A SYSTEMATIC REPLICATION OF THE FAMILY CONNECTIONS PARENT-TODDLER TRAINING PROGRAM

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As more toddlers are being diagnosed with autism there is an increased need for very early intervention. Preliminary research on interventions suggests toddlers can make important developmental progress and that parents can be part of the intervention process. The purpose of this study was to systematically replicate a parent training program reported by Alai-Rosales et al. (2009). Specifically, the present study taught parents a set of teaching strategies that included arranging the environment, setting up learning opportunities, and using positive reinforcement. Baseline-intervention conditions were replicated across four parent-toddler dyads in order to assess the effects of training on parent and child behaviors. Results indicated increases in parent teaching behaviors, the child targeted behavior (facial orientation), as well as a non-targeted skill, joint attention. Findings are discussed in relation to the challenges of intervention and considerations for future research.
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INTRODUCTION

Once considered a rare and stagnant diagnosis, autism spectrum disorder (ASD) has become more prevalent in the past few decades (Dawson & Osterling, 1997). In the past, an ASD diagnosis had typically meant lifelong impairments in communication and social skills, along with a limited range of interests and enjoyable activities (Dawson, 2008). Today, with an estimated 1 in 150 children living with autism, efforts are directed at detecting and diagnosing children at younger ages and increasing services available to these children (Myers & Johnson, 2007). To accomplish these goals, new tools for identifying children at risk, such as checklists, screenings, and assessments for identifying younger children have been created (Bryson, Rogers, & Fombonne, 2003; Dawson, 2008; Vismara & Rogers, 2008).

As children receive the ASD diagnosis earlier, there is an increased need for intervention services for this very young population. And while the need is ever increasing, research on effective practices continues to lag. A growing body of research suggests preschoolers with ASD have the potential to make significant gains when they receive behavioral intervention before the age of four (Anderson, Avery, DiPietro, Edwards, & Christian, 1987; Birnbrauer, & Leach, 1993; Fenske, Zalenski, Krantz, & McClannahan, 1985; Green, Brennan, & Fein, 2002; Harris, Handleman, Gordon, Kristoff, & Fuentes, 1991; Howard et al., 2005; Lovaas, 1987; McEachin, Smith, & Lovaas, 1993; McGee, Daly, & Jacobs, 1994; McGee, Morrier, & Daly, 2000; Perry, Cohen, & DeCarlo, 1995; Stahmer, Collings, & Palinkas, 2005; Strain & Cordisco, 1994; Weiss, 1999). Recently, improvements in children with ASD as young as 9 months have been noted in the areas of communication and overall intellectual functioning.
(Vismara & Rogers, 2008). However, research directed at intervention for children under 2 years old continues to be limited and as such there is very little data on the effects of intervention (Klin & Jones, 2008; Vismara & Rogers, 2008). Children this young pose a unique challenge when it comes to intervention. Common intervention procedures used with preschool age children may not be suitable for toddlers. Recommendations in the literature suggest that intervention procedures need to be partially based on the particular needs of children at different stages of development (Noonan & McCormick, 2006). For example, the most important environment for a toddler is the home and the most frequent interaction partner is the parent. Additionally, toddlers are at a different point in their physical development; for example, they nap, eat different foods, and interact with toys at a simple level. It is conceivable that these differences will change the specifics of an intervention program. Researchers have pointed out the need for investigations with toddlers (Alai-Rosales et al., 2009; Vismara & Rogers, 2008).

Preliminary studies, however, are in keeping with the early intensive behavioral intervention (EIBI) literature and are promising (e.g. Alai-Rosales et al., 2009; Green, Brennan, & Fein, 2002; Vismara & Rogers, 2008). Green, Brennan, and Fein (2002) described the intensive treatment program for a young child at risk for autism. The 14-month-old girl was identified at risk for autism because of her social and communication delays. She also had a four-year-old brother who had been diagnosed with autism in the previous year. She began a 25-35 hour per week ABA program which took place in her home and at her preschool. Teaching formats were selected based on the targeted skill and how the child responded to treatment. Most instruction was delivered using an
incidental or discrete trial format. Over the course of her three year program, intervention shifted from one-on-one teaching to group instruction and a general education setting. Additionally, her mother was trained to implement instruction and served as one of her primary therapists at home. When she was five years old, she no longer carried the diagnostic label, she entered a regular kindergarten, and required no special intervention services.

Building on earlier work, Vismara and Rogers (2008) present a case study based on the Early Start Denver model, a parent-coaching intervention program. The 9-month old child was considered at risk for autism because of his delay in social and communication skills, including limited eye contact and his lack of responsiveness to language and his name. His parents were trained to implement techniques from the Denver model (Rogers et al., 2006) and pivotal response training (PRT; Koegel & Koegel, 2006). Over the course of the parent training intervention, the child’s vocalizations and imitative behaviors increased. At the conclusion of the training, he was 18 months of age and had developed a preference for people (as opposed to toys), but he continued to meet criteria for an ASD diagnosis. He began receiving 20-25 hours of applied behavior analytic (ABA) intervention in his home, and by his second birthday, he no longer met the criteria for an ASD diagnosis. These studies suggest that early detection and treatment is not only effective at reducing and eliminating symptoms of autism, but some believe that it may actually prevent symptoms of autism and an autism diagnosis (Dawson, 2008; Jones, Carr, & Klin, 2008).

One common theme among infant and toddler intervention programs is an emphasis on involvement of the child’s parents (Mahoney, 1999; Sandall et al., 2006).
Early intervention programs are often designed to include the parents as change agents and incorporate some type of parent training. The strategy has produced very positive results with preschoolers with autism (Brookman-Frazee, 2004; Elder et al., 2005; Ingersoll & Dvortcsak, 2006; Symon, 2005). An important outcome associated with some parent training programs is increased responsiveness in parent-child interactions (Dunst and Kassow, 2004). Parents who are verbally and physically responsive to their toddler’s behavior are likely to facilitate desirable developmental outcomes (Trivette, 2003). Parents that are less responsive are likely to have more negative affect and fewer positive, engaging interactions with their child (Poehlmann & Fiese, 2001). Responsive parents are characterized by their immediate and contingent response to their child’s behavior, and by simultaneously matching the child’s mood and intensity. Matching the child is a way of increasing the likelihood that the parental response serves as a reinforcer for the child’s behavior (Trivette, 2003). If parents can increase their responsiveness, they may be able to increase their teaching effectiveness and increase reinforcement for their child’s favorable behavior.

By definition, toddlers with autism, have limited and unusual social interactions (American Psychiatric Association, 2000). Both parent and child characteristics are considered important in developing a reciprocal social relationship, and some research suggests that the parent is especially important in shaping the quality of that relationship (Poehlmann & Fiese, 2001). However, given the lack of social interest and engagement in children with autism, the task of the parent is daunting and it may be necessary to understand how parents can accommodate and adjust responsivity for the child with autism. Without intervention the parent may not overcome this challenge and may not
be able to develop effective ways of responding to the child. There is an added concern that the unresponsiveness on the part of the parent and child could be cyclical in nature, and therefore never really change unless someone intervenes (Poehlmann & Fiese, 2001). Less responsive interactions will likely mean fewer interactions, with fewer interactions there is less opportunity for quality interaction between the parent and child. This directly relates to lost opportunities for the parents to facilitate interactions to increase social responsivity and foster social interactions. This study sought to teach parents how to set up those opportunities for interactions, and in turn use those interactions as a vehicle to teach their child eye contact.

Hart and Risley (1999) describe mutually enjoyable social interactions between parents and their children as a “social dance.” For parents and their toddlers with autism, this “social dance” is often atypical and awkward (Alai-Rosales et al., 2009). Alai-Rosales et al. (2009) described the Family Connections Project (FCP), a program to enhance the parent-child “social dance.” FCP is a training program for parents of newly diagnosed toddlers with ASD. In the pilot study, four parent-child dyads participated in the training program. Parents were taught a general set of teaching procedures based on the acronym “DANCE.” (see Table 1). Each letter of the acronym stands for one teaching component. The “D” is for decide, and has to do with decisions related to teaching. These decisions include identifying optimal times to teach, deciding which skill to work on, and for how long the teaching time will last. The “A” is for arrange, and this component has to do with the environmental arrangement. Parents are instructed to physically get at the same level as the child, to sample toys and activities until they see that the child is engaging with an item, and then control the
child’s access to the item. The “N” is for now, and this component has to do with the parent’s response to the child’s behavior. These responses should be immediate, contingent, and generous. The “C” is for count, and this component deals with the data collection. Parents are taught how to count behaviors, how do use different recording methods, and how to determine the amount of time to sample for. The “E” is for enjoy, and this final component is to ensure that both members of the dyad find the interactions pleasant; and the time spent teaching is kept short, includes reinforcement, and ends while the child and the parent are still happy.

The parent trainer taught the parents the Teaching DANCE by modeling, providing feedback, discussion, and coaching for each of the components. The training procedures were the same for each of the dyads; however, training was adapted to target the needs of each dyad. Additionally, parents were taught how to apply these general procedures to the more specific skills they wanted to increase in their children (for example, crawling, gesturing, eye contact, vocalizations). Alai-Rosales et al. (2009) evaluated the effects of the intervention on the parent and child goal responding and also looked at a variety of collateral measures (i.e. joint attention, smiling, and responsiveness). They found that parents increased their use of the skills they were taught, and children increased their rate of target behaviors and other collateral measures, such as joint attention.

Alai-Rosales et al. (2009) recommend that future research should hold the variable “communicative attending” (making eye contact to signal onset of an interaction) constant. They suggest that future studies examine the effects of one child skill at a time to determine differences in parent-child responding based on skill targets.
For example, there may be a direct relationship between communicative attending and joint attention. Joint attention has been defined as a “triadic” interaction, taking place between the infant, another person, and either an object or event (Bakeman & Adamson, 1984). Behavior measures and definitions are based on those used in the Family Connections Project and were specifically modified for the children in this study.

This study represents a systematic replication of the research by Alai-Rosales et al. (2009). Additionally, this study aimed to add to the descriptive nature of the previous study and begin to account for and control more experimental variables. The earlier study had wider ranges of participant (child) ages and one child had a dual diagnosis of autism and Down syndrome. The children in this study were approximately the same age (20-27 months old) and had similar characteristics. Child target skills in the earlier study spanned a much wider range and included: crawling, eye contact, gestural requesting, vocal requesting, and imitation. For the current study, the child target skill (eye contact) was held constant throughout the study and for each of the participants. This study was unlike the previous in that all training was done in the home, the training in the previous study had been done in a laboratory setting. The present study also aimed to have more experimental control by having more baseline sessions than in the previous study and keeping the videotaped assessments standard (all clips were 10 minutes) and systematic (collected at the beginning of each session). Training was held constant across the previous and current studies, with the addition of a parent training manual (see Appendix B) in the latter.

The goal of this study was to extend the previous research by Alai-Rosales et al. (2009) by replicating their procedures and controlling more variables. Specifically, will
similar results be obtained along the dimensions of parent and child goal responding, coordinated joint attention (e.g. Bakeman & Adamson, 1984; Charman, 2003; Whalen & Schreibman, 2003) and affect (e.g. Carr, 2007), when child age, skills and procedures are held constant?
METHOD

Participants

Three families (4 parent-child dyads) were recruited from flyers distributed at the FEAT (Families for Effective Autism Treatment) of North Texas office in North Richland Hills, Texas. The first three parents to respond all met the selection criteria and were included in this study. Selection criteria included the child's age (between 18-36 months of age), residing within a 60 mile radius of Denton, Texas, and the child could not have any visual impairments. There was no selection criteria based on the gender of the parents or children.

Ethical approval for this study was granted from a University Research Review Board and all participants were treated in accordance with the American Psychological Association ethical guidelines. During an initial face-to-face meeting, parents provided written informed consent to participate (see Appendix E). No compensation was provided for participation nor was there any cost to participate. Each participant is referred to by a pseudonym.

Prior to the onset of this training, the children made limited eye contact, as observed by the parent trainer on the first visit to the families’ homes. The parents had no experience with intervention or training, but one parent had formerly worked as an early elementary school teacher. Each family was receiving 2-4 hours per week in services from early intervention professionals. Parents reported that they thought their children were making minimal progress with these services and that the children often retreated from the professionals and the room where these services were taking place.
The first of the three families included Dawn, a 28-year-old mother, and her son, Brendan. A pediatrician, not associated with this study, diagnosed Brendan with ASD when he was 25-months-old. Dawn worked as a full-time homemaker. They began participation in this training when Brendan was 27-months-old. Brendan lived at home with both of his parents and a newborn sister. The family was of Caucasian descent.

The dyad from the second family was made up of Kelly, a 28-year-old mother, and her son, Michael. Michael was diagnosed with ASD by a pediatrician, not associated with this study, at 15 months of age. Kelly worked as a full-time homemaker, and had previously been an early elementary school teacher. Kelly and Michael began their participation when Michael was 20-months-old. He lived at home with both parents and the family was of Caucasian descent.

The third family included 37-year-old parents Alicia and Jorge, and their son Diego. Both parents were employed full-time and both participated in the training. Diego was diagnosed with ASD by a pediatrician, not associated with this study, at the age of 23 months. The family began their participation in this training that same month. Alicia is from Columbia and Jorge is from Mexico. They lived together with Alicia’s father and brother.

In addition to being the author of this study, I also served as the parent trainer for each the families. At the onset of the training, I had completed the majority of my graduate course work at the University of North Texas in Denton, Texas. I had over five years of clinical experience and supervision in behavior analytic intervention for children with autism, and had observed the training of other parent-toddler dyads using a similar
intervention. I am of Caucasian descent and was in my mid-twenties when this study took place.

The parent trainer was supervised by her faculty advisor. The advisor had her Ph.D. and was a board certified behavior analyst with over twenty-five years of clinical experience. She oversaw the treatment and made ongoing recommendations to the parent trainer about treatment delivery and decisions. She also reviewed the data and videotapes from the sessions.

Setting & Materials

All training took place in the participants’ homes. Two of the families selected their living room and one family selected a playroom as the setting for the training. The rooms had either a large rug covering the floor or foam play mats. Assessments were recorded using a video camcorder. Data were collected from the video assessments using media playing software on laptop computers. Videos were scored using digital timers and data sheets (see Appendix G). Raw data was then transferred from the data sheets into the a spreadsheet computer program to create tables and graphs.

Measurement and Response Definitions

Behavioral measures were collected for both parent and child behaviors from the videotaped assessments. The author and fellow graduate students served as primary observers and interrater agreement observers for each of the measures. All the graduate students were female, between the ages of 22 and 30, and from the Department of Behavior Analysis at the University of North Texas. Training for observers included thoroughly reading the operational definitions of the behaviors in the
observation code (see Appendix D) and practice scoring the behaviors. The observers were not blind to the objectives of the study. A brief overview of the behavioral measures are included below. Each of the measures was adapted from previous studies (Besner, 2008; Ewing, 2008; Goettl, 2008; Jacobs, 2000; Schooley, 2005).

Behavioral measures included parent arrangement of learning opportunities, parent responsive model delivery, parent responsive event delivery, parent vocal expansions, child facial orientation, communicative attending, and coordinated joint attention. Facial orientation was recorded when the child’s face moved in some direction to see the parent’s face for 2-6 seconds. Total teaching episodes included the number of opportunities the parent arranged for the child to respond. Opportunity arrangements are the parent’s behavior of controlling or withholding access to events in the environment, or arranging the environment to promote the child’s interest in events. Additionally, teaching episodes are counted as successful if the child has a correct response and the parent has a responsive event delivery. A responsive event delivery was defined as the parent adjusting the reinforcer delivery based on a closer approximation, previous responding, and apparent desirability of event being delivered. Communicative attending was defined as the child’s look to the parents face following the removal of a toy or the cessation of an event. Their look then gains them access to the toy or event. Vocal requests are the spoken sounds, words, and phrases said by the child to the parent, to ask for an item or to direct the parent’s behavior to engage in a specified activity. Coordinated joint attention was defined as the child’s facial orientation shift from the parent’s face to an object or event, and back to the parent’s face; or from an object or event to the parent’s face, back to the same object or event.
Interobserver Agreement

Interobserver agreement (IOA) was calculated for each child across every measure for baseline and intervention phases. For behaviors recorded using event recording, the smaller number of observed occurrences was divided by the larger number, and that was multiplied by 100 to create a percent. For behaviors recorded using interval recording, IOA was calculated for the occurrence (agreements/agreements + disagreements x 100) and nonoccurrence of each behavior. The percentage of agreement for each of the behaviors is summarized in Table 3. The occurrence IOA is reported in the table when the behavior occurred in less than half of the intervals. The nonoccurrence IOA is reported in the table when the behavior occurred in more than half of the intervals.

Design

This study used an A-B (baseline-intervention) design across three dyads with a multiple probe for the fourth dyad, to evaluate the effects of parent training. During the intervention, preliminary data was collected using a working definition of child eye contact. This was used during baseline to assess trends, level, and variability. When child eye contact data did not have an increasing trend and the data path was fairly stable, the parent training portion of the intervention began.

Intervention Procedures

Procedures for this parent-training package are based on the Family Connections Project (FCP) at the University of North Texas (Alai-Rosales et al., 2009). The FCP mission statement is included in Appendix A. Similar to the FCP sequence of
service, this parent-training package consisted of an initial intake meeting, baseline and rapport building sessions, intervention sessions, and an exit meeting (see Table 2).

**Baseline Phase**

The first five or six sessions were reserved for collecting baseline assessments. These assessments were 10 minutes in duration and were conducted at the beginning of the session when the experimenter arrived at the family’s home. Parents were instructed to interact with their child as they usually would. The experimenter videotaped the assessment. Following the assessment, the remainder of the hour was spent building rapport with the child and parent, as well as providing the parent with information and resources. This included discussing how to evaluate sources of information regarding autism intervention, locating and evaluating services and service providers, finding resources and funding, organization techniques, advocacy skills, and intervention goal selection. The interventionist provided the parents with copies of all the materials and a parent training manual (see Appendix B). Parents were also invited to take notes or write questions in their manual.

**Parent Training Phase**

Similar to the baseline phase during intervention, a 10 minute videotaped assessment was collected prior to parent-training each session. The exception was the first intervention assessment which was collected at the end of the session. The first ten minutes of that session were used to collect the final baseline assessment. In the intervention phase, the experimenter taught the parent a set of foundational teaching strategies based on the FCP Teaching DANCE (Alai-Rosales et al., 2009; see Table 1). These procedures are derived from naturalistic behavioral interventions such as
incidental teaching, milieu teaching, and pivotal response training (Kaiser, Hancock, & Neitfeld, 2000; Koegel & Koegel, 2006; McGee et al., 1992). The child intervention goal was to increase eye contact, as measured by the behavioral definition for facial orientation. Parents were instructed on how to use the Teaching DANCE to increase eye contact. Sessions typically consisted of discussion and question asking, the experimenter modeled the teaching strategies with the parent or child, the parent practicing while being coached thorough each step, and feedback on the parent’s application of the strategies to produce behavior change in the child. At the conclusion of each session, each family was given a family home helper with notes about the session (see Appendix C). The number of intervention sessions ranged from 6 to 10. Following the final session, the parent trainer reviewed the intervention objectives with the parent and discussed the exit report (see Appendix F for an example of an exit report).

Data Analysis

Data were plotted on semi-logarithmic graphs using a linear abscissa for consecutive sessions with a logarithmic ordinate for behavior count. The data set from this study posed some challenges. There was a wide set of ranges from for each of the dyads as well as for each of the behaviors. This type of graph was useful for data analysis because the scale of the ordinate was constant for each of the participants and each of the behaviors; and this allowed for direct comparison across each of the participants as well as across each of the behavioral measures. Additionally, this scale allowed for minor variations in the data without major disruptions to the overall trend and level of the data set (Johnston & Pennypacker, 1993).
RESULTS

There are four figures: Figure 1: Teaching Episodes; Figure 2: Facial Orientation; Figure 3: Coordinated Joint Attention; and Figure 4: Analysis by Child. Each figure has four panels representing one parent-child dyad. The dyads are: Brendan and his mom, Dawn; Michael and his mom, Kelly; Diego and his dad, Jorge; and Diego and his mom, Alicia, respectively. Baseline sessions are represented in the first phase of each figure and parent training sessions are represented in the second phase of each figure (these two phases are separated by a vertical line in each of the figures). Successive 10-minute assessments are plotted along the abscissa. The number of occurrences (per ten minute assessment) are represented along the ordinate, using a logarithmic scale.

Figure 1 shows the total number of teaching episodes (TE) between the parent and child, and the number of teaching episodes that were successful at occasioning communicative attending (STE). Overall, baseline levels of TE were variable, ranging from 0 to 41 and averaging 16 per ten minute assessment. Baseline levels for STE were low, ranging from 0-7 and averaging 0.8 per ten minute assessment. Following intervention, the TEs ranged from 1 to 65 and averaged 30.2 per ten minute assessment. Following intervention, response patterns of STE began to parallel TE, ranging from 0 to 48 with an average of 11.3 per ten minute assessment. This was an average increase of 14.2 for TE and 10.5 for STE per ten minute assessment.

Figure 2 displays the number of facial orientation responses made by the child in the ten minute assessment. The number of facial orientation responses emitted by each child increased from baseline to intervention for each of the dyads. The number of responses in baseline ranged from 0 to 6 and averaged 1.8. Following intervention,
responses ranged from 1 to 26 and averaged 9.8. This is an average increase of 8 facial orientation responses for each child.

Figure 3 displays the number of coordinated joint attention responses made by the child in the ten minute assessment. The number of coordinated joint attention responses emitted by each child increased from baseline to intervention for each of the dyads. The number of responses in baseline ranged from 1 to 19 and averaged 6.8. Following intervention, responses ranged from 6 to 83 and averaged 25.8. This is an average increase of 19 coordinated joint attention responses for each child.

Figure 4 displays the successful teaching episodes, along with the facial orientation and coordinated joint attention for each of the dyads. These data paths are described in the results of Figures 1-3. This figure allows for comparison of each of the behaviors per child.
DISCUSSION

Purpose

This study was designed to systematically replicate a parent training program for toddlers with autism (Alai-Rosales et al., 2009). The training procedures of Alai-Rosales et al. were replicated, and additionally some potentially relevant variables were more systematically controlled (child age, skills addressed, experimental controls and measurement protocols). The goal of this study was to see if similar results would be found in the areas of parent and child goal responding and coordinated joint attention, when the extraneous variables were addressed.

Teaching Episodes

Overall, the parents increased their use of the trained teaching skills, their children had increases in the targeted skill (eye contact), and there were increases in a collateral measure, joint attention. Figure 1 shows the total teaching episodes along with the episodes that were successful at increasing communicative attending (making eye contact) to the parent. The total teaching episodes are generally high for both baseline and intervention, however during baseline there were very few successful communicative attending teaching episodes. With the onset of intervention, the child communicative attending increased and much more of their teaching episodes were successful. Parents were trying to teach in the baseline phase, but most of their efforts were unsuccessful. To be successful, the parents’ efforts had to result in a correct child response.
Based on the parent trainer’s observations, common problems related to the parent’s teaching efforts prior to intervention generally fell into one of a few categories. First, the skills the parents were trying to teach were often too difficult for the children. For example, one parent was trying to teach a child a two-step gesture in sign language, however the child’s imitations skills were not quite sophisticated enough to be successful and the child made no response. During baseline, parents also were trying to physically prompt the children’s hands so they would make a correct response, but the children would often pull their hands back or would start protesting. Again, the child would make no eye contact or response. Additionally, there were problems with the environmental arrangement. In some cases all the toys were put away out of sight and in others all of the toys were on the floor. This may have led to fewer opportunities to “spark” the child’s interest in the former case, and it was nearly impossible to restrict access in the latter. A lack of sampling activities and initiating engagement with the child was also observed. The parents would often follow the child’s lead, but would not try to initiate anything new when the child was no longer engaged in a toy or activity. The child would make no eye contact. Finally, issues surrounding timing appeared to be the leading cause of trouble related to parent teaching during baseline. In all three families, parents were not waiting for child responses before prompting, their teaching episodes were not interspersed with play, the teaching episodes took too long or they were not stopping while the child was happy, and in some instances reinforcer delivery was inadvertently shaping other behaviors. Training in conjunction with the Teaching DANCE (see Table 1) addressed these issues and they were not observed to the same extent during the intervention phase. For data collection purposes, teaching episodes
Facial Orientation

In addition to increasing communicative attending to their parents (when parents were restricting access to a preferred item or event), the children also had significant increases in their overall levels of facial orientation (when it was not contingent on access to an item or event). When the children were reliably looking toward their parents, the duration of the children’s facial orientation (and more specifically, eye contact) was also shaped into longer durations. However the increase in facial orientation over the course of intervention would suggest that the duration of eye contact increased in addition to the number of instances of facial orientation. Durations of total facial orientation were outside the scope of feasibly for this study, but future research might take into consideration frequency as well as overall duration.

The child target skill of eye contact (as measured by facial orientation) was selected for each of the children because they all demonstrated low levels and they were not using it in a communicative fashion. Research suggests that when a child with autism is spoken to, they will spend twice as much time watching the speaker’s mouth as opposed to their eyes (Jones, Carr, & Klin, 2008). This is problematic because attention to the speaker’s eyes may be an important response in terms of social development and social adaption (Arnold, Semple, Beale, & Fletcher-Flinn, 2000; Jones, Carr, & Klin, 2008; Mirenda, Donnellan, & Yoder, 1983). In the beginning, early intensive behavioral intervention (EIBI) programs emphasized the establishment of eye contact (Lovaas et al., 1981) and the recent interest in joint attention has produced a
return to the issue (Myers & Johnson, 2007). Looking to another person (and specifically eye contact) is a defining feature of some types of joint attention (Charman, 2003) and it has even been directly trained in an effort to increase joint attention (Whalen & Schreibman, 2003). Research also suggests that attention to faces is vital to the development of social engagement, which is often included in descriptions of joint attention (Klin, Jones, Schultz, & Volkmar, 2003). To develop joint attention skills, teaching one or more of the deficient components (for example, facial orientation) may be enough to promote joint attention (Alai-Rosales et al., 2009). Joint attention is often targeted in early intervention programs because children who lack joint attention skills generally have trouble acquiring other social skills, such as language and play (Brooks & Meltzoff, 2005; Woods & Wetherby, 2003).

These data may suggest that instruction targeting eye contact will lead to simultaneous increases in coordination joint attention. Given that joint attention skills are related to more favorable child outcomes, this study implies that it may be possible to increase joint attention without explicitly targeting it. Unfortunately, it also means that programs and interventions that deemphasize the role of eye contact may indirectly be losing out on the collateral effects as well. Even when recognized as a deficit for children with autism, eye contact is often not included as a formal part of assessments (i.e. Partington & Sundberg, 1998) or instruction (Taylor & McDonough, 1996).

Skill Selection

As these types of interventions continue to be carried out, there remains a need for more data about the rates of responses and underlying sources of control for typically developing children. Few studies (Arnold et al., 2000) have addressed
behaviors (such as eye contact) in children without developmental disabilities. Without these data, practitioners are possibly left without empirical guidance when selecting the appropriate duration and frequency of a particular behavior. Michael demonstrated high frequencies of facial orientation and his mom reported that he was using eye contact during other activities and in a multiple settings. Based on these reports, the data, and anecdotal observations (including hearing his first spoken word during the 6th intervention session), Michael’s target behavior was changed to vocal requests on his 7th intervention session. However, because facial orientation was no longer being reinforced and did not allow him access to preferred items, it was essentially placed on extinction, during the shaping of vocal requests. Based on observations with Michael, it may be that behaviors like facial orientation have to be trained to high frequencies so that when they are no longer reinforced on such a dense schedule, they will continue to endure. It may have been more useful to chain together both skills as the second skill was beginning to be shaped. That way the first skill would not have decreased to the extent it did. Following one day of vocal request training, and observing the decrease in his facial orientation, Michael’s target behavior was changed back to facial orientation for the final three sessions.

Behavior Cusps

This study showed that a collateral effect of parents teaching eye contact was an increase in joint attention behaviors. This suggests that some behaviors may be cusps, meaning that when they are taught, they will produce effects far greater than the single, target behavior change (Rosales-Ruiz & Baer, 1997). Measuring the collateral effects of intervention across a greater number of behaviors will give a more descriptive
portrayal of how behaviors are related, which ones are behavior cusps, and how to more efficiently alter the trajectory of a child’s development.

**Design of Future Intervention Packages**

The design of future intervention packages need to address previous skill maintenance, the procedures for introducing the next skill, and the logistics of intervention. This study was done in the participants' homes, but most research is done in labs. The length of intervention and the number of skills the parents are trained to teach their children also need to be further explored. Additionally, this study would have been strengthened with measures in place to quantify the behavior of the parent trainer (the independent variable).

*Very Early Intervention*

Research suggests that early intervention is not only effective, but it can actually change a child’s course of development (Dawson, 2008). Early interventions vary on many dimensions, including skills for the child to learn, the learning environment, and the person responsible for teaching the child. The “teacher” is an important aspect of this study, because the parents were trained to teach their child skills. “The effects of the early intervention are predicted to be partially mediated by the quality of parent-child interaction. Parent-child interaction is viewed as a final common pathway that is influenced both by improvements in parental sensitivity and improvements in child behavior” (Dawson, 2008, p. 791). This study adds to the parent training literature and not only demonstrates that parents can play a role in early intervention, but that parents are an important component of a comprehensive intervention program (Brookman-Frazee, 2004; Elder et al. 2005; Symon, 2005).
### Table 1

**Overview of the Teaching DANCE Components**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Decide</strong></td>
<td>Parent learns to identify favorable teaching times for both them and their child. This includes making sure that both partners are well rested, free from other distractions, and in a good mood. The parent also decides which skill to work on and how long they will work on it for.</td>
</tr>
<tr>
<td><strong>Arrange</strong></td>
<td>Parent learns to arrange the environment to maximize learning opportunities. The parent arranges themselves to get lower to the ground to be at the same level as their child. Parents then sample activities and events until they “spark” an interest in the child. Once the child is interested, the parent then controls access to the item or event.</td>
</tr>
<tr>
<td><strong>Now</strong></td>
<td>“Now” refers to the parent’s responses to the child. Responses have to be immediate, contingent and enthusiastic. This also includes adjusting future opportunities for responding (i.e. making it easier or harder). Parents also learn to identify indicators for continuing the teaching interaction and those for stopping or changing.</td>
</tr>
<tr>
<td><strong>Count</strong></td>
<td>“Count” is the component dealing with data collection. This involves determining a time period to count goal responses and having a clear understanding of which response will be taught and counted. Parents learn different ways to collect data so they can count each occurrence of the response in their time sample.</td>
</tr>
<tr>
<td><strong>Enjoy</strong></td>
<td>The fifth component is to ensure that the teaching is fun for both parent and child. One way to help everyone enjoy is to keep the teaching episodes “short and sweet” and end them while the child is happy. To keep the interactions fun, parents were taught to shift between activities while the child is still happy and to intersperse teaching episodes and play.</td>
</tr>
</tbody>
</table>

*Adapted from the Family Connections Project at the University of North Texas*
Table 2

Service Delivery Sequence

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Initial Meeting and Intake Interview</td>
</tr>
<tr>
<td></td>
<td>Rapport Building (Parent)</td>
</tr>
<tr>
<td></td>
<td>- Pre-intervention Assessments</td>
</tr>
<tr>
<td></td>
<td>- Rapport Building (Child)</td>
</tr>
<tr>
<td></td>
<td>- Goal Setting by Trainer</td>
</tr>
<tr>
<td></td>
<td>- Skill: Facial Orientation</td>
</tr>
<tr>
<td>20</td>
<td>Exit Interview</td>
</tr>
</tbody>
</table>

1 20 Sessions

*Adapted from the Family Connections Project at the University of North Texas*
Table 3

Percent of Interobserver Agreement

<table>
<thead>
<tr>
<th>Measure</th>
<th>Brendan</th>
<th>Michael</th>
<th>Diego</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BL</td>
<td>INT</td>
<td>BL</td>
</tr>
<tr>
<td>Opportunity arrangement</td>
<td>100</td>
<td>100</td>
<td>91</td>
</tr>
<tr>
<td>Responsive model</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Response occurrence</td>
<td>83</td>
<td>100</td>
<td>75</td>
</tr>
<tr>
<td>Responsive consequence</td>
<td>85</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>Vocal expansion</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Child facial orientation</td>
<td>75</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Coordinated joint attention</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
Figure 1. Teaching episodes.
Figure 2. Child facial orientation.
Figure 3. Coordinated joint attention.
Figure 4. Analysis by child.
APPENDIX A

FAMILY CONNECTIONS MISSION STATEMENT
The primary mission of the Family Connections Project (FCP) is to enhance the quality of relationships within families who have toddlers with autism. Parents are taught to identify and arrange opportunities to interact with their children in ways that will increase motivation and social responsivity. Initial training involves identifying high preference events and arranging those events to optimize functional interactions, social engagement and play skills. By teaching parents to create and arrange motivating conditions, children are able to learn increasingly complex skills throughout everyday family routines and activities. Subsequent parent training emphasizes the selection of goals that will optimize quality of family life, procedures to teach desired goals, and, finally, techniques for monitoring treatment progress.

The North Texas Autism Project (NTAP) is a service-learning project in the Department of Behavior Analysis in the College of Public Affairs and Community Service at the University of North Texas. The Department of Behavior Analysis offers degree programs in Behavior Analysis and specialty training in the behavioral interventions in autism. NTAP was created in response to a growing local and national need for qualified providers of behavior analytic services for children with autism. The mission of NTAP is to provide applied community service-learning experiences for graduate students in the Department of Behavior Analysis, to provide direct interventions, and to produce pragmatic research. The Family Connections Project is one of the primary service-learning activities of NTAP.

FCP Eligibility
Parents and their toddlers with autism or PDD are eligible for services. Toddlers should be between 12 to 18 months at the onset of services. A majority of the parent training will take place on the campus of UNT in the Family Connections Playroom.

FCP Training Opportunities
In order to receive the full benefit of the training program, parents are asked to participate in one full training sequence (one hour training sessions, two times a week for 10 weeks: a total of 20 training sessions). Shahla Rosales, Ph.D., BCBA, a behavior analyst with over 25 years of experience working with young children and their families supervises all training sequences. Experienced professionals with Bachelor’s degrees that are pursuing advanced training in Applied Behavior Analysis conduct individual sessions with parents and their toddlers.

FCP Training Format
The first three to four sessions involve a thorough assessment of child skills and parental goals in each of the FCP skill areas. Assessments take place at home and in the FCP playroom. During this time, the parent trainer will also spend time working directly with the toddler in order to build rapport and to determine optimal teaching procedures. Following the assessment period, each of the training sessions will include instructions, demonstrations and practice of optimal teaching procedures. As the families make progress, intervention will focus on problem solving and integrating new skills into the ecology of the home. Parents will be provided with practical feedback and have ample opportunity to have input into the training process.

FCP Fees for Services
There is a $_____ fee for each 20 session training sequence. Parents may contract additional 6 session sequences if qualified interventionists are available.

FCP Applications
Dr. S. Rosales, SRosales@pacs.unt.edu
Department of Behavior Analysis,
PO Box 310919,
Denton Texas, 76209
“Today is your day, your mountain is waiting, so get on your way.”

-Dr. Seuss
Parents as Teachers

A child’s family is their most influential, durable and valuable resource. Parents are experts about their child and about the ecology of their family life. Including parents and family members in intervention is a strong component of all effective intervention programs. Parents and professionals should view one another as collaborators in teaching children important skills to foster increased independence and positive lifestyles. Training parents as direct service providers can result in increased quantity and availability of treatment for children with autism. The purpose of this training is to enhance the quality of the relationships within families of children with autism.

This Program is to Teach YOU!

You will be taught how to optimize your child’s environment to more easily build communication skills, identify and foster new interests, construct social activities, increase the ease and flow of daily routines, and offer extended family members the opportunity to learn techniques to improve their relationship with your child. The goal of functional communication training is to teach you skills to enhance your child’s meaningful communication on a regular daily basis.
Applied Behavior Analysis

This program focuses on teaching parents how to use techniques and principles derived from the field of Applied Behavior Analysis. These principles will be applied in the natural environment. The intervention techniques utilized will be "evidence-based," that is, they are documented to produce significant increases in skills for children with autism.

What defines an ABA parent training program?

- setting attainable and socially valid goals in objectively defined terms
- using evidence-based teaching techniques to help child reach goal
- systematic record-keeping methods to monitor progress
- continuously modifying conditions to maintain and promote generalization of acquired skills
Parent Training Timeline

Initial meeting & intake interview

Rapport building with parent

Pre-intervention assessments

Rapport building with child

Goal setting

Intervention: training on skill

Final meeting & exit report

1 sessions
Assessments

At the beginning of each session, the trainer will video record a ten minute assessment of you and your child playing. These assessments provide information about the parent and child skills. In combination with the IFSP Scope and Sequence Toddler Monitoring & Planning Guide, the assessments will help the team decide on intervention goals.

IFSP Scope and Sequence Toddler Monitoring & Planning Guide

Overarching master goal: To increase responsivity, enjoyment and benefit from the social environment

<table>
<thead>
<tr>
<th>Early Interests and Activities</th>
<th>master goal: enjoys playing with a wide range of activities alone &amp; with others</th>
</tr>
</thead>
<tbody>
<tr>
<td>sampling</td>
<td>scanning, touching, manipulating, request help, request demonstrations</td>
</tr>
<tr>
<td>selection</td>
<td></td>
</tr>
<tr>
<td>manipulation</td>
<td>simple, functional, durations, pretend w/ play objects</td>
</tr>
<tr>
<td>diversity</td>
<td>rate w/in class of presenting selections</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Early Communication</th>
<th>master goal: communicates own likes, dislikes, interests; responds to communications of others</th>
</tr>
</thead>
<tbody>
<tr>
<td>functional</td>
<td>signal, requests, protests, directives, comments, descriptions</td>
</tr>
<tr>
<td>eye contact</td>
<td>gazed, access/request, follow gaze, duration, persistence</td>
</tr>
<tr>
<td>gestures</td>
<td>movement, diversity/rate, reach point, differentiated</td>
</tr>
<tr>
<td>vocalizations</td>
<td>babble, diversity, rate, attempts, approximations, words</td>
</tr>
<tr>
<td>responsivity</td>
<td>smiles, follows high, neutral preference requests</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Early Social</th>
<th>master goal: enjoys sharing activities with others &amp; develops attachments to widening circle of people</th>
</tr>
</thead>
<tbody>
<tr>
<td>reciprocity</td>
<td>access to interests, w/ imitations, w/ objects, w/ vocals, w/ physicals, w/ toys, w/ in simple conversations</td>
</tr>
<tr>
<td>motor diversity</td>
<td></td>
</tr>
<tr>
<td>imitation</td>
<td>&amp; rate approximations, w/ objects, movements</td>
</tr>
<tr>
<td>vocal imitation</td>
<td>diversity, rate, single sounds, approximations, words, phrases</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Early Movement</th>
<th>master goal: able to control own access to physical environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>locomotion</td>
<td>sit, crawl, pulls up, walks, trots, runs</td>
</tr>
<tr>
<td>fine motor</td>
<td>hand to hand picks, pincer grasp, accommodates, drops, utensils, fits, tosses</td>
</tr>
</tbody>
</table>

| Early Problem Solving         | master goal: able to encounter novel & varying conditions with success & comfort                       |
| cause-effect flexibility       | experiment w/ objects, experiment w/ social reactions, persistence w/ experimentation                    |
| agility                        | accommodates changes without distress; makes transitions without distress and with eagerness           |
Goal Setting

Assessments provide the observations and the means for analysis to guide goal setting. Goals serve as major supports or guides for specifying what the intervention needs to accomplish. Well-written, specific goals help the teacher select activities that will promote learning. Goals are selected based on their priority. The highest priority goals are those that target skills the child is not likely to develop on their own, or skills that are required for future learning.

Bricker (1998)

Four criteria for selecting goals:

- functional
- generalizable
- observable and measurable
- useful to daily life
### Parent Assessment & Goal Setting Questionnaire

**Rapport and Communication**

<table>
<thead>
<tr>
<th>Does your child approach you to play?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Are you able to play for extended periods of time with your child?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Does your child take turns during play interactions?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Do you usually understand what your child wants and does not want?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Are there situations when it is more or less difficult to be patient with your child?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

What are the situations that you enjoy most with your child?

____________________________________________________________________

____________________________________________________________________

<table>
<thead>
<tr>
<th>How does your child respond when others approach him/her to:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Play:</strong> happy neutral agitated fearful</td>
</tr>
<tr>
<td><strong>Eat:</strong> happy neutral agitated fearful</td>
</tr>
<tr>
<td><strong>Watch tv/videos:</strong> happy neutral agitated fearful</td>
</tr>
<tr>
<td><strong>Transition:</strong> happy neutral agitated fearful</td>
</tr>
<tr>
<td><strong>Go outside:</strong> happy neutral agitated fearful</td>
</tr>
<tr>
<td><strong>Go in the car:</strong> happy neutral agitated fearful</td>
</tr>
<tr>
<td><strong>Go to school:</strong> happy neutral agitated fearful</td>
</tr>
<tr>
<td><strong>Go to bed:</strong> happy neutral agitated fearful</td>
</tr>
</tbody>
</table>

How well does your child communicate with you?

____________________________________________________________________

____________________________________________________________________
How well does your child communicate with other family members?

____________________________________________________________________

____________________________________________________________________

How well does your child communicate with others outside your family?

____________________________________________________________________

____________________________________________________________________

Describe the methods you use to help your child communicate.

____________________________________________________________________

____________________________________________________________________

What kinds of things make your child happy?

____________________________________________________________________

____________________________________________________________________

How often does your child seem happy?

____________________________________________________________________

____________________________________________________________________

What kinds of things make your child upset?

____________________________________________________________________

____________________________________________________________________

Goals and Priorities

Overall, what is most important to you and your child?

____________________________________________________________________

____________________________________________________________________

List some of your child’s strengths:

____________________________________________________________________

____________________________________________________________________

List some of your family’s strengths:

____________________________________________________________________

____________________________________________________________________
What is a Teaching Interaction?

• Arranging the environment
• Teacher provides a cue to the child
• Child responds
• Teacher responds or delivers a consequence

Naturalistic Teaching Interactions

• Instruction embedded within a “natural” context
• Emphasis on prearranging the environment to occasion the goal response
• Emphasis on shaping
• Generally utilized in combination with other formats
The Teaching D.A.N.C.E.
A Metaphor for Relationships

DANCE is a teaching strategy that incorporates the principles of operant conditioning in a developmentally suitable way for a toddler and his or her parents. The parent takes advantage of the toddler’s interests to establish communication “dialogues” and build new skills. The keys are to start with the child’s current interests and skills and to gently shape new and more complex ways of responding to the social and physical environment.


- Staying together for no other reason than the social interaction
- Shared activities, joint engagement
- Dance partners
  - Listening and speaking
  - Following and leading
  - Enticing and prolonging
It’s Time to D.A.N.C.E!

**Decide**
- What are your teaching goals?
- What environment will you teach in?
- How will you break goals into attainable units?
- Is this a good moment for a teaching interaction?

**Arrange**
- Do you have high preference events?
- How will you regulate access to high preference events?
- How will you add and fade prompts?
- Are you leveling & waiting?

**Now**
- Is your response to progress immediate, generous & contingent?
- Are you looking for responses on the goal band?

**Count**
- Are goal behaviors monitored in a way that allows you to see progress over time?

**Enjoy**
- Is everyone having fun?
- Are you alternating teaching and playing?
Individual Teaching Goals

“Without goals, and plans to reach them, you are like a ship that has set sail with no destination.”

-Fitzhugh Dodson
Skill 1: Eye Contact

Why Teach Eye Contact?

Eye contact is a part of social interactions and is often considered a prerequisite skill for more complex behaviors, such as language and social skills. Because eye contact is considered so important, it is often targeted first for intervention.

When you go on to work on other skills, eye contact will allow you to have a better teaching interaction.

What are the functions?

• Indicating interest
• Communicating information
• Obtain information from others
• Conversation skills/regulation
• Expressing emotion
• Reinforcer
APPENDIX C

FAMILY HOME HELPER
The FCP Home Helper Sheet

The Teaching DANCE

_____ Decide
Is this a good moment for a teaching interaction?
What skill will you teach?

_____ Arrange
Are you sampling, setting a goal, arranging, leveling and waiting?

_____ Now!
Are you looking for responses on the goal band?

Date: ___ Child: ____________
Parents: ___________________
Trainer: ___________________

Skill:
Count:

Teaching Tips:

Are you responding immediately by presenting the desired activity or event?
Are you pairing the event with delighted, brief and specific praise?
Are you adjusting your responding?
Is what you are doing effective?
Should you continue? Should you change?

_____ Count
Are you counting in standardized ways over time?

_____ Enjoy!
Are you having fun?
Are you keeping the DANCE short and sweet?
Are you shifting to other activities while your child is still happy?
Are you alternating teaching and play activities?
APPENDIX D

BEHAVIOR DEFINITIONS ADAPTED FROM THE FAMILY CONNECTIONS PROJECT

OBSERVATION PROTOCOL
A Systematic Replication of a Parent-Toddler Training Program

OBSERVATION CODE

Andrea Newcomer 2008-09
F.A.Q.s

Where are the videos?

The videos are on both the Mac and the external hard drive in the FCP office. To open the videos on the Mac, go to file: New finder window. Then go to Movies on the right hand side. Click on the file called andrea. Each of the participants has a file with their pseudonym on it.

What do I fill out for client name?

The video files are labeled with a pseudonym for each child. For confidentiality reasons, it is really important that you never put their real names on the data sheets.

What do I put for session/condition number?

Use the assessment number (between 1-17) that corresponds with the date you are scoring. You can find the assessment number by looking at the title of the video.

Where do I put scored data sheets?

Use your folder in the filing cabinet in the FCP office.

Where did the different definitions come from?

Facial Orientation: Wendy Jacobs

Joint Attention: Jamie Goettl

Teaching Episode: Amanda Besner

Other measures: Sarah Ewing, Katherine Schooley

Confused, need help, question…

Email Andrea
TEACHING EPISODES

Arranging Learning Opportunities (crea./capt.)

Teacher creates and/or capitalizing on a teaching opportunity by controlling or withholding access to events in the environment. The teacher creates or contrives a teaching opportunity by arranging the environment to promote the child's interest in events that the teacher can control access to.

*Examples* include but are not limited to: parent presenting events to the child while maintaining control; parent placing preferred materials out of reach; parent giving inadequate food/drink portions to the child; parent offering choices; parent setting up events that require assistance from the teacher; parent setting up a block or an aversive event; parent asking a question or making a comment.

*Non-examples* include but are not limited to: parent giving item to child non-contingently; parent giving entire container of desired food item to child (French fries, gold fish); all desired toys accessible to child; parent saying "hey honey do you want this?" and then giving it to him.

Responsive Model Delivery (M+/M-)

An appropriate adjustment of a model when compared with a previous model delivery.

*Examples* include but are not limited to; parent did not originally deliver a vocal model, but later delivers a vocal model, it would be considered a responsive model because it was adjusted compared to the first model (lack of vocal model); parent waits 2 seconds to delivery the next model when the previous model delivery occurred within 1 second of no response, it would be considered a responsive model because it was adjusted compared to the first model (shorter latency); parent slowly moves toy upward toward his face to model where the child should look when working on eye contact; parent adjusts placement of a toy (moves it closer or farther away) when child stops crawling towards it.

*Non-examples* include but are not limited to: parent didn't originally deliver a vocal model and later still doesn't deliver a vocal model; parent waits 2 seconds originally and later waits 2 seconds again; giving the same model--parent says "ball" and then says "ball" again without breaking the word down.

Responsive Consequence Delivery (C+/C-)

Teacher adjusts reinforcer delivery based on closer approximation, previous responding, and apparent desirability of event being delivered.

*Examples* include but are not limited to: child delivers bubbles when child says, “buh” following a vocal model “buh;” parent gives child juice following an instance of communicative eye contact when juice was removed.
Non-examples include but are not limited to: parent gives item to child when child turns away; parent gives item to child when child begins to whine/tantrum; child reaches for item, gives eye contact, and parent does not give item to child.

**Expansion of Child Initiations (E+/E-)**

Parent accepts a child initiation and then parent immediately adds/participates in and additional sequence within the same pattern, activity, or vocalization while delivering access. Delivering access includes providing materials/activity related to a vocalization that was inaccessible prior to the initiation; or providing continued access to materials/activity that the child was engaged with at the time a non-vocal play sequence was initiated.

Examples include but are not limited to the child saying “vvv” in the presence of the t.v., mom says “video,” and provides access to a video. Child is looking at a book and touches a flap, mom lifts flap up and the child continues to look at the book.

Non-examples include but are not limited to the child saying “mmm” in the presence of the TV, mom says “video” but does not deliver access. Child is looking at a book, says “du,” mom says “duck” and the child continues to look at the book.

**Response approximation (mark a “/”)**

The child engages or attempts to engage in the target behavior, specified in the opportunity arrangement.

Examples include but are not limited to: the child moves his head in the directions of the parent's head when an opportunity for eye contact is set up; the child says “buh” following the vocal model “ball;” the child touches his mouth and his nose with an open hand following an opportunity for motor imitation of touching nose; the child tries to get a shape in the shape sorter, parent comes over and helps; child tries to sign for “movie” and the parent physically prompts him to do it correctly.

**Communicative Attending (ca)**

The child’s head movement in the direction of the adult’s face, following the removal of a preferred item or to gain access to an inaccessible item or event. An inaccessible item or event may be the attention of the adult (i.e. the parent delivers attention in the form of vocalizations or item/event delivery following the child’s head movement in the direction of the parent).

**Gestural Request (gr)**

Non-vocal gestures directed to another to ask for an item, specify and action to be completed by another, request information, permission, or attention.
Examples include but are not limited to: parent holds up bubbles and child reaches their hands up to the bubble container when the parent pauses in blowing bubbles; parent holds up puzzle piece and says “more,” child stretches their arm out to take the piece.

Vocal Request (vr)

Spoken sounds, words, phrases, or complete sentences directed to another that ask for an item, directs another to engage in a specified activity, specifies an action to be completed by another, request information, permission, or attention. Access to an item does not have to be delivered to be counted as a vocal request.

Sign Language (sn)

Non-vocal gestures directed to another to ask for an item, specify and action to be completed by another, request information, permission, or attention.

Examples include but are not limited to: parent holds up truck and says “truck,” to which child responds by making an approximation to the sign for “truck;” parent has control of puzzle pieces and child signs “more” for access to another puzzle piece.

Non-examples include but are not limited to: parent holds up ball and physically takes the child’s hands to sign ball; Parent holds up bubbles, and child reaches for the bubbles.

Other Response (other; mark an “X”)

The child engages in a behavior other than that specified by the opportunity arrangement.

-or-

Child engages in behavior specified by an opportunity arrangement not listed in the response column (circle “other” if it is a correct response; mark a “/” for an approximation).

Examples include but are not limited to: the child says “eat” when an opportunity for eye contact was set up; the child touches his head when an opportunity for object imitation with a drum was set up; the child sits still when an opportunity for functional communication was set up.
FACIAL ORIENTATION

The point in which the child’s face moves right, left, up, or down to meet with the parent’s face (unless her face was already oriented toward the parent’s face), and may include complete or partial orientations of the child’s eyes to the parent’s eyes. If the child’s face is not directly oriented to the parent’s face but the child’s eyes move to meet the parent’s face, the time at which the child’s eyes orient to the parent’s face is scored as the onset of a facial orientation.

If the child’s face is not oriented and their eyes are not visible, an abrupt head movement so that the back of the child’s head is inline with the parent’s face. If the child’s face is already oriented toward the direction of the parent’s face but her eyes are not visible, an abrupt eyelid movement up or down toward the direction of the parent’s eyes is scored as the onset of a facial orientation. Recording the duration of facial orientation stops when the participant changes her face and/or eye position away from the parent’s face during the facial orientation.

 Orientations had to be between two and six seconds to be counted. Length of an orientation is determined by the observer counting, “one-one thousand, two-one thousand,” etc. at the onset of the orientation, and counting ceases when the child discontinues orientation.

Scoring instructions:
For each occurrence of a facial orientation (between 2 and 6 seconds in duration), place a tally mark in the minute row it was observed. If there is no facial orientation for the minute, check the NO box at the beginning of the row. Calculate cumulative frequencies and place in the triangle of each minute bin.
COORDINATED JOINT ATTENTION

(frequency recording)

Child Facial Orientation Shift – Child alternates facial orientation from

Activity/(group of) object(s)/person/event •
Parent’s face •
Activity/(group of) object(s)/person/event
[and the shift from the parent’s face • activity occurs within 3 seconds]

-or-

Parent’s face •
Activity/(group of) object(s)/person/event •
Parent’s face
[and the shift from the activity • to the parent’s face occurs within 3 seconds]

-or-

In the case of peek-a-boo, song singing, tickling, or other social games, when the event ceases, the child turns his or her facial orientation to the parent within 3 seconds

*Objects related to the activity such as those in the parents hand in a task where the parent is handing objects one by one to the child count as the same “group of objects”

Examples:

- Child and parent are playing with cards and mom holds one up and says “bird.” The child orient toward the card then to mom’s face then back to one of the cards(tally1)…then back to the mom’s face then to a card(tally 2)…
- Child looks from puppet on mom’s hand to mom’s face then back to the puppet within 3 seconds
- Child shifts orientation from bucket to the parent’s face to the next object in the parent’s hand (for the bucket)
- After a tickle stops the child shifts orientation from some other area of the room to the parent’s face
- Dad says “peek-a-boo” and child turns toward dad’s face and giggles (“implicit vocal to attend”) then dad disappears. Within 3 seconds child moves around the obstructing objects and when he finds dad, he orients toward dad’s face and giggles when dad says “peek-a-boo” (1 FOS)

Nonexamples:

- Child looks at the card then to the TV then to the parent
- Child looks from puppet on mom’s hand, to mom’s face, then to television
APPENDIX E

PARENT INFORMED CONSENT FORM
University of North Texas Institutional Review Board

Informed Consent Form

Before agreeing to your and your child’s participation in this research study, it is important that you read and understand the following explanation of the purpose and benefits of the study and how it will be conducted.

Title of Study:
Comparing observation lengths in a parent-toddler training program

Principal Investigator:
Andrea Newcomer, University of North Texas, Department of Behavior Analysis

Purpose of the Study:
You and your child are being asked to participate in a research study that is designed to help make the evaluation of a standard parent training program more efficient. This project is designed to help us understand how long we have to observe to know if families are making progress. Observation procedures are the way that we know we are making progress. The way we observe may have a direct impact on the ability of practitioners to effectively assess treatment procedures, goals, and monitor progress. To help us observe more efficiently we will watch video footage from parent training sessions. The parent training package is designed to teach you to increase teaching opportunities and respond in ways that will help your child. We will videotape you and your child interacting before we start training, during training, and after training. We will then use these videotapes to compare short segments of the footage to longer segments.

Study Procedures:
You and your child will be asked to engage in typical observation and teaching sessions that will take about 1 hour a day, 2-4 days a week for 5-10 weeks during play activities. The parent training will involve the trainer demonstrating the techniques with your child, and then you will practice the techniques by pretending with the trainer, while the trainer pretends to be your child. Once you have observed and practiced, you will use the techniques with your child and the trainer will tell you what you are doing successfully and what you will continue to need training on. These procedures include a 10 minute videotaped segment of you and your child interacting and the teaching sessions described above. Data will be collected on parent teaching skills including arranging learning opportunities, providing prompts and shaping more complex responding. The child’s ability to acquire those skills will be measured by eye contact, toy play and social games.

Voluntary Participation:
Participation in this research study is voluntary. Refusal to participate or a decision to discontinue participation will not involve a penalty or loss of benefits to which you are otherwise entitled.
Foreseeable Risks:

No foreseeable risks are involved in this study. Previous clinical and research reports have identified no harm and substantial benefit from participation in the type of training associated with this study. We will take precautions to be sure that your child does not experience discomfort during the training. We do this by using positive teaching procedures and, as needed, having the faculty advisor observe videotaped sessions to insure the treatment is being carried out correctly. If your child shows distress (cry, scream) we will stop the session and then adjust the criterion so that your child can be successful. In the event that your child is distressed for more than one session, the faculty advisor will conduct a site visit to modify the procedures. If distress continues, the study will be terminated.

Benefits to the Subjects or Others:

Parents may learn how to use teaching skills that can be used in a natural way; for example, while playing with your child. The skills parents may learn are meaningful social behaviors. The results of the study may also benefit future parents and children receiving parent training services. In addition to you and other parent/child groups, the results of the study may add to the knowledge of other service providers delivering services to families of children with autism.

Procedures for Maintaining Confidentiality of Research Records:

All records including signed consent forms and video tapes will be kept in a locked filing cabinet in the Family Connections Project lab in Chilton Hall Rm. 361E. Any electronic copies (videotapes and QuickTime files) will be given to the family immediately upon completion of the study. All research participants will be given a pseudonym that will be used when referring to that participant’s data and will be maintained throughout the course of research. Following the research study, all personally identifiable data will be marked with the participant’s pseudonym and will remain in The Family Connections Project records for at least 3 calendar years. In addition to the principal investigator, additional graduate students may assist with data analysis. All of these graduate students are staff of The Family Connections Project and have completed the NIH clinical research training. Personally identifiable data will not be disclosed to anyone outside of The Family Connections Project Research Team. The confidentiality of the participants’ personal information will be maintained in the master’s thesis defense and in any public dissemination, such as appearance in academic journals and/or academic conferences.

Questions about the Study:

If you have any questions about the study, you may contact Andrea Newcomer or the faculty advisor, Dr. Shahla Ala’i Rosales.

Review for the Protection of Participants:

This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-3940 with any questions regarding the rights of research subjects.
Research Participants’ Rights:

Your signature below indicates that you have read or have had read to you all of the above and that you confirm all of the following:

- Andrea Newcomer has explained the study to you and answered all of your questions. You have been told the possible benefits and the potential risks and/or discomforts of the study.
- You understand that you and your child do not have to take part in this study, and your refusal to participate or your decision to withdraw you and your child from the study will involve no penalty of loss of rights or benefits. The study personnel may choose to stop your and your child’s participation at any time.
- You understand why the study is being conducted and how it will be performed.
- You understand your and your child’s rights as a research participant and you voluntarily consent to your and your child’s participation in this study.
- You have been told you will receive a copy of this form and that at the conclusion of the study Andrea will meet with you to describe the findings and the outcomes.

________________________________________
Printed Name of Child

________________________________________
Printed Name of Participant

________________________________________       ________________
Signature of Participant            Date

For the Principal Investigator or Designee: I certify that I have reviewed the contents of this form with the participant signing above. I have explained the possible benefits and the potential risks and/or discomforts of the study. It is my opinion that the participant understood the explanation.

________________________________________
Printed Name of Principal Investigator

________________________________________     _________________
Signature of Principal Investigator     Date
APPENDIX F

EXAMPLE OF AN EXIT REPORT
FCP Transition Report

Child: Brendan DOB: 4/5/06
Parent: Dawn Date of Meeting: 6/8/08
Address:

North Texas Autism Project (NTAP) Staff Contact Information

Dr. Shahla Ala’i-Rosales Andrea Newcomer
Director Parent Trainer
email email
phone number phone number

Report Preparation: Andrea Newcomer and Dr. Shahla Ala’i-Rosales

Program Timeline:
• 04/18/08 - 6/8/08 (7 weeks)
• NOTE: Participation in this project was part of the thesis research of Andrea Newcomer and parents voluntarily enrolled in the research project. The FCP service fee was waived and the parents gave informed consent to participate (letter attached).

Treatment Timeline and Hours:
• FCP Intake Meeting and Program Review (1 hr.)
• 11 parent training sessions (1 hr./session)
• Transition Meeting (1 hr.)

Treatment Team Staff
Dr. Shahla Ala’i-Rosales Director
Andrea Newcomer Parent Trainer
NOTE: Data for the exit reports were gathered with preliminary behavior definitions and are not the same definitions and data as used for the thesis manuscript.

Parent Goal Performance

To reach Brendan’s goals, Dawn was taught through instructions, models, and guided feedback to implement the DANCE teaching skills to teach the performance goal of communicative eye contact to Brendan.

Parent Performance

First Performance during baseline phase:
Setting up opportunities for Brendan to engage in communicative eye contact
• 3 opportunities set up/10 min.

Last Performance during baseline phase:
Setting up opportunities for Brendan to engage in communicative eye contact
• 5 opportunities set up/10 min.

Parent Performance

First Performance during intervention phase:
Setting up opportunities for Brendan to engage in communicative eye contact
• 19 opportunities set up/10 min.

Last Performance during intervention phase:
Setting up opportunities for Brendan to engage in communicative eye contact
• 27 opportunities set up/10 min.
NOTE: Data for the exit reports were gathered with preliminary behavior definitions and are not the same definitions and data as used for the thesis manuscript.

Child Goal Performance

Following formal assessments, Dawn, the parent trainer and the project director selected a goal for Brendan: non-vocal functional communication (communicative eye contact).

Child Performance
First Performance during baseline phase:
Total rates of eye contact and communicative (2-5 second) eye contact
• 11 instances of eye contact/10 min.
• 1 instances of communicative eye contact/10 min.

Last Performance during baseline phase:
Total rates of eye contact and communicative (2-5 second) eye contact
• 17 instances of eye contact/10 min.
• 7 instances of communicative eye contact/10 min.

Child Performance
First Performance during intervention phase:
Total rates of eye contact and communicative (2-5 second) eye contact
• 25 instances of eye contact/10 min.
• 12 instances of communicative eye contact/10 min.

Last Performance during intervention phase:
Total rates of eye contact and communicative (2-5 second) eye contact
• 31 instances of eye contact/10 min.
• 16 instances of communicative eye contact/10 min.
Program Review

Communicative Eye Contact
The Communicative Eye Contact Program was implemented on 5/10/08. The purpose of the program was to teach Brendan how to communicate his wants and needs to his caregivers and others. Target behaviors include requesting toys, activities, and attention from others. In addition, communicative eye contact is a necessary prerequisite skill for gestural and verbal communication. At the start of the program, goals consisted of requesting items and activities following the removal of a reinforcer and later focused on social initiations, requests, and greetings. Caregivers were taught to identify optimal teaching moments, appropriately arrange opportunities for Brendan to engage in communicative gestures, respond to approximations of the target response, adjust their own responding, and count Brendan’s responses. In addition, caregivers were taught to deliver events with effective and efficient timing and clarity to increase the likelihood of quick and meaningful acquisition of the skill.

Successful Teaching Strategies
1. The Teaching D.A.N.C.E
   n DECIDE
   n Identifying moments for teaching interactions
   n ARRANGE
   n Planning materials, body positioning, skill sets
   n NOW
   n Responding and adjusting immediately
   n COUNT
   n Keeping track of time, counting, and charting
   n ENJOY
   n Taking turns, having fun

Suggested Performance Goals for Parents
Continue DANCE components with emphasis on:
1. Transfer to new environments (e.g. backyard, cousins’ home, community, park)
2. Transfer to new child skills (e.g. play, imitation, functional communication)
3. Teaching others to use DANCE components (e.g. therapists, aunts and uncles)
4. Continue to use with:
   a. ECI and in-home therapists
   b. Consultation with Board Certified Behavior Analyst

Suggested Performance Goals for Child
See attached scope and sequence table
1. Play and imitation skills
2. Beginner academic skills

Additional Resources:
Support Group for Families
Families for Effective Autism Treatment-North Texas  www.featnt.org  (972) 245-8722
# IFSP Scope and Sequence Toddler Monitoring & Planning Guide

**Overarching master goal:** To increase responsivity, enjoyment and benefit from the social environment

<table>
<thead>
<tr>
<th>Early Interests and Activities</th>
<th><em>master goal:</em> enjoys playing with a wide range of activities alone &amp; with others</th>
</tr>
</thead>
<tbody>
<tr>
<td>sampling</td>
<td>scanning, touching, manipulating, request help, request demonstrations</td>
</tr>
<tr>
<td>selection</td>
<td>gaze, grab, reach, point, vocal, long, in absence of event</td>
</tr>
<tr>
<td>manipulation</td>
<td>simple, functional, short durations, durations, pretend w/ play objects, objects</td>
</tr>
<tr>
<td>diversity</td>
<td>rate w/in class of presenting selections, rate w/in classes of similar, rate w/in classes of diff. selections</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Early Communication</th>
<th><em>master goal:</em> communicates own likes, dislikes, interests; responds to communications of others</th>
</tr>
</thead>
<tbody>
<tr>
<td>functional</td>
<td>signal, requests, protests, directives, comments, descriptions, information exchange</td>
</tr>
<tr>
<td>eye contact</td>
<td>gaze, access/request, follow gaze, duration, persistence, direct gaze, reference</td>
</tr>
<tr>
<td>gestures</td>
<td>movement, diversity/rate, reach, point, differentiated, expand, support vocals</td>
</tr>
<tr>
<td>vocalizations</td>
<td>babble, diversity, rate, attempts, approximations, words, phrases</td>
</tr>
<tr>
<td>responsivity</td>
<td>smiles, follows high, neutral preference requests, gives information, turn taking</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Early Social</th>
<th><em>master goal:</em> enjoys sharing activities with others &amp; develops attachments to widening circle of people</th>
</tr>
</thead>
<tbody>
<tr>
<td>reciprocity</td>
<td>access to interests &amp; rate approximations, large movements w/ toys, small movements w/ toys, movements w/ toys, in simple conversations</td>
</tr>
<tr>
<td>motor</td>
<td>diversity, hand to hand pick ups, accommodates drops, fits, tosses</td>
</tr>
<tr>
<td>imitation</td>
<td>vocal imitation, rate, single sounds, approximations, words, phrases</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Early Movement</th>
<th><em>master goal:</em> able to control own access to physical environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>locomotion</td>
<td>sit, crawl, pulls up, walks, trots, runs</td>
</tr>
<tr>
<td>fine</td>
<td>hand to hand, accommodates changes without distress; makes transitions without distress and with eagerness</td>
</tr>
<tr>
<td>motor</td>
<td>hand pick ups, pincer grasp, accommodates drops, utensils, fits, tosses</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Early Problem Solving</th>
<th><em>master goal:</em> able to encounter novel &amp; varying conditions with success &amp; comfort</th>
</tr>
</thead>
<tbody>
<tr>
<td>cause-effect</td>
<td>experiment w/ objects, experiment w/ social reactions, persistence w/ experimentation</td>
</tr>
<tr>
<td>flexibility</td>
<td>accommodates changes without distress; makes transitions without distress and with eagerness</td>
</tr>
<tr>
<td>agility</td>
<td>switches from one activity to another; engages in activities in different ways; learning rate increases with successive exposures</td>
</tr>
</tbody>
</table>
### Parent and Child Intervention Goals

<table>
<thead>
<tr>
<th>Min</th>
<th>Opp</th>
<th>RM</th>
<th>Response</th>
<th>RC</th>
<th>Exp</th>
</tr>
</thead>
<tbody>
<tr>
<td>creat. capt.</td>
<td>M+ M-</td>
<td>ca gr vr LL sn other</td>
<td>C+ C- N</td>
<td>E+ E-</td>
<td></td>
</tr>
<tr>
<td>creat. capt.</td>
<td>M+ M-</td>
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<td>C+ C- N</td>
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<td>C+ C- N</td>
<td>E+ E-</td>
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<td>C+ C- N</td>
<td>E+ E-</td>
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<td>C+ C- N</td>
<td>E+ E-</td>
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<td>ca gr vr LL sn other</td>
<td>C+ C- N</td>
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<td>E+ E-</td>
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<td>C+ C- N</td>
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<td>E+ E-</td>
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</tr>
<tr>
<td>creat. capt.</td>
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<td>ca gr vr LL sn other</td>
<td>C+ C- N</td>
<td>E+ E-</td>
<td></td>
</tr>
</tbody>
</table>

**Totals:**
- Opportunity Arrange (opp):
- Responsive Model (RM):
- Responsive Conseq. (RC):
- Expansion (Exp):

**Comm. Attending (ca):**
**Gestural Request (gr):**
**Vocal Request (v):**
**Learn to Learn (LL):**
**Sign Language (sl):**
**Other:**
Facial Orientation (Child)

**Scoring Instructions:**
For each occurrence of a facial orientation, place a tally mark under the type of orientation in the minute row it was observed. If there is no facial orientation for the minute, check the NO box at the beginning of the row. Calculate cumulative frequencies and place in the triangle of each minute bin.

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<thead>
<tr>
<th>minute</th>
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<th>Facial Orientation</th>
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<td>1-2</td>
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<td>8-9</td>
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<tr>
<td>9-10</td>
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</tbody>
</table>
Coordinated Joint Attention (Child)

**Scoring Instructions:**
For each occurrence of a coordinated joint attention (CJA), place a tally mark in the minute row it was observed. If there is no CJA for the minute, check the NO box at the beginning of the row. Calculate cumulative frequencies and place in the triangle of each minute bin.

<table>
<thead>
<tr>
<th>minute</th>
<th>NO</th>
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<tbody>
<tr>
<td>0-1</td>
<td>none</td>
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<td>1-2</td>
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REFERENCES


