	If changes are inconsistent with regard to level, trend, or variability, was that expected?	Yes	No
	Does inconsistency impede confidence in a functional relation?	Yes	No
Overlap	Are data highly overlapping between conditions?	Yes	No
	If overlapping, does the degree of overlap improve over time? (e.g., initial intervention data points are overlapping, but later ones are not)	Yes	No
	Is overlap consistent across comparisons?	Yes	No
	Was overlap expected a priori?	Yes	No
	Does presence of overlap impede confidence in a functional relation?	Yes	No
Immediacy	Are changes between tiers immediate, in the indended direction?	Yes	No
	If no, are delays in change consistent across tiers	Yes	No
	Does lack of immediacy imped confidence in a functional relation?	Yes	No

Part 2: Conclusions Regarding Functional Relation				
Did the design allow for at least three potential demonstrations of effect? If no, STOP. No functional relation can be demonstrated.			Yes	No
What is your determination regarding the presence of a functional relation?		Present	Not Present	
How confident are you in your determination?	Not at all confident	Not very confident	Quite confident	Extremely confident
How large is the effect?	Negative or null	Small	Medium	Large

All questions in this Visual Analysis Worksheet were quoted from p. 17 of:

Ledford, J. R., Lane, J. D., & Severini, K. E. (2018). Systematic use of visual analysis for Assessing outcomes in single case design studies. *Brain Impairment, 19*(1), 4-17.

APPENDIX R: TRAINING SESSIONS – TEAM PLANNING

AFTER BASELINES/BEFORE INTERVENTION PHASES

DATE: _____
TRAINING SESSION: (CIRCLE ONE) 1 2 3
Goal setting, strategy planning, Training

SESSION GOALS:

- Share a Vision and Set Long-Term and Short-Term Goals (Stoner, Meadan, and Angell, 2013) – Only training session 1.
- Review videos from baseline and highlight a) Activity analysis of the routine and b) Caregiver's natural use of strategies (Strategies may include how caregivers set up the activity or how they engage during the activity). Show graphs of facilitative elements.
- **IDENTIFY FACILITATIVE ELEMENTS TO TARGET FOR NEXT INTERVENTION PHASE (i.e. Phase 2 choose Element 1 for Mother and Father)**
- **PARENTS IDENTIFY EVIDENCE-BASED STRATEGY:** Choose implementation dimension of strategies to start with based on assessment of caregiver team's current repertoire of strategies. A list of which implementation dimensions caregivers already have skills in is presented so they can learn ways to build on current strengths
    - Discuss options
    - Discuss pros and cons
- **SET CRITERION LEVELS (i.e. Training Session 1)**
    - Mother sets targeted Criterion Level 1 for Element 1
    - Father sets targeted Criterion Level 1 for Element 1
- Planning how to use strategy over the next week
- Social Validity Questionnaire
- Review Questions

SHARE A VISION AND SET LONG-TERM AND SHORT-TERM LEARNING GOALS FOR THE CHILD (Stoner, Meadan, and Angell, 2013) - Review caregivers responses to earlier question on expectations for participation - are they the same?

> '**What are your hopes and dreams for your child in the next 2-3 years regarding his/her social interaction?'**
>
> _____
>
> _____
>
> _____
>
> For example, a goal could be: To have fun/play/enjoy time with child and other caregiver.

REVIEW VIDEOS

'Next I'd like to review some of the interaction videos we collected during baseline. I want to complete an activity analysis of the routine with you and discuss what worked best for the child and each of you during initial interactions.'

'An ACTIVITY ANALYSIS OF A ROUTINE is completed to help delineate the sequence of potential steps within the routine. Let's discuss the following aspects or qualities of the activity together:'

- **'Is there a structure for the activity?'**
  _____
  _____

  'Is there an identifiable beginning and end?'
  _____
  _____
- **'Are there preferred materials?'**
  _____
  _____
- **'Who are the usual participants?'**
  _____
  _____
- **'Are the amounts of interaction and joint attention appropriate to the activity?'**
  _____
  _____
- **'How much repetition is involved in the activity?'**
  _____
  _____
- **'What is the length of typical engagement?'**
  _____
  _____

IDENTIFY FACILITATIVE ELEMENTS TO TARGET FOR NEXT PHASE
PHASE (Circle one) 2 3 4 ELEMENT (Circle one) 1 2 3

'Now I'd like to show you some highlights of your natural use of interaction strategies during engagement in the activity. What the intervention process hopes to do is to build upon natural strategies you already use to teach your child. From observing your caregiver child interaction videos, I have identified some of your natural interaction strategies. Here are some examples from videos of strategies you naturally use.'

REVIEW VIDEOS OF PARENTS NATURAL USE OF STRATEGIES

Show the caregivers video clips of examples of each facilitative element of quality social interaction they demonstrated during the baseline sessions. Show caregivers visual graphs of their baseline IPCI data.

'These videos highlight that you already have strengths. What do you think went well?'

_____

_____

_____

'For the first phase of the intervention each of you will need to choose one of these facilitative elements (acceptance and warmth, descriptive language, follows lead, maintains extends, etc.) that you would like to increase during social interactions with your child. Based on what you have seen, does either or both of you have an idea of which one you'd like to target? Or which one you think might benefit _____ the most if you did more? If so, which one are you most motivated to start with?'

Mother Element (CIRCLE ONE) 1 2 3

_____

_____

Father Element (CIRCLE ONE) 1 2 3

_____

_____

'Ok. Good. We will keep those in mind as we discuss more about your interactions. We are going to continue to discuss the activity and will revisit this question again later during the training session before setting each of your goals for the first phase of the intervention.'

ACTIVITY ANALYSIS CONTINUED… DISCUSS CHALLENGES

'Next let's talk about whether there are aspects of the activity that are tough for each of you?'

_____

_____

'How does your child behave or interact during the activity?'

_____

_____

IDENTIFY/BRAINSTORM POSSIBLE REASONS

'Let's try to identify/brainstorm possible reasons the child does not currently give positive feedback, sustain engagement, imitate or follow through during the activity.'

- **'Is the activity scaffolded to support age appropriate participation for the child?'**

  _____

  _____

- **'How do you try to incorporate the child into the activity?'**
- _____

  _____

- **'How do you set up the activity to help the child attend to the activity?'**
- _____

  _____

- **'During the activity do you have time to wait for the child to respond, wait for him/her to imitate?'**
- _____

  _____

  'What are your moods typically like during this time of day/activity?'

  _____

  _____

BRAINSTORM SOLUTIONS

'Let's try to think of as many solutions as possible that could increase the number of opportunities we/you provide the child _____ to socially interact (give positive feedback, sustain engagement, socially imitate, or follow through.'

_____

_____

_____

_____

'Great!'

PARENTS IDENTIFY EVIDENCE-BASED STRATEGY (Circle one) 1 2 3
Mother and Father need to choose the same strategy to work on together

'I have made a list of many of the evidence-based strategies often used to support children's development of social interaction skills. From observations of you interacting with your child I have identified which of the strategies you already naturally use and are part of your current repertoire of skills. Let's see which of your ideas is closest to or the same as one of the evidence-based strategies. We will want you to choose one implementation dimension (strategy) that you think you are ready to integrate more heavily into your

interactions during the activity in the upcoming week. Once you have chosen one, we will make a plan for how you might do this together throughout the upcoming week before we meet again.'

Interventionist will edit this based on data in baseline videos

STRATEGIES TO CHOOSE FROM

Behavioral Definitions of Strategy Dimensions

Strategy Dimensions for parent fidelity of implementation	
Setting up the teachable moment	Setting up the environment for engagement in the activity in the home. With whom, where, when, and what will be used to set up the activity to help embed opportunities for social interaction during the activity. With whom: Preparing to have both parents present and actively engaged. Where: Setting up a consistent physical space in the home with limited distractions to support social engagement during the activity. When: Setting up a consistent time to practice engagement in the activity during family routines. With what: Set up the activity with materials that are of high motivational interest and value to the child. (Watson, Boyd, Baranek, Crais, & Odom, 2011)
Makes activity interactive	Parents set up preferred activity. Parents allow child to choose how they engage with the activity. Parents remain face-to-face with the child, join in the child's play/imitate the child, use heightened animation, and wait with anticipation (Ingersoll & Wainer, 2013)
Models and expands language	Parents give meaning to the child's actions, model language/play around the child's focus of interest, use simplified language, and expand on the child's language (Ingersoll & Wainer, 2013)
Provides opportunities for initiation	Parents use playful obstruction,

	balanced turns, or communicative temptations to create opportunities for the child to initiate (Ingersoll & Wainer, 2013)
Helps increase the complexity of initiations	Parents wait for the child to initiate, use appropriate prompts, provide sufficient response time, follow through after a third prompt, provide reinforcement immediately after a correct response, withhold reinforcement for an incorrect response, expand on the child's response, and adjust the support of prompts as needed (Ingersoll & Wainer, 2013)
Paces the interaction	Parents pace the interaction to keep the child engaged and motivated, and take advantage of engagement and motivation to prompt more complex skills (Ingersoll & Wainer, 2013)
	Primary references: Advancing Social Communication and Play (ASAP) manual (Watson, Boyd, Baranek, Crais, & Odom, 2011) Language adapted from Ingersoll & Wainer (2013) to include two parents and only target one preferred activity chosen by parents.

DISCUSS PROS AND CONS OF STRATEGIES

'Next, let's discuss some pros and cons of each of the strategy options you have selected. We want to discuss the likelihood of success if you were to apply each of the solutions to the routine this week. We can also discuss some of the research base and evidence behind each approach.'

'For each solution… Would this work during the selected routine? What are possible problems that might arise?' Give examples.

SELECT THE STRATEGY THAT FITS BEST WITH THE ROUTINE.

'It is important that the two of you mutually agree on the strategy (ies) you think will best fit the routine activity. We will try to focus on one for now, but strategies can tend to overlap during social interaction.'

EVIDENCE-BASED STRATEGY (Circle one) 1 2 3 =

_____

'Let's revisit your initial thoughts on your target facilitative elements. We need to consider if implementation of Evidence-based Strategy 1 is likely to increase your performance on those particular facilitative elements.'

Confirm Mother Element (Circle one) 1 2 3 =

_____

_____

Confirm Father Element (Circle one) 1 2 3 =

_____

_____

SET CRITERION LEVEL (Circle one) 1 2 3

'Now that each of you has chosen a facilitative element to target. Next, we need to set your goals for how much improvement you hope to make with this skill during the first phase of the intervention.'

Four common approaches to determination of criterion levels are use of the mean, halving the mean, using the baseline lowest and highest data points to determine the range, or an optimal approach is to seek professional advice from a person familiar with the participant and the target behavior (Klein et al., 2016).

'Based on the graphs we looked at earlier. Options for each of you for the target element you identified include the following:'
(Therapist fills in options prior to training session and adjusts based on caregiver choices.)

Mother (Coach Circles Mother's choice)

Element	Mean	Halving mean	Baseline lowest	Professional advice
Acceptance Warmth				
Descriptive Language				
Follows Lead				
Maintains Extends				

Father (Coach Circles Father's choice)

Element	Mean	Halving mean	Baseline lowest	Professional advice
Acceptance Warmth				

Descriptive Language				
Follows Lead				
Maintains Extends				

Example: i.e. Father Criterion Level 1 for Element 1 = 30% for descriptive language

Mother Criterion Level (circle one) 1 2 3 for Element _____ =

Father Criterion Level (circle one) 1 2 3 for Element _____ =

_____

Notes:

_____

_____

DEMONSTRATION

'If appropriate, I will model/ demonstrate use of these strategies with _____ so you can observe them as well as help me assess whether the strategies chosen are appropriate for _____ right now. I will demonstrate then will coach you two through participation with _____ using the strategy during the activity.' 10-20-minute Family Coaching

PLANNING

'Let's work together on detailing how the strategies will be tried during the activity over the next week. These plans will be short-term goals before our next meeting.'

'Let's also discuss what you would do if a problem arose during the activity.'

SOCIAL VALIDITY QUESTIONNAIRE

'One of the last steps of today's session is to get some feedback from you on your satisfaction with the steps of today's session. I'd like each of you to complete your own. This sheet has some questions about your satisfaction with and how valuable you think key steps of today's session were. At the top of the sheet is a 6-point scale to reference when answering each question and rating your satisfaction on a scale from 1 to 6, one being low, and 6 being high on the scale. Please let me know if you have any questions as you fill these out.'

QUESTIONS TO CONSIDER

'Before we plan our next meeting I want you two to consider the following questions. Let's review your family goals for the activity.'

- **'Do the strategies support your goals?'**

  _____

  _____

- **'Could the strategies work over an extended period of time (6-12 months)?'**

  _____

  _____

- **'Are you comfortable with what you will be doing?'**

  _____

  _____

- Ex. Increase social imitation and interaction, attention, and learning opportunities for toddler.

PLAN THE NEXT MEETING

'During our next session we will start the session with the two of you engaging in the activity with _____ (child) practicing these strategies for 10 minutes while I videotape the interaction. Following the recording, we review and discuss your engagement. Then the three of us will practice the strategies together with _____ (child) for about 20-30 minutes.'

Future sessions –Ongoing - MONITOR PROGRESS, REVISE, ADJUST, AND GATHER FEEDBACK

Stoner, J., Meadan, H., & Angell, M. (2013). A model for coaching parents to implement teaching strategies with their young children with language delay or developmental disabilities. *Perspectives on Language Learning and Education, 20*(3), 112-119.

APPENDIX S: PARENT SOCIAL VALIDITY QUESTIONNAIRE FOR TRAINING PHASE

Parent Name: _____
Date: _____

1	2	3	4	5	6
Not at all Never Not important	A little Occasionally Less important	Undecided No opinion Neutral	Rather Sometimes So So	Much Often Important	Very much Always Very important
Less than 15%	16-32%	33-49%	50-66%	67 -83%	84%-100%

Training Phase							
Question	Rating						Comments
1. Did you like being videotaped?	1	2	3	4	5	6	
2. Did you like having graphs of data presented?	1	2	3	4	5	6	
3. Was reviewing your performance data with the coach helpful?	1	2	3	4	5	6	
4. Was reviewing your partner's performance data with the coach helpful?	1	2	3	4	5	6	
5. Was reviewing your performance data together with the coach helpful?	1	2	3	4	5	6	
6. Was reviewing your child's (affective/emotional and behavior) data with the coach helpful?	1	2	3	4	5	6	
7. Did you like reviewing your videos with the coach?	1	2	3	4	5	6	
8. Did you like reviewing your videos with your partner?	1	2	3	4	5	6	
9. Did viewing the videos help you choose your goals?	1	2	3	4	5	6	
10. Did you like choosing your behavior targets?	1	2	3	4	5	6	
11. Did completing the activity analysis	1	2	3	4	5	6	

questions with the coach help you better understand the qualities of the activity?		
12. Did you like choosing the best strategy for your family?	1 2 3 4 5 6	
13. Did you like helping to choose the criterion levels?	1 2 3 4 5 6	

APPENDIX T: OUTLINE OF INTERVENTION SESSIONS

Outline of Intervention Sessions

Sessions planned for 1 hour 15 minutes (Ask families to hold space/time for 1.5 hours)

- Opening Greetings (10 min)
  - Wellbeing check in
    - **How are you?** (rest, food, health, mood)
    - Inquire about each member
  - Review family goals
  - Successes since last visit
    - **Have you had any successes or challenges since last visit?**
  - Review plan for day
    - **We will record our 10-minute video of you all engaging in 'play time' together, we will continue play together practicing new techniques together. Then we will review the video from last week, talk about your interactions and discuss teachable moments or 'Pause points' to consider over the next week as you play with your child.**
    - **Do any of you have any questions?**
- Video data collection (10 min)
  - 10-minute data collection
- 10-20 minutes – Family coaching:
  - Coach joins in play and conversation and works with parents and child together providing coaching on social interaction strategies and reinforcement during activity in real time.
  - Coach provides positive feedback to the group and identifies at least one skill, strategy, or activity that was used well by team and team members
  - Reflection today and since last visit
    - **How do you feel about your progress working on goals since our last visit?**
      - Mother
      - Father
    - **Have you had any challenges working on goals since our last meeting?**
      - Mother
      - Father
    - Coach provides parents with at least one additional technique within the strategy dimension that can be layered into social interactions during today's session and practiced over the upcoming week.
- 20 minutes – Video feedback. Review last week's video, discuss 'Pause points', and provide parents with additional resources and techniques to build on the current strategy. (Video review was optional at first but became an integral part of each intervention session.)

        - Coach engages the team in identifying strengths and challenges.
        - Positive and Constructive feedback - Coach identifies skills used well by team and team members
        - Coach points out child's emerging skills to keep working on, looking for, encouraging
        - Coach offers ideas to parents to build on current implementation strategy and shares resources for parents to put in their 3 ring binder if applicable.
        - Coach facilitates brainstorming with caregivers for ideas addressing challenges identified during meeting.
    - 10 minutes – Review and Action Planning:
        - Parents reflect on the session and develop a joint action plan with the coach for how they will work with the child during the upcoming week prior to the next session.
        - Coach and parents plan for how they can integrate the strategy into routines during the upcoming week
    - 5 minutes - Social validity data collection from parents (optional)
        - (Likert scale to assess caregiver enjoyment of strategy, synchrony) Self rate each session.
    - Coach exits home and completes post intervention session data recording procedures below

After exiting the home Coach completes:

- Coaching fidelity checklist completed randomly for 30%.
- Coach records observations and clinical notes about environment, context, interactions
- Coach records problem solving and clinical reasoning processes applied during sessions including descriptions of recommendations and of barriers.

APPENDIX U: PARENT SOCIAL VALIDITY OF INTERVENTION QUESTIONNAIRE

Parent Name: _____
Date: _____

Scale

1	2	3	4	5	6
Poor, disappointed	Needs improvement the majority of the time	Needs improvement up to half of the time	Well, for over half of the session	Good the majority of the time	Very good, high quality throughout session
Less than 15%	16-32%	33-49%	50-66%	67 -83%	84%-100%

Intervention Phase							
Question	Quality						Comments
1. How did you do today?	1	2	3	4	5	6	
2. How did your partner do today?	1	2	3	4	5	6	
3. How did you do together?	1	2	3	4	5	6	
4. How did the coach do?	1	2	3	4	5	6	
5. Did you like the coach's delivery style?	1	2	3	4	5	6	
6. How did you feel about the process?	1	2	3	4	5	6	
7. Was it feasible?	1	2	3	4	5	6	
8. How do you feel today? (In the rating scale replace the word session with today)	1	2	3	4	5	6	
9. How did you sleep last night? (In the rating scale replace the words session and time with night)	1	2	3	4	5	6	

Please use the scale below for the remaining questions

1	2	3	4	5	6
Not at all Never Not important	A little Occasionally Less important	Undecided No opinion Neutral	Rather Sometimes So So	Much Often Important	Very much Always Very important
Less than 15%	16-32%	33-49%	50-66%	67 -83%	84%-100%

Intervention Phase							
Question	Quality						Comments
10. Did you like being videotaped?	1	2	3	4	5	6	
11. If provided, was the live video feedback during the coaching sessions helpful?	1	2	3	4	5	6	
12. Was the coaching on the strategies you chose helpful?	1	2	3	4	5	6	
13. Did you enjoy practicing the strategy during family routines?	1	2	3	4	5	6	
14. Was the problem solving process completed during the coaching sessions helpful?	1	2	3	4	5	6	
15. Did you find the opportunity to participate in choices during the intervention process empowering?	1	2	3	4	5	6	
16. Do you think participating in this process with your partner together will help you carry these skills forward together to navigate future decisions?	1	2	3	4	5	6	

APPENDIX V: TEAM/FAMILY INFORMATION FORM: PART 2

Date: _____

Please complete the following information together.

1. What is your annual total family income for Mother? (Circle one)
   - Less than $25,000
   - $25,000 - $49,999
   - $50,000 - $74,999
   - $75,000 - $99,999
   - Greater than $100,000

2. How many people are supported on this income? (Circle one)
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8 or more

If different for Father? Same

3. What is the annual total family income for Father? (Circle one)
   - Less than $25,000
   - $25,000 - $49,999
   - $50,000 - $74,999
   - $75,000 - $99,999
   - Greater than $100,000

4. How many people are supported on this income? (Circle one)
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8 or more

5. Please specify the ethnicity of Mother
   - Hispanic or Latino
   - Black or African American
   - Native American or American Indian
   - Asian/ Pacific Islander
   - White or Caucasian
   - Other

6. Please specify the ethnicity of Father
   - Hispanic or Latino
   - Black or African American
   - Native American or American Indian
   - Asian/ Pacific Islander
   - White or Caucasian
   - Other

APPENDIX W: LIFE PARTICIPATION FOR PARENTS PRE & POST-INTERVENTION RESULTS

	Pre-intervention Total Score	Post intervention Total score	Post-intervention sample quotes
Mother	75	85	In response to whether there are other activities she would like to participate in that are affected by having a child with special needs. " No. For the most part I end up getting done what I want."
Father	99	82	In response to whether there are other activities he would like to participate in that are affected by having a child with special needs. "None I can think of at the moment."

APPENDIX X: PARENT'S COPM PRE & POST-INTERVENTION RESULTS

COPM: Parental ratings of improvements in performance for primary areas of concern

	Pre-intervention Performance 1 = ☹ 10 = ☺	Post intervention Performance	Pre to Post intervention performance improvement
1. Communication	1	3	20% (mild focus during intervention)
2. Expand Food repertoire	2	1	- 10 % (not a focus of intervention)
3. Expand Play repertoire. Want confirmation he is making progress	4	6	20 %
4.Bowel management Better comfort for Fezzik during bowels and toileting routines.	1 .	2	10 % (mild focus of conversation following intervention sessions)
5. For Fezzik to consistently respond to social cues in his environment.	3	5	20 %

COPM: Parental ratings of improvements in satisfaction for primary areas of concern

	Pre-Intervention Satisfaction (1-10) 1= low, 10 = high	Post Intervention Satisfaction	Pre to Post intervention satisfaction improvement
1. Communication	3 Mother = 2, Father = 4	4	10% (mild focus during intervention)
2. Expand Food repertoire	2	1	-10% (not a focus of intervention)
3. Expand Play repertoire. Want confirmation he is making progress	3	7	40 % improvement
4.Bowel management Better comfort for Fezzik during bowels and toileting routines.	1	2	10 % improvement (mild focus of conversation following intervention sessions)
5. For Fezzik to consistently respond to social cues in his environment.	2	Mother = 5 Father = 4	30 % improvement for Mother 20 % improvement for Father 25 % for parents

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